ADVENTURE DESTINATION PRIORITIZATION IN INDIA: AHP AND TOPSIS APPROACH

Parminder Singh Dhillon
Punjabi University,Patiala (Punjab) India
parminderhm@pbi.ac.in

Abstract
India's adventure destinations offer a rich tapestry of experiences for enthusiasts, drawing visitors from around the globe. This study uses multi-criteria decision-making techniques, specifically AHP (Analytic Hierarchy Process) and TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution), to identify the most suitable adventure site based on various factors. Seasonality is highlighted as the most significant criterion, followed by expected hedonic value, adventure type, difficulty level, safety, budget, accessibility, duration, landscapes, and services. Among the twenty adventure sites evaluated, Rishikesh in Uttarakhand emerged as the most ideal, while Spiti in Himachal Pradesh was the least preferred. The research provides valuable insights into the relative suitability of various sites, offering a decision-making framework for tourists, destination managers, and stakeholders. This framework ensures that the selected adventure destinations align closely with the diverse preferences and priorities of tourists, aiding in the development and selection of adventure tourism products and experiences.

Key words: *Adventure, AHP, destinations, factors, India, TOPSIS.*

JEL Classification: L83, Z32, Z39.

I.INTRODUCTION

Adventure tourism has gained significant traction in recent years, as individuals seek thrilling experiences amidst natural landscapes and cultural diversity (Buckley, 2007; Buckley, 2014; Cheng et al., 2016; Giddy, 2018; Schott, 2007; Williams & Soutar, 2009). It encompasses a range of outdoor activities that are inherently thrilling to participants (Buckley, 2007). These activities typically involve elements of risk, exploration, and a sense of danger (Beedie, 2008). It involves travel experiences that incorporate at least three key components: physical exertion, cultural immersion, and engagement with natural surroundings. The essence of adventure lies in the adrenaline rush derived from taking risks and the potential for gaining new knowledge or insights through participation (Walle, 1997). Consequently, adventurers may include extreme enthusiasts who are drawn to challenging and remote locations without relying on commercial support. Several noteworthy trends and statistics regarding the adventure tourism market have been identified. In 2020, the global adventure tourism market was valued at approximately $112,227 million. The industry has experienced a compounded annual growth rate (CAGR) of nearly 20%, and this trend is anticipated to persist in the foreseeable future. Projections suggest that by 2028, the adventure tourism sector could reach a valuation of $380,687 million if the current growth trajectory is sustained (Singh, 2021).
Moreover, in the vast tapestry of adventure destinations worldwide, India stands out as a beacon, renowned for its diverse and exhilarating experiences that beckon adventure enthusiasts from across the globe (Adventure Tourism in India, 2023; Patil, 2016; Kamble, 2019). The country's geographical and cultural richness offers an array of exhilarating experiences ranging from trekking in the Himalayas to scuba diving in the Andaman Islands (Beyond, 2024). The Himalayan range, with its towering peaks and rugged terrain, offers an unparalleled trekking experience amidst breathtaking landscapes (Jain et al., 2023; Narvekar, & Dayanand, 2020; Vyas et al., 2024). As a result, trekking in the Himalayas is a hallmark adventure activity that draws countless adventurers to India each year. On the other hand, the Andaman Islands, nestled in the Indian Ocean, captivate adventurers with their pristine beaches and vibrant marine life. Scuba diving enthusiasts flock to these idyllic islands to explore vibrant coral reefs teeming with exotic marine species (“5 Exclusive Experiences You Can Have Only in the Andamans!”, 2024; Kumar, 2017). India also offers a plethora of other adventure sites beyond the Himalayas and Andaman Islands. For those with a passion for heights, Gulmarg in Kashmir is renowned for its elite skiing and snowboarding opportunities in the winter and it transforms into a paradise for mountain biking and trekking in the summer months (Dar, 2014). Meanwhile, Ladakh beckons adventurers with its

rugged terrain, offering experiences such as mountain biking, high-altitude trekking in the Markha Valley, camel safaris in the Nubra Valley, and river rafting along the Zanskar River (Kumar & Reddy, 2024). Further, in Uttarakhand, adventure enthusiasts can explore the thrill of white-water rafting in Rishikesh or embark on treks through dense forests in places like Nainital (Upadhyaya & Garg, 2023). Down south, Tamil Nadu boasts the Western Ghats also provides opportunities for thrilling rock climbing and rappelling experiences. Moving towards north-east, Meghalaya's mesmerizing landscapes offer thrilling experiences like caving in the world's longest cave networks and embarking on treks to discover hidden waterfalls amidst the dense forests (Sarkar, et al., 2024). Each of these regions presents a unique tapestry of adventures, ensuring a memorable journey for thrill-seekers. However, amidst this abundance of options, discerning the best adventure place in India becomes a pertinent inquiry. With numerous destinations vying for attention, adventurers are faced with the challenge of selecting the most optimal location that aligns with their preferences and interests (Noble et al., 2009). While previous studies have focused on specific regions and their challenges and business prospectus (Bhautik, 2023, Dar, 2014, Kumar & Reddy, 2024, Patil, 2023, Sarkar, et al., 2024, Upadhyaya & Garg, 2023), there is a need for research that synthesizes information from diverse regions to identify the best adventure destinations in the country. Furthermore, while adventure tourism is a burgeoning industry, previous research often lacks a comprehensive approach for selecting adventure sites that consider diverse factors and tourist preferences. The decision-making process involved in planning and participating in adventurous activities is multifaceted and influenced by various factors like seasonality, duration, level of difficulty, budget, accessibility, safety, and facilities. However, existing literature does not fully explore the interplay between these factors and how they collectively shape the decision-making process of adventure tourists. Therefore, the absence of previous studies on evaluating adventure destinations in India based on factors has resulted in a significant knowledge gap. Thus, there is a need in developing a structured approach for analyzing and ranking adventure destinations in India based on a comprehensive set of criteria. Consequently, addressing this research gap would not only provide valuable insights for adventure tourists seeking diverse experiences across India but also offer guidance to tourism authorities and stakeholders in promoting and developing adventure tourism infrastructure in the country. As the adventure tourism industry continues to burgeon and is driven by a growing global demand for immersive and adrenaline-pumping experiences, the quest to identify the best adventure place in India assumes greater significance. By delving deeper into the unique offerings of each destination and assessing their appeal from various perspectives, adventurers can make informed choices that promise unforgettable experiences amidst India's captivating landscapes. Therefore, the general objective of this study is to evaluate the best adventure destination in India. To achieve this, specific objectives include analysing various adventure destinations across India, assessing their suitability based on factors such as seasonality, duration, level of difficulty, type of adventure, expected hedonic value, budget, accessibility, safety, facilities and services, and the landscapes (Bichler & Peters, 2020, Heyns, 2009; Meng and Minghui, 2007; Singh, 2021; Uysal, 2008; Vukic et al., 2015).

The choice of conducting the research within the Indian subcontinent is strategic, considering the country's rich cultural heritage, diverse natural landscapes, and burgeoning adventure tourism industry. From the towering peaks of the Himalayas in the north to the landscapes of western ghats in the south, India offers a kaleidoscope of adventure experiences. Geographically, the study traversed the length and breadth of India, exploring renowned adventure hotspots such as Manali in Himachal Pradesh, Rishikesh in Uttarakhand, Maharashtra in the west, Tamil Nadu in the South and Mizoram in the North-East (Mangoch & Jain, 2022; Patil, 2024). Each destination presents unique opportunities for adventure enthusiasts, ranging from trekking and mountaineering to water sports and wildlife safaris (Jain et al., 2023; Kapur, 2018). By considering both the geographical diversity and seasonal variability of adventure destinations in India, the research aimed to provide holistic insights into identifying the best adventure destination across the country. Moreover, by employing a mixed-method approach through the integration of AHP and TOPSIS techniques that combines qualitative analysis of destination attributes with quantitative surveys, this study bridges the gap between theoretical frameworks and practical decision-making processes in adventure tourism management. Additionally, the inclusion of factors such as seasonality, expected hedonic value, and safety, alongside traditional criteria like accessibility and budget, enhances the depth and accuracy of destination evaluations. This research not only offers valuable insights into the relative suitability of adventure sites but also provides a structured decision-making framework that can inform adventure tourists, destination managers and tourism stakeholders in the development of tailored adventure tourism products and experiences. Overall, by addressing the complexity of decision-making in adventure tourism through the integration of AHP And TOPSIS techniques, this study fills a significant research gap and paves the way for more informed and strategic management practices in the industry.

The organization of the text followed a structured format, encompassing literature review, methodology, results, discussion, and conclusion sections, ensuring clarity and coherence in presenting the research findings. In summary, this research

endeavours to unravel the mysteries of adventure tourism in India, shedding light on the best destinations that encapsulate the spirit of adventure amidst the country's rich cultural and geographical tapestry.

