



Identifying the factors influencing the role of capacity management in the supply chain of sports tourism services

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ABSTRACT

Objective: The sports tourism industry, due to its key role in the economy and regional development, requires optimal capacity management to provide a satisfactory experience for tourists. Accordingly, the present study aimed to identify the factors influencing the role of capacity management in the supply chain of sports tourism services.

Method: This study is applied research of a qualitative nature, employing the thematic analysis method. The statistical population of the study included faculty members in sports management, tourism, and sports tourism, managers of tourism agencies, senior officials from the Ministry of Sports and Youth, and PhD researchers in sports management and tourism. The study sample was selected from this population using purposive and snowball sampling methods. Data collection for the research was conducted through document analysis and interviews. The interviews took place between April to August 2024. The research instrument consisted of semi-structured interviews with 20 research experts, continuing until theoretical saturation was reached. The validity of the research was confirmed by experts, and its reliability was measured using the intra-subject agreement method, yielding a reliability score of 83%.

Results: The results indicated that the present study identified 88 sub-themes, categorized into four organizing themes: supply capacity factors, access to supply, supply quality, and supply performance. Effective management of these themes, through proper planning, accessibility facilitation, quality enhancement, and performance improvement, can create a positive and memorable experience for tourists and contribute to the sustainable development of the sports tourism industry.

Conclusions: The innovation of this study lies in presenting a comprehensive and systematic framework for capacity management in the sports tourism industry, which can serve as a practical guide for managers and policymakers in this field. The practical solutions derived from the research include flexible planning, facilitating access to services, improving supply quality, and enhancing service performance. These strategies can help build loyalty, increase satisfaction, and attract more tourists.

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Introduction

The tourism industry is recognized as one of the primary drivers of economic and social development in many countries and plays a significant role in reducing unemployment, fostering the development and strengthening of local businesses, promoting economic prosperity, and enhancing social welfare (Heydari Chiane & Ahmadian, 2020). By attracting both domestic and foreign investment, tourism facilitates infrastructure development, improves transportation services, enhances the quality of accommodation, and expands recreational and cultural facilities in both urban and rural areas (Shahbazi et al., 2024). Tourism has become one of the major pillars of the global economy and makes a substantial contribution to employment generation, with one out of every ten jobs worldwide being directly or indirectly associated with this sector (Shahbazi et al., 2019). Within this industry, sports tourism has emerged as one of the most important branches of international commerce and is recognized as a key source of revenue generation, employment creation, private sector growth, and the development of sports infrastructure (Gibson, 2017). Many stakeholders in the tourism industry utilize the potential of sport as an effective tool for promoting local culture, strengthening economic development, and attracting tourists (Egilsson, 2017). One prominent example of this interaction is sports tours, which attract athletes and sports enthusiasts from around the world, thereby promoting cultural exchange and enhancing international relations (Giango et al., 2022). Furthermore, hosting national and international sporting events plays a significant role in attracting tourists. By generating excitement among sports fans, these events increase tourist flows to sports destinations and create valuable investment opportunities across various economic sectors (Narangajavana et al., 2017).

Like other economic sectors, sports tourism is governed by the principles of supply and demand (Khodadadi et al., 2025). In a competitive market, service prices are determined transparently, and neither buyers nor sellers are able to exert substantial influence over market prices (Giango et al., 2022). According to the law of supply, the volume of tourism services provided depends on price levels; that is, as prices increase, the quantity of services supplied rises, whereas lower prices lead to a reduction in supply (Safarzade & Asghari, 2019). Success on the supply side largely depends on effective marketing. Efficient marketing plays a pivotal role in establishing communication between service providers and tourists while identifying and satisfying their diverse needs (Shayan et al., 2022). On the demand side, sports enthusiasts increasingly seek unique and memorable experiences, making sports tourism more important than ever (Heebkhoksung et al., 2024). The growing demand for distinctive and memorable sports tourism experiences has expanded international interactions and transformed sports tourism into an effective instrument for strengthening national identity, preserving and revitalizing sports cultural heritage, and enhancing the global image of countries (Tian et al., 2023). From this perspective, sports tourism not only increases international awareness of a country's sporting history and culture but also provides an effective platform for enhancing its international standing (Higham & Wada, 2024).