II.LITERATURE REVIEW

Scholars have offered diverse perspectives on adventure tourism, reflecting varying interpretations of adventurous experiences. Sung et al., (1997) conceptualize adventure tourism as recreational activities in unconventional settings, emphasizing thrill and excitement. In contrast, Walle (1997) contends that adventure entails seeking knowledge rather than solely embracing risk. This highlights the multifaceted nature of adventure experiences, incorporating elements of both risk and exploration (Ewert et al., 2013). These studies underscore the importance of understanding the motivations driving adventure tourism, as individuals exhibit varying levels of willingness to engage in risky activities based on factors such as experience and courage. Moreover, the level and type of adventure pursued by individuals are influenced by their motivations and psychological characteristics. Further Lee and Crompton (1992) suggest that adventurers' engagement in adventurous activities is influenced by their "Optimum Stimulation Level" (OSL), with individuals exhibiting high OSL gravitating towards adrenaline-pumping activities like mountaineering and rafting. This highlights the role of individual traits and motivations in shaping adventure tourism preferences. In addition to individual motivations, destination characteristics play a crucial role in shaping adventure tourism experiences. Studies by Buckley (2006), Hudson (2002), and Davis et al. (1997) have examined the organizational aspects of the adventure tourism industry, emphasizing the significance of proper guidance and equipment for adventure activities. Moreover, understanding destination attributes such as safety, cultural resources, and adventure activity resources is essential for enhancing the attractiveness of adventure tourism destinations. The adventure tourism experience is further characterized by elements of risk, responsibility, uncertainty, and commitment (Arnould & Price ,1993). This highlights the complexity of adventure tourism experiences and the importance of catering to diverse motivations and preferences.

2.1 Motives of Adventure Activity

Understanding the motivations of participants in adventure activities poses a significant challenge due to the inherent ineffability of the experience, as emphasized by Lyng (1990). Additionally, Ewert (1994) and Ewert et al. (2013) highlight the dynamic nature of adventure motives, which can evolve during participation and are influenced by the resulting experiences. This complexity underscores the difficulty of investigating this subject matter. Early studies predominantly focused on thrill-seeking as a primary motive driving participation in outdoor adventure activities, but more recent research, such as that by Kerr and Houge Mackenzie (2012), has explored a broader range of motivations that encompass adventure's core elements. Buckley's (2011) extensive examination of motive-based outdoor adventure studies sheds light on various motivations among participants in activities ranging from climbing and mountaineering to skiing and snowboarding. Further, one key aspect identified is the concept of "rush," characterized by a combination of thrill, flow, and peak experience, particularly experienced by skilled individuals in highly favourable circumstances. Moreover, Buckley's review contributed to the identification of 14 distinct motivations grouped into three categories: internally-generated motives related to activity performance, motivations associated with nature, art, and spirit, and externally produced motivations linked to social factors. However, Buckley's review also highlights the lack of research specifically focusing on adventure tourists, with only a limited number of studies addressing their motives. Further research, such as that by Ewert et al. (2013), has explored motivational differences across different adventure activity types, revealing variations in motives according to the specific demands and settings of each activity. For example, rock climbers exhibited higher sensation-seeking motives compared to canoeists and sea kayakers, reflecting the differing nature and challenges of these activities. Studies like Willig's (2008) have delved into the meanings associated with extreme sports participation and the motives driving involvement across various adventure activities. Participants identified the pursuit of goals, the development of mastery, and the rejuvenating effects of engagement as key motivational forces, highlighting the multifaceted nature of adventure motivations. In summary, while existing research provides valuable insights into the motivations of adventure activity participants, there remains a need for further exploration, particularly in understanding the nuanced differences in motives among adventure tourists. Therefore, in this study other motives or factors like level of difficulty, type of adventure, expected hedonic value, seasonality, duration, budget, accessibility, safety, facilities and services, and the landscapes are taken which interplay with each other and contribute to the complexity of the decision-making process when it comes to planning and participating in adventurous activities (Bichler & Peters, 2020, Heyns, 2009; Meng and Minghui, 2007; Singh, 2021; Uysal, 2008; Vukic et al., 2015).

2.2 Reversal theory

Research on the motivations of seasoned participants in adventure activities has drawn on reversal theory to clarify the different reasons behind their behavior (Apter, 1982). According to this theory,

people switch between different pairs of mental states, known as meta-motivational states, as they go about their daily lives. These states influence how individuals perceive and understand their motivations at any given time. For example, individuals in the telic state are generally serious, focused on goals, and tend to avoid stimulation, whereas those in the contrasting paratelic state are more spontaneous, playful, and seek out excitement (Kerr & Houge Mackenzie, 2012). Moreover, this theory posits that the motivation to participate in adventure activities is often driven by paratelic dominance and a desire for high levels of stimulation in a challenging environment (Apter, 1982). When in a paratelic state, participants develop protective mental frames that allow them to perceive typically negative emotions, such as fear and anxiety, as enjoyable during adventure activities. Other meta-motivational states also display opposing frames of mind, with individuals shifting between them. The amount of time someone spends in one part of a paired state compared to the other influences their personality and motivational style. For example, a person who frequently exhibits competitiveness and a desire for control has a mastery-oriented personality, while someone who seeks harmony and connection with others has a sympathy-oriented character.

This theory has been examined in numerous studies related to recreational activities, but its use in the realm of adventure tourism is still relatively unexplored. A key exception is the study by Houge et al. (2012), which applied this theory to examine the motivational states of adventure guides. Another study by Kerr & Houge Mackenzie (2012) looked at five seasoned adventure enthusiasts participating in different adventure sports and identified a range of motives for their involvement, including adrenaline rush, risk-taking, seeking challenges, goal achievement, and a connection with nature. The significance of these motives varied among different respondents. Participants in these studies were found to shift between paired meta-motivational states, although one state generally tended to dominate. For instance, a river surfer reported experiencing the intensely arousing paratelic state marked by enjoyment, thrill, spontaneous playfulness, and internal rewards while surfing. But this person had been in a telic condition, concentrating on intense training to develop the requisite abilities and competence, before participating in the activity. The prevalence of the paratelic attitude among adventure sports players has been measured in certain research using the Telic Dominance Scale (TDS), which evaluates the parattelic meta-motivational state through three subscales.

Therefore, this theory proposes that individuals seek experiences that offer opportunities for psychological reversals, where they can switch between opposing motivational states. In the context of adventure site selection, this study examines how different factors such as level of difficulty, type of adventure, seasonality and other factors may elicit different motivational states in individuals. In this way, reversal theory helps this study by providing a nuanced understanding of how individuals navigate the decision-making process when selecting adventure sites in India.

2.3 Edgework

The second theoretical concept examined in research on the motivations of outdoor adventure activity participants is the idea of edgework, as explained by Lyng and Snow (1986). Edgework entails deliberately venturing beyond one's comfort zone by engaging in calculated risk-taking, to reach a state of self-actualization and depart from one's usual self (Lois, 2005). It represents a profound and often ineffable experience characterized by navigating the boundary between instability and control (Lyng, 1990), encompassing stages such as preparation, performance, aftermath, and the redefinition of emotions. Although edgework has been examined in a number of risk-related situations, experienced outdoor enthusiasts who are risk-takers who want to apply and improve their abilities in their preferred activities will find edgework especially pertinent. These individuals, known as edge workers, are driven by the desire to confront their fears and undertake increasingly extreme and potentially perilous challenges while maintaining a sense of control (Laurendeau, 2006). Edge workers value the chance to test and enhance their skills, therefore they place more value on the experience of taking a risk than the final result. The intensity of the edgework experience is impacted by various factors such as the type of the adventure activity and the degree of real risk involved, with endeavours like skydiving and mountaineering, which carry the potential for life-threatening situations, often leading to the most profound experiences.

Researchers (Allman et al., 2009; Lois, 2005; Lyng, 1990) have concluded that individuals engaging in edgework across various outdoor adventure activities are motivated by a range of factors that mirror broader motives associated with outdoor adventure. These motivations encompass the pursuit of skills development, the desire for achievement, the need for control, spiritual experiences, a sense of belonging, and the quest for adrenaline. While flow is characterized by a state of "loss of self-consciousness" and is less prone to arouse frightened emotions, edgework has the capacity to provoke profound feelings of anxiety and a deeper investigation of the self (Csikszentmihalyi, 1985; Lyng, 1990).

Therefore, this approach focuses on the thrill-seeking aspect of risk-taking behaviors. As a result, this approach considers not only practical factors like accessibility, budget and safety but also helps in understanding the underlying psychological motivations and experiential aspects like level of difficulty, type of adventure that drive adventure-seeking behaviour.

2.4 Multi-Criteria Decision-Making (MCDM)

MCDM methodologies are designed to address decision-making scenarios characterized by the presence of numerous criteria and alternatives. The primary objective of MCDM methods is to facilitate optimal decision outcomes. In pursuit of this goal, these techniques aim to identify, evaluate, and compare various alternatives, ultimately selecting, organizing, or categorizing the most suitable option among them. This involves a comprehensive analysis that considers multiple factors and potential choices, enabling decision-makers to navigate complex decision landscapes with greater precision and efficacy. By systematically weighing different criteria and alternatives, MCDM approaches provide a structured framework for decision-making that enhances clarity, transparency, and the likelihood of arriving at the most advantageous decision (Paksoy, 2017). Analytical Hierarchy Process (AHP) and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) are two prominent techniques of MCDM (Shaikh et al., 2021).

2.4.1 Analytical Hierarchy Process (AHP)

AHP, a crucial tool in MCDM, was developed by Thomas Saaty (Ayçin, 2019). This method provides a structured approach to incorporate the insights and expertise of decision-makers, rendering them quantifiable (Paksoy, 2017). By breaking down complex decisions into manageable components, AHP not only enhances understanding but also streamlines the decision-making process, offering a practical and accessible framework for application (Shaikh et al., 2021, Topdemir, 2019). In essence, AHP empowers decision-makers by offering a systematic methodology to leverage their knowledge and experience efficiently, ultimately facilitating more informed and efficient decision-making. Following are the steps of calculating the values in AHP method.

1. Firstly, pairwise comparisons should made between each criterion. These comparisons produce numerical values on a scale from 1 to 9, where higher numbers reflect a greater level of importance or value attributed to the selected factors.
2. These comparisons result in numerical values on a scale ranging from 1 to 9, with higher numbers indicating greater importance or value assigned to the chosen factors.
3. Moving on to the second step, after the pairwise comparisons are made, the next task is to complete the comparison matrix. This matrix reflects the importance of each criterion in relation to the others. (Şahin & Cezlan, 2022).
4. Following the completion of the matrix, the third step involves normalization. This process ensures that the sum of weights assigned to selected criteria equals 1. Each criterion's value from the column is divided by the sum of the corresponding column to achieve this normalization.
5. Subsequently, the priority vector is obtained by summing the rows of the normalized matrix and dividing the result by the total number of elements within the matrix (Özbek, 2019). Through this method, the significance of both criteria and alternatives is established, delineating their respective importance levels (Akman, 2019).
6. Further, it is crucial to verify the consistency of the pairwise comparison matrix. The Consistency Ratio (CR) is derived by dividing the Consistency Index (CI) by the Random Consistency Index (RI). If the CR exceeds 0.10, it indicates that some pairwise values need to be reviewed for consistency. Conversely, if the CR is less than 0.01, the consistency of the values is deemed acceptable (Özbek, 2019).

2.4.2 Technique for Order Preference by Similarity to Ideal Solution (TOPSIS)

TOPSIS, another prominent MCDM technique, was introduced by Hwang and Yoon in 1981 (Paksoy, 2017). This TOPSIS method is based on two fundamental concepts: the positive ideal solution and the negative ideal solution. Within this approach, the ideal alternative is identified as being closest to the positive ideal solution while simultaneously being farthest away from the negative ideal solution (Özbek, 2019). This method essentially seeks to pinpoint the most optimal choice by comparing it with the most favorable scenario and the most unfavorable scenario, thus offering a robust framework for decision-making. Following are the steps of calculating the values in TOPSIS method.

1. The first step entails clearly defining the problem (Çelikbilek & Özdemir, 2020).
2. In the second stage, a decision matrix is constructed where alternatives are listed in rows and criteria in columns, representing the initial input from decision-makers (Özbek, 2019).
3. Then, the square root of the sum of squares of the items in each criterion column is then used to normalize each element in the decision matrix. This procedure guarantees that every criterion is on a similar scale.
4. Moreover, the decision matrix's normalized values are multiplied by the criteria's corresponding importance weights to create a weighted normalized matrix (Çelikbilek & Özdemir, 2020).
5. Accordingly, the positive ideal solution is represented by the greatest values in each column of the weighted normalized matrix, while the negative ideal solution is represented by the minimum values (Paksoy, 2017).
6. Subsequently, each alternative's distances to the positive and negative ideal solutions are calculated. To find the distance to each ideal solution, this entails taking the square root of the values of each criterion in the weighted normalized matrix, subtracting them from the corresponding ideal solution values, and then

squaring the discrepancies.

7. Finally, a measure of each alternative's relative proximity to the ideal solutions is produced by dividing the distance to the negative ideal solution by the sum of the distances to both ideal solutions. This yields the relative proximity to the ideal solutions (Ayçin, 2019).

III. RESEARCH METHODOLOGY

3.1 Nature of the research

This study seeks to identify the optimal adventure destination based on expert insights, employing multi-criteria decision-making techniques such as AHP and TOPSIS. With a primary focus on practical application, the research aims to utilize these methods to address the challenge of selecting adventure sites for tourists. Additionally, it aims to outline the criteria influencing site preferences and detail the process of applying AHP and TOPSIS methodologies for destination selection. Hence, the research blends theoretical knowledge with practical implementation. Through quantitative analysis of questionnaire data and expert opinions, it systematically evaluates criteria to inform rational decisions regarding adventure site selection, making it both quantitative and analytical.

3.2 Methods

The questionnaire utilized for data collection was developed based on insights from existing literature. It encompassed various factors influencing tourists' selection of adventure sites, including seasonality, duration, level of difficulty, type of adventure, expected hedonic value, budget, accessibility, safety, facilities and services, and the landscapes (Bichler & Peters, 2020, Heyns, 2009; Meng and Minghui, 2007; Singh, 2021; Uysal, 2008; Vukic et al., 2015). These criteria, along with their corresponding symbols, are outlined in Table 1.

Table 1. Criteria's

Symbol	Criteria
C1	Seasonality
C2	Duration
C3	Level of difficulty
C4	Type of adventure
C5	Expected hedonic value
C6	Budget
C7	Accessibility
C8	Safety
C9	Facilities and Services
C10	Landscapes

Source: (Primary Data)

The questionnaire designed for comparing criteria consisted of 45 questions and utilized the Saaty 9-scale during its development (Saaty, 2000). This scale, outlined in Table 2, enabled pairwise comparisons of criteria within the framework of the AHP method (Çelikbilek and Özdemir, 2020). Following the determination of criterion weights through AHP, the TOPSIS method was employed to select an ideal adventure destination. During this phase, hypothetical adventure sites like Manali, Bir-Billing, Spiti, Khajjiar in Himachal Pradesh, Gulmarg, Sanasar, Patnitop in Jammu Kashmir, Ladakh, Rishikesh, Mussoorie, Auli in Uttarakhand, Panchgani, Lonavala, Kamshet, Divegar in Maharashtra, Jaisalmer in Rajasthan, Serchhip in Mizoram, Ananthagiri in Andhra Pradesh, Yelagiri in Tamil Nadu, and Varkala in Kerala were evaluated based on criteria, with numerical values ranging from 1 to 9 assigned to each criterion. These alternatives along with their corresponding symbols, are outlined in Table 3.

Table 2: Saaty's pairwise comparison scale

Intensity of importance	Definition
1	Equally importance
3	Moderately importance
5	Strongly importance
7	Very strongly importance
9	Extremely importance
2,4,6,8	Intermediate

Source: (Saaty, 2000)

Table 3: Symbols for alternatives

Symbol	Alternatives
A1	Panchgani, Maharashtra
A2	Rishikesh, Uttarakhand
A3	Gulmarg, Jammu Kashmir
A4	Ananthagiri, Andhra Pradesh
A5	Khajjiar, Himachal Pradesh
A6	Manali, Himachal Pradesh
A7	Yelagiri, Tamil Nadu
A8	Lonavala, Maharashtra
A9	Sanasar, Jammu Kashmir
A10	Bir-Billing, Himachal Pradesh
A11	Ladakh
A12	Jaisalmer, Rajasthan
A13	Auli, Uttarakhand
A14	Kamshet, Maharashtra
A15	Patnitop, Jammu Kashmir
A16	Spiti, Himachal Pradesh
A17	Divegar, Maharashtra
A18	Varkala, Kerala
A19	Mussoorie, Uttarakhand
A20	Serchhip, Mizoram

Source: (Primary Data)

3.3 Sample and Data Collection

The research was conducted over an extended period (April 2023 to May 2024) to capture the seasonal variability of adventure destinations. Different regions of India experience distinct climatic patterns,

influencing the suitability of adventure activities throughout the year. Therefore, the research spanned one year covering all the seasons, ensuring a comprehensive understanding of each destination's dynamics and attractiveness across different times of the year. Further three experts were chosen due to their extensive expertise in tourism, with one specializing as an adventure trip manager and the other two serving as domestic travel and tour managers in India, all possessing over 10 years of experience in guest management. Two of the experts were interviewed in person, while one was interviewed online, each session lasting approximately 25 minutes. Utilizing the Saaty 9-scale evaluation scale, a questionnaire was crafted to facilitate pairwise comparisons of criteria. Thereafter, experts were asked to evaluate each criterion related to adventure site selection throughout the interviews. They were encouraged to articulate their perspectives on the matter, indicating whether they deemed it important, unimportant, or equally important. If they deemed it significant or insignificant, they were further prompted to specify the extent of its importance. The obtained responses were quantified using Table 2, resulting in paired comparison matrices.

3.4 Techniques of data analysis

In this research, the AHP and TOPSIS methods from Multiple Criteria Decision Making (MCDM) techniques, were employed to examine the preferred adventure sites for tourists (Paksoy, 2017). Pairwise comparison matrices were generated using Microsoft Excel based on the collected data. Thereafter, geometric averages of the pairwise comparisons were calculated in order to combine these matrices into a single decision matrix (Şahin & Cezlan, 2022). The use of geometric mean was deemed more appropriate for this study compared to arithmetic mean, as it is less susceptible to extreme values (Krejčí & Stoklasa, 2018).

The process involved summing the items in each column of the pairwise comparison matrix and then dividing each item by the sum of the respective column. This yielded a normalized matrix. Then, by calculating the average of the rows in these normalized matrices, priority vectors were obtained (İpek, 2019). Thereafter, a consistency test was carried out to ensure the coherence of the results, aiming for a consistency ratio below 0.1 (Acharya et al., 2022). Following the determination of weights using the AHP method, a TOPSIS normalization matrix was created to evaluate 20 hypothetical adventure sites. A weighted normalized matrix was then generated based on these normalized values. In this matrix, negative ideal solution values were indicated by the minimum values, while positive ideal solution values were represented by the maximum values in the columns. Tourists' preferred alternative adventure places were ranked and an optimum selection made by calculating distance values and relative proximity. It is crucial to remember that the research data was limited to inputs from three experts and ten criteria influencing adventure site selection.