The success of sports tourism depends largely on the existence of an efficient sports service supply chain, which plays a critical role in delivering coordinated and high quality services

throughout every stage of the sports tourists travel experience (Shi et al., 2020). Services, as an essential component of economic activities, possess temporal, spatial, and psychological value and make substantial contributions to economic growth (Wang, 2020). Studies conducted in advanced economies indicate that numerous industries and occupations rely heavily on service supply chains. Consequently, improving the efficiency and performance of these supply chains can significantly contribute to economic growth and sustainable development (Kerdpitak, 2022). Within the service sector, supply chains play a crucial role in coordinating information, resources, personnel, and service assets from primary suppliers to end customers, thereby directly influencing the financial performance of organizations operating in this sector (Srinivasan et al., 2021). The efficient delivery of services and effective utilization of resources constitute fundamental components of supply chain performance, while efficient management of these processes facilitates access to critical information required for planning and decision making (Khodadadi et al., 2023). In this regard, Yektayar (2019), in a study entitled “Prioritizing Supply Chain Management Indicators in Sport”, concluded that key factors such as coordination among different supply chain components, resource optimization, adoption of advanced technologies, and accurate demand forecasting play a vital role in improving the performance of the sports supply chain. Accordingly, effective supply chain management can reduce operational costs, enhance productivity, and improve the quality of sports services.

Supply chain management of sports tourism services, as one of the fundamental pillars of the development and advancement of this industry, encompasses an integrated network of organizations, processes, and resources that extends from the planning and design of services to their delivery and final evaluation for sports tourists (Ayhan et al., 2020). This supply chain includes sectors such as transportation, accommodation, catering, ticketing, event support, recreational services, healthcare services, and sports services, all of which must operate in an integrated and well coordinated manner to ensure tourist satisfaction and provide a positive experience for sports tourists (Cong et al., 2024). However, the distinctive characteristics of services in this industry, including demand volatility, non-storability, perishability, and a strong dependence on time and location, expose the management of this supply chain to complex challenges (He & Wu, 2022). In a context where competition among tourism destinations is continuously intensifying and tourist satisfaction is recognized as a key indicator of success, optimizing the sports tourism service supply chain has become an inevitable necessity (Gruchmanna et al., 2022; Palang & Tippayawong, 2019). In this regard, Nguyen et al (2025), in their study entitled “Measuring Tourism Supply Chain Management Performance”, concluded that the adoption of advanced technologies, tourism data analytics, the application of advanced management models, and the strengthening of information infrastructure can enhance service quality, reduce operational costs, and improve productivity throughout the supply chain. Therefore, a systematic and scientific examination of the structure, processes, and challenges of the sports tourism service supply chain not only contributes to a better understanding of its underlying mechanisms but also paves the way for strategic decision making, evidence based planning, and the development of competitive capabilities at both national and international levels (Heebkhoksung et al., 2024).

Consequently, sports tourism service supply chain management should focus not only on resource provision but also on improving service quality, optimizing service delivery time, and increasing tourist satisfaction in order to provide a satisfying and memorable tourism experience (Tekalign et al., 2018). Achieving these objectives requires effective coordination among service providers, travel agencies, and sports facilities to ensure that capacities are properly managed and organized (Higham & Wada, 2024).

Capacity management is one of the key aspects of the sports tourism service supply chain and is of particular importance in destinations hosting sporting events. This concept refers to the regulation and control of available resources and services (such as hotel capacity, tour operations, recreational facilities, event scheduling, and sports venues) in a manner that establishes an optimal balance between supply and demand (Gaganis et al., 2019). The carrying capacity of a tourism destination refers to the number of people who can attend sporting events without causing damage to the natural environment or the local culture. This capacity may be defined in terms of the number of participants or spectators at a particular point in time or over the course of a year (Shi et al., 2022). Capacity management in sports tourism enhances the experience of both participants and spectators because, when visitor numbers do not exceed a certain threshold, individuals can make optimal use of the available facilities and services and enjoy a positive and memorable experience (Gaganis et al., 2019). Capacity management in sports tourism operates in a manner similar to inventory and warehousing management, as well as supply management in the manufacturing sector (Cheunkamona et al., 2022). Capacity management within the sports tourism service supply chain plays a fundamental role in responding to the changing needs of sports tourists and delivering high quality services. The primary objective of this supply chain is to establish a balance between supply and demand in order to increase tourist satisfaction, reduce service waiting times, promote integration among the stakeholders of this industry, and improve resource planning (Heebkhoksung et al., 2024). Significant demand fluctuations and effective coordination among different components of the supply chain, such as hotels, transportation providers and sports facilities, constitute major challenges in sports tourism capacity management (Tian et al., 2023). In other words, capacity management not only contributes to reducing crowd congestion during sporting events but also optimizes resource utilization and preserves the quality of the sports tourism experience in the long term (Shi et al., 2022).