IV RESULT ANALYSIS

4.1 Weighting of criteria with the AHP method

The AHP method determined the criteria weights, and the TOPSIS method was used to create the ideal adventurous place selection application. A hierarchical structure comprising 10 criteria and 20 adventure site alternatives is constructed to facilitate the selection process as shown in Figure 1.

These criteria, identified through an extensive literature review, include seasonality, duration, difficulty level, type of adventure, expected enjoyment, budget, accessibility, available facilities and services, and landscape characteristics (Bichler & Peters, 2020, Heyns, 2009; Meng and Minghui, 2007; Singh, 2021; Uysal, 2008; Vukic et al., 2015). Further, each adventure destination Manali, Bir-Billing, Spiti, Khajjiar in Himachal Pradesh, Gulmarg, Sanasar, Patnitop in Jammu Kashmir, Ladakh, Rishikesh, Mussoorie, Auli in Uttarakhand, Panchgani, Lonavala, Kamshet, Divegar in Maharashtra, Jaisalmer in Rajasthan, Serchhip in Mizoram, Ananthagiri in Andhra Pradesh, Yelagiri in Tamil Nadu, and Varkala in Kerala is designated as A1, A2, A3..... A20 as shown in table 3. To ascertain the significance levels of the 10 criteria influencing adventure site selection, three expert opinions are sought. A questionnaire based on Saaty's 9-scale evaluation is employed for this purpose (Saaty, 2000). The resulting pairwise comparison matrices are then amalgamated into a consolidated matrix using geometric averages, with each criterion's geometric average determined based on the input from three experts (Krejčí & Stoklasa, 2018).

These criteria, identified through an extensive literature review, include seasonality, duration, difficulty level, type of adventure, expected enjoyment, budget, accessibility, available facilities and services, and landscape characteristics (Bichler & Peters, 2020, Heyns, 2009; Meng and Minghui, 2007; Singh, 2021; Uysal, 2008; Vukic et al., 2015). Further, each adventure destination Manali, Bir-Billing, Spiti, Khajjiar in Himachal Pradesh, Gulmarg, Sanasar, Patnitop in Jammu Kashmir, Ladakh, Rishikesh, Mussoorie, Auli in Uttarakhand, Panchgani, Lonavala, Kamshet, Divegar in Maharashtra, Jaisalmer in Rajasthan, Serchhip in Mizoram, Ananthagiri in Andhra Pradesh, Yelagiri in Tamil Nadu, and Varkala in Kerala is designated as A1, A2, A3..... A20 as shown in table 3. To ascertain the significance levels of the 10 criteria influencing adventure site selection, three expert opinions are sought. A questionnaire based on Saaty's 9-scale evaluation is employed for this purpose (Saaty, 2000). The resulting pairwise comparison matrices are then amalgamated into a consolidated matrix using geometric averages, with each criterion's geometric average determined based on

the input from three experts (Krejčí & Stoklasa, 2018).

The resulting decision matrix derived through the geometric mean process is presented in Table 4. This matrix is a foundational tool for subsequent analysis:

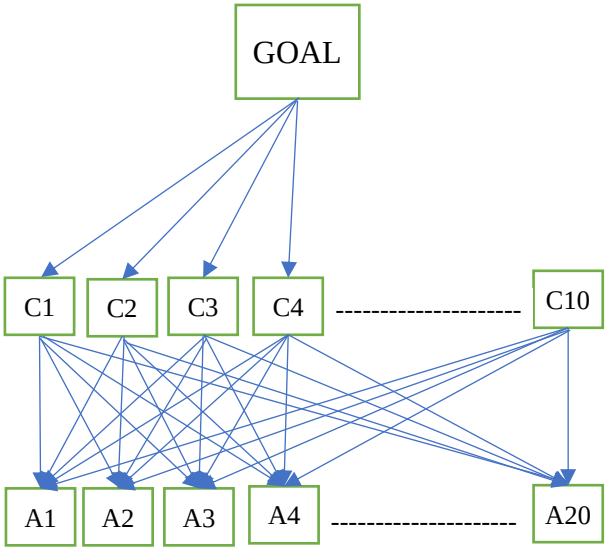

Figure 1. AHP Hierarchical structure

Table 4: Decision matrix obtained as a result of the geometric mean

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
C1	1.000	2.150	1.912	2.024	0.721	2.127	1.848	1.564	2.207	1.633
C2	0.465	1.000	1.292	0.749	0.788	0.944	0.683	0.849	0.816	0.603
C3	0.523	0.774	1.000	1.058	1.110	0.681	2.410	0.789	2.288	2.123
C4	0.494	1.336	0.945	1.000	1.054	0.645	2.283	0.879	2.169	2.012
C5	0.470	1.269	0.901	0.949	1.000	1.595	2.174	0.785	2.066	1.916
C6	0.760	1.059	1.468	1.551	0.627	1.000	1.188	0.679	1.127	1.046
C7	0.541	1.464	0.415	0.438	0.460	0.842	1.000	0.949	2.381	2.212
C8	0.639	1.178	1.268	1.137	1.273	1.474	1.053	1.000	1.393	1.295
C9	0.453	1.226	0.437	0.461	0.484	0.887	0.420	0.718	1.000	1.845
C10	0.612	1.658	0.471	0.497	0.522	0.956	0.452	0.772	0.542	1.000

Source: (Primary Data)

The initial step involved aggregating the values within each column to normalize the pairwise comparison matrix. Subsequently, the total for each column was computed, and each criterion value was divided by its respective column total (Özbek, 2019). This process yielded the normalized decision matrix as shown in Table 5, ensuring that each criterion's contribution is proportionate to its significance relative to others. The values in each row were added up and then divided by the total number of elements once the normalized matrix was obtained. The priority vector, which illustrates the relative weight of each criterion in the decision-making process, was developed through this iterative approach (Özbek, 2019). This meticulous normalization procedure ensures that the criteria are appropriately weighted based on their respective contributions, facilitating a more accurate and informed decision-making process.

Table 5: Weighted Normalized Matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
C1	0.168	0.164	0.189	0.205	0.090	0.191	0.137	0.174	0.138	0.104
C2	0.078	0.076	0.128	0.076	0.098	0.085	0.051	0.094	0.051	0.038
C3	0.088	0.059	0.099	0.107	0.138	0.061	0.178	0.088	0.143	0.135
C4	0.083	0.102	0.093	0.101	0.131	0.058	0.169	0.098	0.136	0.128
C5	0.079	0.097	0.089	0.096	0.124	0.143	0.161	0.087	0.129	0.122
C6	0.128	0.081	0.145	0.157	0.078	0.090	0.088	0.076	0.071	0.067
C7	0.091	0.112	0.041	0.044	0.057	0.076	0.074	0.106	0.149	0.141
C8	0.107	0.090	0.125	0.115	0.158	0.132	0.078	0.111	0.087	0.083
C9	0.076	0.093	0.043	0.047	0.060	0.080	0.031	0.080	0.063	0.118
C10	0.103	0.126	0.047	0.050	0.065	0.086	0.033	0.086	0.034	0.064

Source: (Primary Data)

Thereafter, the consistency ratio was computed to ensure the reliability of the pairwise comparisons conducted in the study. The resulting consistency rate was determined to be 0.04, which is less than 0.10 threshold. This indicates a high level of consistency within the pairwise comparison matrices, affirming their reliability in guiding decision-making processes (Acharya et al., 2022). Given the consistent nature of the pairwise comparisons, the criteria weights obtained through the AHP method remain valid and reliable as shown in Table 6. These weights are essential for precisely determining each criterion's significance when choosing adventure travel destinations for travelers. This confirmation of consistency enhances the confidence in the derived criteria weights, thereby reinforcing the validity of subsequent analyses and decision-making processes based on these weights.

Table 6. Criteria weights obtained as a result of the AHP method

Symbol	criteria	Criteria weights
C1	Seasonality	0.1560
C2	Duration	0.0775
C3	Level of difficulty	0.1097
C4	Type of adventure	0.1099
C5	Expected hedonic value	0.1128
C6	Budget	0.0979
C7	Accessibility	0.0890
C8	Safety	0.1087
C9	Facilities and Services	0.0690
C10	Landscapes	0.0694

Source: (Primary Data)

Consequently, the criteria weights obtained through the AHP method provide valuable insights into the relative importance of various factors influencing the selection of adventure destinations for tourists. Among the identified criteria, seasonality emerges as the most significant, with a weight of 0.1560, followed by expected hedonic value (0.1128), type of adventure (0.1099), level of difficulty (0.1097), safety (0.1087), budget (0.0979), accessibility (0.0890), duration (0.0775), landscapes (0.0694), facilities and services (0.0690).

4.2 Ideal Adventure Place Selection with TOPSIS Method

Using the criterion weights obtained from the AHP approach, the best adventure destination for tourists was chosen during this study phase. This is

accomplished by using the TOPSIS technique, which starts with the development of a decision matrix (Çelikbilek & Özdemir, 2020). This matrix encompasses alternatives labelled A1 through A20, each representing a hypothetical adventure site. These sites are assessed based on various criteria by assigning numerical values ranging from 1 to 9, with 1 indicating the lowest suitability and 9 representing the highest (Şahin, & Cezlan, 2022). Through this evaluation process, each adventure site is systematically analyzed according to the established criteria. The resulting decision matrix, provided in Table 7, presents a comprehensive overview of the evaluations conducted within the framework of the TOPSIS method, facilitating the subsequent determination of the most optimal adventure site for tourists.

Table 7: TOPSIS decision matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
A1	9	7.74	6.78	7.96	8.57	7.96	5.31	5.66	8.16	7.16
A2	9.39	7.35	7.35	8.57	9.59	8.78	7.88	8.37	8.57	8.37
A3	8.37	8.57	8.16	8.37	8.78	6.77	8.78	8.57	6.73	9.24
A4	5.92	8.98	8.78	7.96	7.94	7.35	6.94	8.16	7.96	8.16
A5	6.33	7.76	7.35	7.96	6.73	7.14	6.53	8.37	8.78	8.37
A6	8.37	8.78	5.66	8.37	8.57	9.59	6.94	8.78	9.59	6.78
A7	6.12	8.78	8.16	8.57	6.73	7.76	5.51	8.57	8.16	8.78
A8	8.84	7.55	7.16	8.37	9.21	7.96	7.35	8.78	5.35	7.96
A9	5.51	8.57	7.96	8.16	5.71	6.73	4.69	8.57	8.78	6.94
A10	8.16	7.76	8.16	8.37	8.78	7.96	7.76	8.34	8.37	8.16
A11	8.57	7.76	7.96	8.78	9.59	7.96	7.14	7.96	8.37	8.57
A12	8.78	7.55	8.16	8.37	8.78	8.37	7.55	8.12	8.57	5.73
A13	9.26	8.16	8.57	8.78	8.57	8.57	8.78	8.34	8.57	5.45
A14	8.17	6.12	8.16	5.35	8.78	7.34	3.78	8.78	8.57	8.78
A15	5.92	8.98	8.78	7.96	6.94	6.55	6.94	8.37	8.57	7.34
A16	7.24	7.72	8.34	7.96	8.12	7.14	4.45	7.55	8.78	3.78
A17	8.37	8.78	8.37	8.37	8.57	9.59	6.94	6.94	7.34	3.78
A18	6.12	8.78	8.16	8.57	6.73	7.76	5.51	6.55	6.55	6.94
A19	8.34	7.35	8.34	8.57	6.45	8.78	7.78	6.94	7.14	4.45
A20	8.37	7.57	8.16	9.2	7.74	7.56	6.34	7.56	9.59	6.94

Source: (Primary Data)

Each criterion is divided by the square root of the sum of the squares of the values in its column during the TOPSIS method's normalization of the decision matrix. This step ensures that each criterion's contribution to the decision-making process is appropriately scaled relative to the magnitude of values within the column (Şahin, & Cezlan, 2022). Following normalization, each value in the normalized decision matrix is multiplied by the criterion weights established using the AHP approach to calculate its weight. This weighted normalization procedure aligns the significance of each criterion, as determined by the AHP weights, with the respective evaluations of the adventure sites (Çelikbilek & Özdemir, 2020). As a result, the weighted normalized decision matrix effectively captures the combined influence of both the criterion weights and the evaluations of the adventure sites, facilitating a comprehensive assessment of their suitability for tourists as shown below in Table 8.

Table 8: Weighted Normalized Matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
	0.1560	0.0775	0.1097	0.1099	0.1128	0.0979	0.0890	0.1087	0.0690	0.0694
A1	0.3595	0.1288	0.1416	0.1885	0.2630	0.1750	0.0828	0.1100	0.1256	0.1095
A2	0.3913	0.1161	0.1665	0.2185	0.3294	0.2129	0.1823	0.2405	0.1385	0.1496
A3	0.3109	0.1579	0.2052	0.2085	0.2761	0.1266	0.2263	0.2521	0.0854	0.1823
A4	0.1556	0.1734	0.2375	0.1885	0.0107	0.1492	0.1414	0.0240	0.1195	0.1422
A5	0.1778	0.1295	0.1665	0.1885	0.1622	0.1408	0.1252	0.2405	0.1454	0.1496
A6	0.3109	0.1657	0.0987	0.2085	0.2630	0.2540	0.1414	0.2646	0.1734	0.0981
A7	0.1662	0.1657	0.2052	0.2185	0.1622	0.1663	0.0891	0.2521	0.1256	0.1646
A8	0.3468	0.1226	0.1580	0.2085	0.0143	0.1750	0.1586	0.0275	0.0540	0.1353
A9	0.1348	0.1579	0.1952	0.1981	0.1168	0.1251	0.0646	0.2521	0.1454	0.1028
A10	0.2955	0.1295	0.2052	0.2085	0.2761	0.1750	0.1768	0.2388	0.1321	0.1422
A11	0.3260	0.1295	0.1952	0.2294	0.3294	0.1750	0.1497	0.2175	0.1321	0.1568
A12	0.3422	0.1226	0.2052	0.2085	0.0179	0.1935	0.1674	0.0309	0.1385	0.0701
A13	0.3806	0.1432	0.2263	0.2294	0.2630	0.2029	0.2263	0.2388	0.1385	0.0634
A14	0.2963	0.0805	0.2052	0.0852	0.2761	0.1488	0.0419	0.2646	0.1385	0.1646
A15	0.1556	0.1734	0.2375	0.1885	0.1725	0.1185	0.1414	0.2405	0.1385	0.1150
A16	0.2327	0.1281	0.2143	0.1885	0.0215	0.1408	0.0581	0.0343	0.1454	0.0305
A17	0.3109	0.1657	0.2159	0.2085	0.2630	0.2540	0.1414	0.1653	0.1016	0.0305
A18	0.1662	0.1657	0.2052	0.2185	0.1622	0.1663	0.0891	0.1473	0.0809	0.1028
A19	0.3087	0.1161	0.2143	0.2185	0.1490	0.2129	0.1777	0.1653	0.0961	0.0423
A20	0.3109	0.1232	0.2052	0.2519	0.0251	0.1579	0.1180	0.0378	0.1734	0.1028

Source: (Primary Data)

The maximum value in each column denotes the positive ideal solution, and the smallest value denotes the negative ideal solution for determining the positive and negative ideal solution values within the weighted normalized matrix (Şahin, & Cezlan, 2022). Then, each criterion in the weighted normalized matrix is subtracted from the corresponding positive ideal solution values, and the squares of these differences are computed to determine the distance to the positive ideal points. Subsequently, these squared differences are summed across all criteria, and the square root of the resulting sum is taken (Çelikbilek & Özdemir, 2020). Each criterion is then deducted from the negative ideal solution values, and this process is repeated to determine the distance to the negative ideal points. By conducting these calculations, both the positive and negative ideal solution values provide valuable reference points for assessing the proximity of each adventure site to the ideal outcomes across all evaluated criteria. This comparative analysis aids in identifying the most favourable and unfavourable alternatives among the adventure sites, offering valuable insights for decision-making purposes (Şahin, & Cezlan, 2022). Positive and negative ideal solution values are shown in the table 9.

Table 9: Ideal and negative ideal solution values

	S_i^+	S_i^-
A1	0.281006	0.390674
A2	0.126237	0.536463
A3	0.191349	0.494035
A4	0.491655	0.258076
A5	0.331662	0.345361
A6	0.215337	0.471311
A7	0.331817	0.374102
A8	0.442237	0.305395
A9	0.407422	0.324754
A10	0.171929	0.459607
A11	0.158713	0.494854
A12	0.424864	0.318556
A13	0.157148	0.510421
A14	0.309728	0.437882
A15	0.340768	0.369054
A16	0.494495	0.212688
A17	0.241951	0.425875
A18	0.368761	0.293213
A19	0.289431	0.361978
A20	0.425886	0.314975

Source: (Primary Data)

The relative proximity is determined by utilizing both the negative and positive ideal solution values obtained in the preceding step. Initially, the positive ideal solution value and the negative ideal solution value are added to determine the total distance value. The relative proximity value is then obtained by dividing the negative ideal solution value by the total distance value. This relative closeness value signifies the proximity of each alternative to the ideal outcomes, considering both favourable and unfavourable reference points (Şahin, & Cezlan, 2022). The resulting ranking of adventure site alternatives within the TOPSIS method is presented in Table 10, providing a systematic evaluation of each alternative's relative suitability concerning the ideal solutions.