The implementation of effective tourism capacity management strategies is therefore essential. For example, during major sporting events such as the Olympic Games or the FIFA World Cup, where available capacity is limited and demand is exceptionally high, effective supply chain management plays a vital role in preventing congestion and service disruptions (Higham & Wada, 2024). Targeted and intelligent marketing can contribute to regulating tourist flows and optimizing the utilization of available capacities by accurately identifying target markets and appropriately scheduling visitor arrivals, thereby creating a positive and memorable experience for sports tourists (Fu, 2022). In this regard, Tian et al. (2023), in their study entitled “Assessing Sports Tourism Competitiveness”, concluded that strengthening the competitiveness of sports tourism can effectively increase available resources, expand tourism

markets, stimulate economic growth, enhance regional and international positioning, and improve the quality of sports tourism products. Similarly, Higham & Wada (2024), in their study entitled “The Geography of Sports Tourism”, concluded that the use of spatial and analytical data to optimize capacity management at sports destinations can significantly enhance the tourist experience. Furthermore, Palang and Tippayawong (2019), in their study entitled “Evaluating Tourism Supply Chain Management Performance”, found that capacity management and accurate demand forecasting during peak travel periods are among the key factors in preventing resource wastage and ensuring the sustainable utilization of tourism destinations. Accordingly, coordination among the various components of the supply chain including service providers, accommodation facilities, transportation systems, and destination management organizations plays a fundamental role in improving the efficiency and quality of tourism services (Nazarian et al, 2025). Although previous studies have emphasized the importance of coordination among different components of the supply chain, the adoption of advanced technologies, and demand forecasting, no comprehensive and specialized study has yet been conducted on capacity management within the sports tourism service supply chain. The distinctive contribution of the present study, compared with previous research, lies in its specific focus on capacity management in sports tourism services rather than on the general management of the sports tourism supply chain. It seeks to identify the factors influencing capacity management and to propose strategies for its optimization. The present study specifically focuses on balancing the supply and demand of sports tourism, preventing resource wastage, and improving the efficiency of sports facilities issues that have received relatively limited attention in previous studies.

The novelty of the present study can be observed in several key dimensions. First, unlike previous studies that have primarily emphasized the overall dimensions of the sports tourism supply chain, this study specifically examines capacity management and proposes a comprehensive model for optimizing capacity within the sports tourism service supply chain. Second, it introduces innovative approaches for managing fluctuating demand in sports tourism, particularly during major sporting events. Third, the adoption of a mixed methodological approach, incorporating both big data analysis and qualitative techniques such as interviews with experts in the sports tourism industry, distinguishes this study from previous research. Therefore, the present study not only addresses the existing research gaps concerning capacity management in sports tourism but also proposes a novel and operational model that can serve as a foundation for policymaking and strategic decision making within the sports tourism industry. Given the growing importance of sports tourism in the economic, social, and cultural development of countries, capacity management in the tourism service supply chain has emerged as a key factor in optimizing resources, enhancing tourist experiences, and ensuring the sustainable utilization of sports destinations. While previous studies have mainly focused on the overall tourism supply chain, the present study seeks to systematically identify the factors influencing capacity management and to propose a comprehensive and efficient model for enhancing capacity management within the sports tourism service supply chain.

Accordingly, the present study aims to answer the following research question: What are the factors influencing the role of capacity management in the sports tourism service supply chain?