Table 10. Relative proximity values and ranking of alternatives

Symbols	Destinations	C_i^+	Ranking
A1	Panchgani, Maharashtra	0.028102	**9**
A2	Rishikesh, Uttarakhand	0.038589	**1**
A3	Gulmarg, Jammu Kashmir	0.035537	**4**
A4	Ananthagiri, Andhra Pradesh	0.018564	**19**
A5	Khajjiar, Himachal Pradesh	0.024843	**13**
A6	Manali, Himachal Pradesh	0.033903	**5**
A7	Yelagiri, Tamil Nadu	0.026910	**10**
A8	Lonavala, Maharashtra	0.021968	**17**
A9	Sanasar, Jammu Kashmir	0.023360	**14**
A10	Bir-Billing, Himachal Pradesh	0.033061	**6**
A11	Ladakh	0.035596	**3**
A12	Jaisalmer, Rajasthan	0.022914	**15**
A13	Auli, Uttarakhand	0.036716	**2**
A14	Kamshet, Maharashtra	0.031498	**7**
A15	Patnitop, Jammu Kashmir	0.026547	**11**
A16	Spiti, Himachal Pradesh	0.015299	**20**
A17	Divegar, Maharashtra	0.030634	**8**
A18	Varkala, Kerala	0.021091	**18**
A19	Mussoorie, Uttarakhand	0.026038	**12**
A20	Serchhip, Mizoram	0.022657	**16**

Source: (Primary Data)

As a result, upon scrutinizing the relative closeness values of the alternatives, A2 has a relative proximity value of 0.038589 and is ranked 1st as the most ideal adventure site choice followed by A13 (0.036716), A11(0.035596), A3 (0.035537), A6 (0.033903), A10 (0.033061), A14 (0.031498), A17 (0.030634), A1(0.028102), A7 (0.026910), A15 (0.026547), A19 (0.026038), A5 (0.024843), A9(0.023360), A12 (0.022914), A20 (0.022657), A8 (0.021968), A18 (0.021091), A4 (0.018564) and A16 with a relative proximity value of 0.015299 is in the last place. Therefore, among the twenty adventure places, the most ideal destination was identified as Rishikesh, Uttarakhand followed by Auli, Uttarakhand, Ladakh, Gulmarg, Jammu Kashmir, Manali, Himachal Pradesh, Bir-Billing, Himachal Pradesh, Kamshet, Maharashtra, Divegar, Maharashtra, Panchgani, Maharashtra, Yelagiri, Tamil Nadu, Patnitop, Jammu Kashmir, Mussoorie, Uttarakhand, Khajjiar, Himachal Pradesh, Sanasar, Jammu Kashmir, Jaisalmer, Rajasthan, Serchhip, Mizoram, Lonavala, Maharashtra, Varkala, Kerala, Ananthagiri, Andhra Pradesh and Spiti in Himachal Pradesh was identified as the alternative farthest from the ideal solution.

V DISCUSSION

This research aimed to identify the preferences of tourists regarding adventure sites through the establishment of criteria weights using the Analytic Hierarchy Process (AHP) method. Subsequently, based on these criteria weights, the study employed the Technique for Order of Preference by Similarity to the Ideal Solution (TOPSIS) method to select the most suitable adventure sites for tourists. The results of this analysis offer valuable insights into the relative suitability of various adventure sites and provide a basis for informed decision-making in adventure tourism management. The criteria weights obtained through the AHP method highlight the relative importance of different factors influencing adventure site selection. Seasonality emerged as the most significant criterion, followed by expected hedonic value, type of adventure, level of difficulty, safety, budget, accessibility, duration, landscapes, and facilities and services. The criteria weights obtained through the Analytic Hierarchy Process (AHP) method provide valuable insights into the relative importance of various factors influencing the selection of adventure destinations for tourists. Among the identified criteria, seasonality emerges as the most significant, with a weight of 0.1560, suggesting that the timing and seasonal variations play a crucial role in determining the suitability of an adventure site. Factors such as the type of adventure and the expected hedonic value also carry substantial weight, underscoring the significance of the specific activities available and the overall enjoyment expected by tourists. Duration and the level of difficulty follow closely behind, with weights of 0.0775 and 0.1097 respectively, highlighting the importance of considering the duration of the adventure experience and its level of challenge. Additionally, practical considerations such as budget, accessibility, safety, and the availability of facilities and services are deemed important, as reflected in their respective weights. Finally, the landscape, while still significant, carries a slightly lower weight compared to other criteria, suggesting that while scenic beauty is valued, it may be secondary to other practical and experiential considerations. Overall, these criteria weights provide a comprehensive understanding of the multifaceted aspects that inform tourists' decisions when selecting adventure destinations. These weights reflect the preferences and priorities of tourists when choosing adventure destinations, emphasizing the importance of factors such as weather conditions, the perceived enjoyment of the experience, the type and level of challenge offered by the adventure activity, and considerations related to safety and budget constraints.

Thus, the findings suggest that seasonality plays a crucial role in adventure site selection in India, which aligns with the proposed theory of psychological reversals. Individuals seem to actively seek experiences that offer a departure from their usual environmental conditions. For instance, the preference for colder regions during summer reflects a desire to escape the heat of the plains, indicating a psychological reversal from the norm. Moreover, the weight given to the expected hedonic value indicates that individuals are driven by the anticipation of pleasure and excitement when selecting adventure sites. This aligns with the idea that adventure seekers are motivated by the prospect of experiencing something out of the ordinary, which could induce a psychological reversal from their everyday routine. The type of adventure and level of difficulty also emerge as significant factors, suggesting that individuals are drawn to challenges that provide opportunities for psychological reversals. The desire to overcome difficult terrain or activities may stem from a need to break away from mundane experiences and seek excitement and novelty. Safety, budget, and accessibility are also important considerations, indicating that while individuals seek psychological reversals, they also prioritize practical concerns and personal well-being when selecting adventure sites. This suggests a balanced approach where individuals aim for experiences that offer both excitement and security. Furthermore, the emphasis on landscapes, facilities, and services underscores the importance of the overall environment and amenities in facilitating enjoyable and memorable adventure experiences. This indicates that individuals seek adventure sites that not only provide opportunities for psychological reversals but also offer comfort and convenience during their stay. Overall, these findings highlight how psychological factors, as outlined by reversal theory, intersect with practical considerations to influence adventure site selection in India. Moreover, the edgework approach explains how adventure seekers engage in edgework by pushing their physical and psychological boundaries in pursuit of excitement and adrenaline. Factors such as accessibility,

safety measures, and landscape features contribute to the perceived risk and thrill of an adventure like remote or challenging-to-reach adventure sites may appeal to individuals seeking the thrill of exploration and venturing into unknown territories. Further, while safety is essential, some adventure seekers may deliberately seek out experiences with an element of risk, such as extreme sports, to heighten the sense of excitement and edginess. Moreover, scenic landscapes with rugged terrain or dramatic natural features may attract adventure enthusiasts seeking visually stimulating and adrenaline-inducing experiences.

Moreover, the application of the TOPSIS method facilitated the identification of the most favourable and unfavourable alternatives among the adventure sites, offering valuable insights for decision-making purposes. The ranking of alternatives based on their relative proximity values provided a clear indication of the most ideal adventure sites for tourists, as well as those that deviated furthest from the ideal solutions. Among these twenty adventure places, the most ideal place was found to be Rishikesh, Uttarakhand followed by Auli inUttarakhand, Ladakh, Gulmarg in Jammu Kashmir, Manali and Bir-Billing in Himachal Pradesh, Kamshet, Divegar and Panchgani in Maharashtra, Yelagiri in Tamil Nadu, Patnitop in Jammu Kashmir, Mussoorie in Uttarakhand, Khajjiar in Himachal Pradesh, Sanasar in Jammu Kashmir, Jaisalmer in Rajasthan, Serchhip in Mizoram, Lonavala in Maharashtra, Varkala in Kerala, Ananthagiri in Andhra Pradesh while Spiti in Himachal Pradesh was identified as the alternative farthest from the ideal solution.

Therefore, based on the prioritized factors, Rishikesh in Uttarakhand emerged as the most ideal destination for adventure enthusiasts, primarily due to its favorable seasonality, offering a climate that suits a wide range of activities throughout the year. The high expected hedonic value is evident in the diverse array of thrilling experiences like white-water rafting and bungee jumping, catering to both seasoned adventurers and novices. Rishikesh's accessibility, budget-friendliness, and comprehensive facilities further enhance its appeal. Following Rishikesh, Auli in Uttarakhand stands out for its picturesque landscapes and exceptional skiing opportunities, combining adventure with scenic beauty. On the other hand, Ladakh and Gulmarg in Jammu and Kashmir are preferred for their unique and challenging adventure options amidst stunning backdrops, despite their higher difficulty levels and safety considerations. Manali and Bir-Billing in Himachal Pradesh are known for their paragliding and trekking trails, balancing adventure with moderate accessibility, catering to those who seek excitement but also consider budget and convenience. Similarlyy, Kamshet, Diveagar, and Panchgani in Maharashtra offer relatively easier adventures, making them accessible for beginners and families, with a good balance of budget and facilities. Yelagiri in Tamil Nadu and Patnitop in Jammu and Kashmir provide serene landscapes and moderate adventure activities, appealing to those seeking a mix of tranquility and excitement. Likewise, the scenic beauty of Mussoorie and Khajjiar, along with the moderate adventure opportunities in Sanasar, make these destinations attractive for tourists seeking both relaxation and moderate thrills. Jaisalmer in Rajasthan, known for its desert adventures, and Serchhip in Mizoram, offering unique northeastern experiences, appealing to tourists looking for varied and culturally rich adventures. Lonavala in Maharashtra and Varkala in Kerala provide coastal and hill-based adventures, appealing to a broad spectrum of travelers, offering both excitement and relaxation. Ananthagiri in Andhra Pradesh offers a tranquil retreat with moderate adventure options. In contrast, Spiti in Himachal Pradesh, while stunning, faces challenges in seasonality due to harsh winters, limited accessibility, higher levels of difficulty in its treks and travel routes, and fewer facilities and services, making it less suitable for a wide range of tourists. Thus, the findings of this research contribute to the understanding of tourists' preferences and decision-making processes in adventure tourism.

Therefore, by incorporating both subjective expert opinions and objective numerical evaluations, the study ensures a comprehensive and robust assessment of adventure sites, considering a wide range of factors that influence tourist satisfaction and experience. The systematic approach adopted in this research can serve as a valuable tool for adventure tourist, destination managers and tourism stakeholders in the selection and development of adventure tourism products and experiences.