Method

The present study is an applied qualitative investigation conducted using the thematic analysis method. Regarding its ontological and epistemological foundations, the study may be explained as follows. From an ontological perspective, this research is based on the assumption that phenomena related to capacity management in the sports tourism service supply chain are dynamic and context dependent; that is, these realities are shaped by diverse economic, social, and cultural contexts. The study assumes that the factors influencing capacity management are not limited solely to physical and organizational structures but are also substantially shaped by interactions among stakeholders and environmental conditions. From an epistemological perspective, the study adopts an interpretivist approach, assuming that knowledge in this field is generated through the exploration of the experiences, perceptions, and viewpoints of different stakeholders. Accordingly, a qualitative research approach employing thematic analysis as a tool for identifying and analyzing key themes was considered the most appropriate method for achieving an in depth understanding of this phenomenon. In this regard, data were collected through semi structured interviews with experts and practitioners in the field of sports tourism and subsequently analyzed. The study population consisted of faculty members in sport management, tourism, and sports tourism, managers of tourism agencies, senior experts and managers from the Ministry of Sports and Youth, and PhD researchers in sport management and tourism. The research participants were selected from this population using purposive and snowball sampling methods. Data were collected through document analysis and semi structured interviews. The interviews were conducted between May to August 2024, and each interview lasted approximately 35 to 70 minutes. The primary research instrument was a semi structured interview conducted with 20 experts, and data collection continued until theoretical saturation was achieved. The interviews were conducted according to a prearranged schedule following prior coordination with the participants. After each interview, the recordings were transcribed verbatim, and initial coding was performed to extract the primary concepts. A total of 20 interviews were conducted. Repetition in the collected information became evident after the twelfth interview, and complete theoretical saturation was reached after the seventeenth interview, as no new concepts or themes emerged. Nevertheless, data collection continued until the twentieth interview to ensure the completeness and credibility of the findings. To establish the trustworthiness and rigor of the study, four criteria proposed by Lincoln and Guba credibility, transferability, dependability, and confirmability were employed. Credibility was enhanced through member checking, whereby the preliminary findings were returned to the participants to verify their consistency with the participants' experiences and perspectives. Transferability was ensured by purposively selecting participants with relevant expertise and practical experience and by providing a clear and transparent description of the research process. Dependability was established through systematic documentation of all stages of the research, including data collection and data analysis. Confirmability was achieved by maintaining comprehensive documentation of the research process, preserving the coding

records and analytical memos, and ensuring that the findings were grounded in the interview data rather than the researcher's personal interpretations. The reliability of the thematic analysis was assessed using the intra-coder agreement (test–retest reliability) method, yielding an agreement coefficient of 83%. To calculate the reliability coefficient, the codes generated from each interview were compared across two different coding occasions. The stability index was then calculated based on the level of agreement and disagreement between the two rounds of coding. Codes that remained identical across the two coding sessions were classified as agreements, whereas codes that differed were classified as disagreements. Subsequently, the researcher and a research colleague independently coded three interviews, and the percentage of intra-coder agreement was calculated as the reliability index of the thematic analysis.

$$\text{Intra-coder Agreement (\%)} = \frac{2 \times \text{Number of Agreements}}{\text{Total Number of Codes}} \times 100$$

Table 1. Percentage of Reliability Using the Recoding Method

Interviewee Code	Total Number of Codes	Number of Agreements	Number of Disagreements	Intra-coder (%) Agreement
3	33	14	7	%85
5	25	10	4	%80
8	38	16	8	%84
Total	96	40	19	%83

Table (1) shows that the total number of codes generated by the two coders (the researcher and the research colleague) was 96, of which 40 were agreements and 19 were disagreements. Accordingly, the inter-coder reliability, calculated using the aforementioned formula, was 83%. Therefore, the reliability of the coding process was considered satisfactory and the consistency of the coding was confirmed.

Table 2. Research Method Based on the Onion Model

Research Philosophy	Interpretivism
Research Approach	Deductive Approach
Research Strategy	Applied Research
Research Choice	Qualitative Research
Research Time Horizon	Cross-sectional
Data Collection and Analysis Methods	Document Analysis and Semi-structured Interviews; Thematic Analysis
Sample Selection Criteria	Experts and specialists in the relevant field
Interview Period	May–August 2024
Interview Duration	Approximately 35–70 minutes
Interview Questions	What factors influence capacity management in the sports tourism service supply chain? What roles do different stakeholders (managers, service providers, tourists, and policymakers) play in tourism capacity management? What is the role of technology and digitalization in optimizing capacity management in sports tourism? What are the major challenges associated with capacity management in the sports tourism service supply chain?

How can optimal capacity management influence tourists' experiences and the sustainable development of the sports tourism industry?

What strategies can be adopted to improve capacity management in the sports tourism service supply chain?

Results

Table (3) presents the descriptive findings regarding the demographic characteristics of the participants in the present study.

Table 3. Frequency of Research Participants

Study Participants	Frequency	Percentage (%)
Faculty Members of Sport Management	6	30
Faculty Members of Tourism and Sports Tourism	5	25
Managers of Tourism Agencies	3	15
Senior Experts and Managers of the Ministry of Sports and Youth	2	10
PhD Researchers in Sport Management and Tourism	4	20
Total	20	100

Table (4) presents two sample interviews together with their initial codes generated through thematic analysis.

Table 4. Initial Thematic Analysis Coding Along with Interviews

Interview Transcript	Initial Coding
Interview 1: Sports tourism, as one of the most important sub sectors of the tourism industry, plays a significant role in the economic, social, and cultural development of societies. This form of tourism involves individuals traveling to various destinations to participate in or attend sporting events and contributes to the economic growth of destinations by creating employment opportunities and generating local income. The presence of tourists attending sporting events increases expenditure on accommodation, transportation, and the purchase of local products, thereby stimulating economic activity and encouraging further investment in sports tourism development. In addition, sports tourism can make a positive contribution to environmental conservation. Many sports tourism activities emphasize sustainable tourism practices and the protection of natural resources, thereby enhancing public environmental awareness and promoting sustainable development. One of the most critical factors in optimizing the capacity of sports facilities is ensuring convenient accessibility to sports venues. Several factors influence the selection of locations for sports facilities. For example, proximity to healthcare centers and adjacency to recreational and sports complexes can enhance the attractiveness of sports tourism destinations. Likewise, the environmental conditions of the destination must be carefully considered, as areas with high levels of pollution are less likely to attract tourists. Furthermore, limitations on physical development should also be taken into account to ensure that sports facilities have sufficient potential for future expansion. The capacity of sports facilities should be designed and managed in	– Introducing sports tourism event destinations – Increasing employment opportunities and revenue generated from sports tourism – Addressing the needs and preferences of sports tourists – Focusing on enhancing tourists experiences and expanding service provision for sports tourists – Educating and raising tourists awareness of environmental issues – Optimizing the capacity of sports tourism service facilities – Improving tourists accessibility to sports facilities and amenities – Optimizing the capacity of sports facilities – Close proximity to recreational and sports centers

accordance with the needs of different categories of tourists. For instance, tourists with disabilities should have access to automated and intelligent systems that enable them to use sports facilities conveniently and independently. Moreover, tourism equipment and facilities should be standardized, and recycled materials should be incorporated into their development. Such measures not only reduce adverse environmental impacts but also prevent the unnecessary depletion of natural resources and contribute to the long-term sustainability of the tourism industry. Collectively, these initiatives enable tourism destinations to be recognized as environmentally responsible and sustainable locations while providing positive and memorable experiences for both tourists and local communities.

- Environmental conditions of the sports tourism destination
- Physical development constraints
- Utilization of automated and intelligent systems
- Standardization of recycled equipment

Interview 2:

The organization of sporting events provides an excellent opportunity to showcase the culture and tourism attractions of host destinations while enhancing their international recognition. Sports tourism plays a significant role in cultural promotion and in improving the image and reputation of destinations hosting sports tourism events. Furthermore, sports tourism contributes to the enhancement of individuals physical and mental well-being, as participation in sporting activities can encourage the provision of appropriate sports facilities and services aimed at improving the overall health of sports tourists. To successfully host sporting events, destination managers are required to develop and upgrade sports tourism infrastructure, including transportation networks, accommodation facilities, and sports venues. These infrastructures continue to benefit local communities long after the events have concluded. Supply chain management plays a crucial role in sports tourism services, serving as a fundamental mechanism for delivering services to sports tourists and managing tourism related operations efficiently. Within the sports tourism sector, supply chain management is responsible for ensuring the adequate capacity of sports tourism resources. This includes procuring the equipment, facilities, and other essential resources required to provide high quality services to sports tourists. The compatibility of sports tourism facilities with tourists' social characteristics and lifestyles is another important determinant of destination attractiveness. When sports tourism facilities align with the preferences and lifestyles of tourists, they are more likely to attract a larger number of visitors. One of the most influential factors in the development of sports tourism facilities is understanding the preferences and interests of sports tourists. For example, some tourists may seek specialized sports tourism services, and facilities should be designed to accommodate these specific demands. Moreover, forecasting future population density and visitor flows in tourism destinations is essential for effective capacity management. Such forecasts enable planners to appropriately design and expand sports tourism facilities to accommodate increasing numbers of tourists over the long term. They also facilitate the adoption of standardized equipment and the utilization of recycled materials to support the green provision of sports tourism services. These practices contribute to sustainable resource management, minimize environmental impacts, and promote the long term sustainability and competitiveness of sports tourism destinations.

- Providing career development opportunities for innovative ideas
- Encouraging creative thinking and the adoption of emerging technologies
- Creating an innovative environment by introducing new ideas to improve sports tourism services
- Recruiting and developing new talent with an innovative vision
- Designing digital sports tours and artificial intelligence based travel programs
- Providing 24/7 access to human resource information within the sports tourism service supply chain
- Facilitating access to human resource information and the experiences of other organizations in the sports tourism industry
- Ensuring the transferability of human resource information for use by managers at all organizational levels within sports tourism services
- Maintaining up to date human resource information across every stage of the sports tourism service supply chain

Following the interviews conducted with the experts, the extracted data were coded. Table (5) presents the results related to the factors influencing the role of capacity management in the sports tourism service supply chain.

Table 5. Themes Related to the Framework of the Model Influencing the Role of Capacity Management in the Supply Chain of Sports Tourism Services

Category	Concept	Initial Code	Key Statements	Code Frequency
Supply Capacity	Professional Capacity	Assessment and Evaluation of Sports Tourism Capacity	Selecting appropriate locations and assessing the capacity of sports facilities to attract more sports tourists	5
			Assessing the actual capacity of sports tourism facilities	7
			Optimizing the capacity of sports tourism service facilities	9
			Optimizing the capacity of sports facilities	4
			Maximizing the utilization of resource capacity to attract sports tourists	6
			Ensuring consistency between the population density of the tourism destination and the capacity of sports facilities	8
		Specialization of Sports Tourism Service Provision	Specializing the activities of the sports tourism service supply chain	5
			Focusing on delivering unique sports tourism services	7
			Focusing on enhancing tourist experiences and expanding service provision for sports tourists	6
			Continuously improving processes within the sports tourism service supply chain	3
	Professional Capacity	Standardization of Sports Tourism Facilities and Services	Establishing and implementing the required standards to ensure the safety and quality of sports tourism services	5
			Developing and upgrading sports tourism service infrastructure	12
			Continuously monitoring and evaluating sports tourism facilities and services based on established standards	7
			Standardizing recycled equipment to support the sustainable development of sports tourism service	4