VI IMPLICATIONS

The study's findings help adventure tourists to make more informed decisions, aligning their preferences and expectations with suitable destinations, thereby enhancing their overall travel experience and satisfaction. The key criteria identified in the study such as seasonality, expected hedonic value, safety, and accessibility help decision-makers to make more informed choices when selecting and promoting adventure sites. This is exemplified by Rishikesh, which not only offers a variety of adventure activities but is also accessible and budget-friendly, making it an ideal choice for a wide range of tourists, from thrill-seekers to budget-conscious travelers. Destinations such as Manali and Bir-Billing offer a balance of adventure and moderate accessibility, catering to those who seek excitement but also consider budget and convenience. Similarly, locations in Maharashtra like Kamshet, Diveagar, and Panchgani are ideal for beginners and families, providing easier adventures with good facilities and services. The scenic beauty of Mussoorie and Khajjiar, along with the moderate adventure opportunities in Sanasar, make these destinations attractive for tourists seeking both relaxation and moderate thrills. Conversely, the challenges faced by Spiti in terms of harsh seasonality, limited accessibility, and higher difficulty levels highlight the need for

adventure tourists to carefully consider their own experience and capability levels, as well as the availability of facilities and services when planning their trips. Further, the systematic approach employed in the research, which integrates both qualitative analysis and quantitative surveys, offers a robust framework for tourism management. By combining these methods, destination managers can gain a comprehensive understanding of tourist preferences and behavior, enabling them to tailor marketing strategies, infrastructure development plans, and visitor management initiatives accordingly. This proactive approach to tourism management can help mitigate potential challenges such as overcrowding, environmental degradation, and safety concerns, while simultaneously enhancing the overall visitor experience. The emphasis on factors such as safety, budget, and environmental sustainability in the study's analysis underscores the importance of promoting responsible tourism practices.

Moreover, the identification of best sites like Rishikesh and Auli in Uttrakhand as the most ideal adventure destination highlights the economic potential of strategically promoting and investing in specific tourism hotspots. By focusing resources on developing infrastructure, promoting local businesses, and enhancing tourist experiences in high-potential destinations, policymakers and stakeholders can stimulate economic growth, create employment opportunities, and generate revenue for local communities. This targeted approach to destination development can maximize the economic benefits of adventure tourism while minimizing negative impacts on fragile ecosystems and indigenous cultures.

VII LIMITATIONS AND FUTURE SCOPE

It is essential to acknowledge certain limitations and considerations associated with the methodology and results of this study. Firstly, the subjective nature of expert opinions and the potential for bias in the selection of criteria weights may influence the overall results. While efforts were made to mitigate bias using multiple experts and a structured evaluation process, some degree of subjectivity may still exist. Additionally, the selection of adventure sites and the assignment of numerical values to criteria may not fully capture the complexity and diversity of tourist preferences and experiences. Subsequent studies could investigate other techniques and strategies to improve the accuracy and reliability of adventure site selection in tourist administration. With advancements in technology, future research could explore the integration of innovative tools such as geographic information systems (GIS), virtual reality (VR), and artificial intelligence (AI) in the decision-making process to enhance the accuracy and efficiency of destination selection. Furthermore, different regions or countries may have unique characteristics, preferences, and challenges that could influence the suitability of adventure destinations. Future research could explore the application of these methodologies in diverse geographical settings to enhance the generalizability of the findings. Despite the comprehensive list of criteria considered in the study, there may be additional factors that influence the suitability of adventure destinations, such as weather conditions, infrastructure development, and regulatory frameworks. Future research could expand the scope of criteria to capture a more holistic view of destination suitability. Moreover, tourist preferences and priorities for adventure destinations may evolve over time due to changing trends, socio-economic factors, and environmental considerations. Future studies could adopt longitudinal approaches to track changes in tourist preferences and assess the dynamic nature of adventure destination suitability.

VIII CONCLUSION

The study offers significant insights into the parameters and elements impacting travelers' choice of adventure destinations. By integrating the AHP and TOPSIS methods, the study offers a systematic and comprehensive approach for evaluating and selecting adventure destinations, thereby informing decision-making processes in adventure tourism management. The results add to the body of knowledge in the adventure tourism and provide practical implications for tourists, destination managers, policymakers, and tourism stakeholders seeking to enhance experiences and satisfaction in adventure tourism destinations.

Overall, these findings help adventure tourists make more informed decisions, aligning their preferences and expectations with suitable destinations, thereby enhancing their overall travel experience and satisfaction. This is exemplified by Rishikesh, which not only offers a variety of favourable weather conditions and adventure activities but is also accessible and budget-friendly, making it an ideal choice for a wide range of tourists, from thrill-seekers to budget-conscious travelers. Consequently, this understanding also assists tourism planners and marketers in tailoring their offerings to meet the diverse needs and preferences of adventure tourists. Destination managers should prioritize marketing efforts and infrastructure development to capitalize on peak seasons while also exploring strategies to attract tourists during off-peak periods. Further, by identifying and prioritizing factors such as expected hedonic value, type of adventure, and safety, destination managers can gain a deeper understanding of tourists' preferences and tailor their offerings accordingly. Moreover, each destination's distinct blend of adventure, natural splendour, and cultural allure influences its placement in this ranking of adventurous sites. Thus, the most ideal place in the study was found to be Rishikesh in Uttarakhand while the least preferred adventure site was found to be Spiti in Himachal Pradesh. In summary, this research adds to the

corpus of knowledge on adventure tourism destination selection by offering a comprehensive analysis of key criteria and employing advanced decision-making techniques. The conclusions drawn from this research provide valuable guidance for tourists, destination managers, policymakers, and tourism stakeholders seeking to enhance the attractiveness and competitiveness of adventure destinations while ensuring a memorable and fulfilling experience for tourist.

REFERENCES

1. 5 exclusive experiences you can have only in the Andamans! (2024). The Times of India. Retrieved May 7, 2024, from https://timesofindia.indiatimes.com/travel/destinations/5-exclusive-experiences-you-can-have-only-in-the-andamans/articleshow/109664174.cms
2. Acharya, A., Mondal, B. K., Bhadra, T., Abdelrahman, K., Mishra, P. K., Tiwari, A., & Das, R. (2022). Geospatial analysis of geo-ecotourism site suitability using AHP and GIS for sustainable and resilient tourism planning in West Bengal, India. Sustainability, 14(4), 2422.
3. Adventure Tourism in India—Top 12 Adventure Destinations in India 2023. (2023). Retrieved May 7, 2024, from https://blog.decathlon.in/articles/adventure-tourism-in-india-an-overview
4. Akman, K. (2019). Çok ölçütlü karar verme yöntemlerinde AHP ve TOPSIS ile araba seçimi. Necmettin Erbakan University, Institute of Science and Technology, Master's Thesis, Konya
5. Allman, T. L., Mittelstaedt, R. D., Martin, B., & Goldenberg, M. (2009). Exploring the motivations of BASE jumpers: Extreme sports enthusiasts. Journal of Sport and Tourism, 14(4), 229–247.
6. Apter, M. J. (1982). The experience of motivation: The theory of psychological reversals. London: Academic Press.
7. Ayçin, E. (2019). Çok kriterli karar verme bilgisayar uygulamalı çözümler. Ankara: Nobel Akademik Yayıncılık .
8. Beedie, P. (2008). Adventure Tourism as a 'New Frontier' in Leisure, World Leisure Journal, 50(3), p. 173- 183.
9. Beyond, F. (2024, January 23). India, with its diverse landscapes and rich cultural tapestry, offers adventure enthusiasts a…. Medium. https://medium.com/@frontiersbeyondtours/india-with-its-diverse-landscapes-and-rich-cultural-tapestry-offers-adventure-enthusiasts-a-740184d0d96a
10. Bhautik, P. N. (2023). Exploring the Camping Tourism Opportunities of Pune, Maharashtra, India. ATITHYA: A Journal of Hospitality, 9(2).
11. Bozionelos, N., & Bozionelos, G. (1999). Playfulness: Its relationship with instrumental and expressive trait. Personality and Individual Difference, 26, 749–760.
12. Buckley, R. (2007). Adventure tourism products: Price, duration, size, skill, remoteness, Tourism management, 28(6), p. 1428-1433
13. Buckley, R. (2014). Adventure tourism as a research tool in non-tourism disciplines, Tourism Recreation Research, 39(1), p. 39-49.
14. Buckley, R. C. (2011). Rush as a key motivation in skilled adventure tourism. Tourism Management, 33(4), 961–970
15. Çelikbilek, Y., & Özdemir, M. (2020). Çok kriterli karar verme yöntemleri açıklamalı ve karşılaştırmalı sağlık bilimleri uygulamaları ile. Ankara: Nobel Akademik Yayıncılık.
16. Csikszentmihalyi, M. (1975). Beyond boredom and anxiety. San Francisco, CA: Jossey-Bass.
17. Csikszentmihalyi, M. (1985). Reflections on enjoyment. Perspectives in Biology and Medicine, 28(4), 489–497.
18. Csikszentmihalyi, M. (1992). Flow: The psychology of happiness. London: Rider.
19. Dar, H. (2014). Potentials and problems of adventure tourism: a study of Kashmir valley. Abhinav International Monthly Refereed Journal of Research in Management & Technology, 3(9), 77-84.
20. Delle Fave, A., Bassi, M., & Massimini, F. (2003). Quality of experience and risk perception in high-altitude rock climbing. Journal of Applied Sport Psychology, 15(1), 82–98.
21. Ewert, A. W. (1994). Playing the edge: Motivation and risk taking in a high altitude wilderness environment. Environment and Behaviour, 26(1), 3–24.
22. Ewert, A. W., Gilbertson, K., Luo, Y., & Voight, A. (2013). Beyond "because it's there": Motivations for pursuing adventure recreational activities. Journal of Leisure Research, 45(1), 91–111
23. Ewert, A., & Jamieson, L. (2003). Current status and future directions in the adventure tourism industry, Wilks, J. Moore, J. S. (Eds.). Managing tourist health and safety in the new millennium, London: Routledge, p. 87-104.
24. Ewert, A., Gilbertson, K., Luo, Y. & Voight A. (2013). Beyond "Because It's There"Motivations for Pursuing Adventure Recreational Activities. Journal of Leisure Research, 44(1), 99-111. DOI: 10.18666/JLR-2013-V45-I1- 2944
25. Giddy, J. K. & Webb, N. L. (2018). The influence of the environment on adventure tourism: from motivations to experiences, Current issues in tourism. 21(18), p. 2124-2138.
26. Giddy, J. K. (2018). Adventure Tourism Motivations: A push and pull factor approach, Bulletin of Geography. Socio-economic Series, 42(42), p. 47-58.
27. Heyns CM. 2009. Factors influencing the student travel behavior. Mini Dissertation- Hons. North-West University: Potchefstroom.
28. Houge Mackenzie, S., Hodge, K., & Boyes, M. (2011). Expanding the flow model in adventure activities: A reversal theory perspective. Journal of Leisure Research, 43(4), 519–544.
29. İpek, U. (2019). Kuruluş yeri seçiminde çok kriterli karar verme teknikleri: Analitik hiyerarşi süreci ve TOPSIS örneği. Toros University Institute of Social Sciences.
30. Jackson, S. A., & Csikszentmihalyi, M. (1999). Flow in sports: The keys to optimal experience and performances. Champaign, IL: Human Kinetics.
31. Jackson, S. A., & March, H. W. (1996). Development and validation of a scale to measure optimal experience: The flow state scale. Journal of Sport & Exercise Psychology, 18(1), 17–35.
32. Jain, D., Bukhari, S. S., & Gupta, S. (2023). Discovering the Contentment of Adventure Travel in Relation to Trekking Retreats in Northern India: An Empirical Investigation. Boletin de Literatura Oral-The Literary Journal, 10(1), 1606-1611.
33. Jones, C. D., Hollenhorst, S. J., & Perna, F. (2003). An empirical comparison of the four channel flow model and adventure experience paradigm. Leisure Sciences, 25, 17–31.
34. Kamble, U. P. (2019). Overview on adventure sports tourism in India.
35. Kerr, J. H., & Houge Mackenzie, S. (2012). Multiple motives for participating in adventure sports. Psychology of Sport and Exercise, 13(5), 649–657.
36. Krejčí, J., & Stoklasa, J. (2018). Aggregation in the analytic hierarchy process: Why weighted geometric mean should be used instead of weighted arithmetic mean. Expert Systems with Applications, 114, 97-106.
37. Kumar, G. M. K. (2017). Andaman Islands-A Perfect Tourist Destination. International Journal of Science Technology, and Management, 6(7), 67.

38. Kumar, K. (2023). Potential of India in becoming top tourism hub in the world. The Times of India. Retrieved May 7, 2024, from https://timesofindia.indiatimes.com/readersblog/potential-of-india-in-becoming-top-tourism-hub-in-the-world/potential-of-india-in-becoming-top-tourism-hub-in-the-world-52037/
39. Kumar, L., & Reddy, J. B. (2024). A Study on Adventure Tourism and Mountaineering Practice as a Business Perspective Among the Northern Region of India. In Mountain Tourism and Ecological Impacts: Himalayan Region and Beyond (pp. 1-14). IGI Global.
40. Laurendeau, J. (2006). "He didn't go in doing a sky dive": Sustaining the illusion of control over an edgework activity. Sociological Perspectives, 49(4), 583–605.
41. Lois, J. (2005). Gender and emotion management in the stages of edgework. In S. Lyng (Ed.), Edgework: The sociology of risk taking (pp.117–152). London: Routledge.
42. Lyng, S. (1990). Edgework: A social psychological analysis of voluntary risk taking. American Journal of Sociology, 95(4), 851–886
43. Lyng, S., & Snow, D. (1986). Vocabularies of motive and high-risk behaviour. The case of sky-diving. In E. J. Lawler (Ed.), Advances in group process, Vol. 3, (pp.157–179). Greenwich, CT: JAI.
44. Mangoch, S., & Jain, D. (2022). Factors Determining Tourists Motivation To Visit A Place for Adventure Tourism: A Systematic Review. Academy of Marketing Studies Journal, 26(3).
45. Meng,F,Uysal M.2008.Effects of gender differences on perceptions of destination attributes, motivations, and travel values: an examination of a nature-based resort destination. Journal of Sustainable Tourism. 16(4): 445–465.
46. Minghui, S. 2007. Travel behaviour of Chinese tourists living in the city of Beijing, China. MA diss, North-West University: Potchefstroom.
47. Narvekar, R. H., & Dayanand, M. S. (2020). Perceived value in adventure tourism-a study of trekkers in Himachal Pradesh with respect to satisfaction and future intentions!. Revista Turismo & Desenvolvimento (RT&D)/Journal of Tourism & Development, (34).
48. Noble SM, Haytko DL, Phillips J. 2009. What drives college-age Generation Y consumers? Journal of Business Research 62: 617–628.
49. Özbek, A. (2019). Çok kriterli karar verme yöntemleri ve excel ile problem çözümü. Ankara: Seçkin Akademik ve Mesleki Yayınlar.
50. Paksoy, S. (2017). Çok kriterli karar vermede güncel yaklaşımlar. Adana: Karahan Kitabevi.
51. Patil, A. H. (2023). NAVIGATING THE DYNAMIC LANDSCAPE OF INDIAN TOURISM: CHALLENGES AND OPPORTUNITIES. Commerce and Management Volume III, 98.
52. Patil, N. (2024). A Journey to India's Farthest Corners. Retrieved May 7, 2024, from https://www.linkedin.com/pulse/journey-indias-farthest-corners-neil-patil-azgff
53. Patil, S. (2016). Adventure Tourism in India-An Emerging Form of Tourism. KIMI Hospitality Research Journal, 1(1), 41.
54. Pomfret, G. (2012). Personal emotional experiences associated with packaged mountaineering holidays. Tourism Management Perspectives, 4, 145– 154.
55. Saaty, T. L. (2000). Fundementals of Decision Making and Priority Theory with Analytic Hierarchy Process. Pittsburgh: RSWPublications.
56. Şahin, K., & Cezlan, E. Ç. (2022). Hospital selection of health tourists: A study with Ahp and Topsis Methods. OPUS Journal of Society Research, 19(46), 327-339.
57. Sarkar, S., Keat, T. T., & Gebrie, B. D. (2024). Prospects and Challenges of Tourism Industry in Meghalaya-Socio-Geographical Approach. Journal of Global Economy, 20(1).
58. Schott, C. (2007). Selling adventure tourism: a distribution channels perspective. International Journal of Tourism Research, 9(4), p. 257-274.
59. Seifert, T., & Hedderson, C. (2010). Intrinsic motivation and flow in skateboarding: An ethnographic study. Journal of Happiness Studies, 11(3), 277–292.
60. Shaikh, S. A., Memon, M., & Kim, K. S. (2021). A multi-criteria decision-making approach for ideal business location identification. Applied Sciences, 11(11), 4983.
61. Singh, H. (2021). Promoting Adventure Tourism and Developing an Adventure Product Program in India for the European Market.
62. Sung, H. H., Morrison, A. M., & O'Leary, J. T. (1996). Denition of adventure travel: Conceptual framework for empirical application from the providers' perspective. Asia Pacic Journal of Tourism Research, 1(2), 4767. https://doi.org/10.1080/10941669708721975
63. Swarbrooke, J., Beard, C., Leckie, S. & Pomfret, G. (2003). Adventure tourism: The new frontier, London: Routledge
64. Topdemir, S. (2019). Ahp-Tosis Yöntemleri ile tedarikçi seçimi: Doğalgaz sekötründe bir uygulama. Beykent University Institute of Science and Technology, Istanbul.
65. Upadhyaya, S., & Garg, R. (2023). Analysis of Initiatives taken by Uttarakhand Tourism for the Promotion of Experiential Tourism in Uttarakhand. RES MILITARIS, 13(3), 3915-3930.
66. Vukic, M., Kuzmanovic, M., & Kostic Stankovic, M. (2015). Understanding the heterogeneity of Generation Y's preferences for travelling: A conjoint analysis approach. International Journal of Tourism Research, 17(5), 482-491.
67. Vyas, N., Kumari, B., & Sharma, P. (2024). Adventure Tourism in Bilaspur: A Framework for Assessment and Strategic Development. International Journal of Innovative Science and Research Technology, 9(3), 168-181.
68. Walle, A. H. (1997). Pursuing Risk or Insight: Marketing Adventures. Annals of Tourism Research 24:265–282
69. Williams, P. & Soutar, G. N. (2009). Value, satisfaction and behavioral intentions in an adventure tourism context, Annals of tourism research, 36(3), p. 413-438.
70. Willig, C. (2008). A phenomenological investigation of the experience of taking part in 'extreme sports'. Journal of Health Psychology, 13, 690–702.
71. Wu, C. H. J., & Liang, R. D. (2012). The relationship between white-water rafting experience formation and customer reaction: A flow theory perspective. Tourism Management, 32(2), 317–32