Service and Welfare Capacity	Assessment of the Welfare Capacity of Tourism Services	Establishing recreational and leisure facilities adjacent to sports venues to enhance the attractiveness of sports tourism	10
		Providing recreational and wellness amenities, including swimming pools, fitness centers, and massage services	9
		Creating appropriate environments for delivering high quality services to sports tourists	8
		Providing health consultation services for sports tourists to enhance their sports experiences	6
		Establishing dedicated transportation systems to provide efficient services for sports tourists	4
		Providing appropriate sports facilities to promote the overall health of sports tourists	3
		Improving tourists' accessibility to sports facilities and amenities	11
	Capacity of Sports Event Tourism Supply	Providing specialized facilities and services for sports event tourism	10
		Utilizing automated and intelligent systems in sports event tourism facilities	7
		Providing information systems, internet networks, and communication facilities to enhance the sports tourist experience	3
		Attracting tourists through the unique cultural and recreational attractions of sports events	9
	Development of Sports Tourism Services	Promoting collaboration and enhancing service quality across the sports tourism supply chain	4
		Assessing population density and growth to align sports facilities with tourists' needs	6
Development Capacity	Physical Development of Sports Tourism	Evaluating the potential for the development of sports tourism facilities	6
		Modifying destination related facilities to enhance sports tourism experiences while addressing physical development constraints	2
		Identifying legal and physical constraints affecting the development of tourism facilities and the attraction of sports tourists	3
Access to Supply	Physical Accessibility	Facilitating access to sports facilities for the convenience of sports tourists	6

Access to Sports Tourism Services	Designing sports tourism facilities to ensure visibility and accessibility for sports tourists	2
	Planning the location of sports facilities based on the long-term needs of the sports tourism destination	5
	Providing access to ATMs, banking services, and electronic payment systems	4
	Providing access to healthcare centers, pharmacies, and emergency medical services to ensure tourists' health and safety	6
	Providing accessible ramps, suitable elevators, and disability friendly restrooms for people with disabilities and older adults	2
	Providing access to high-speed internet and reliable mobile network coverage	7
	Providing convenient and affordable transportation systems for sports tourists	8
Close Proximity to Sports Tourism Facilities	Locating sports tourism facilities in close proximity to densely populated areas	6
	Ensuring close proximity to recreational and cultural centers to enhance the attractiveness of sports tourism and the services provided to sports tourists	6
	Ensuring close proximity of healthcare centers to sports tourism facilities	4
Environmental Conditions of the Tourism Destination	Environmental conditions of the sports tourism destination	9
	Implementing effective waste collection and recycling systems within the sports tourism destination	3
	Assessing and controlling environmental pollution to protect the health and satisfaction of sports tourists	5
	Enhancing the visual attractiveness, tranquility, and environmental compatibility of the tourism destination with the expectations and needs of sports tourists	4
	Utilizing renewable resources and recycled materials in the design and construction of sports tourism facilities	6
	Educating and raising sports tourists' awareness of environmental issues	7

Functional Accessibility	Sports Tourists' Interests	Implementing sustainable development principles in tourism policies	8
		Planning sports tourism destinations in accordance with tourists' interests	8
		Sports tourists' preferences and interests	10
		Tourists' preferences regarding the type of sports services received	6
		Addressing the needs and preferences of sports tourists	7
		Tourists' interest in participating in adventure activities, such as mountaineering and skiing, or visiting historic and iconic sports venues	5
	Characteristics of Sports Tourists	Social classes and subcultures of sports tourists	4
		Aligning sports facilities with the social classes and lifestyles of sports tourists	5
		Lifestyle and purchasing behavior of sports tourists	9
	Financial Conditions of Sports Tourists	Assessing the purchasing power and income level of sports tourists	8
		Increasing employment opportunities and tourism-generated income through sports tourism	12
		Pricing of transportation tickets, accommodation, and sports tourism packages	7
		High inflation and rising prices at sports tourism destinations	3
		Residents' willingness in the origin community to spend on sports and sports-related travel	4
	Key Factors in the Development of Sports Tourism Programs	Forecasting future population density to align sports facilities with the long-term needs of sports tourists	5
		Assessing the distribution of competitors and supply chain partners in sports tourism	6
		Governmental and private support programs and incentive schemes for attracting sports tourists	7
		Employment conditions and unemployment rates in the tourists' country or region of origin	8

			Promoting the culture and natural attractions of sports tourism event destinations	9
			Providing security systems, surveillance cameras, and security personnel at tourism destinations	2
			Enhancing the image of host destinations for sports tourism events	4
Supply Quality	Assessment of Sports Tourism Service Quality	Identifying Factors Related to Sports Tourism	Identifying sports tourism service quality indicators	6
			Addressing the individual and specific needs of sports tourists in service delivery	4
		Service Quality	Enhancing the efficiency and productivity of sports tourism services	2
			Continuous monitoring and evaluation of the quality of services provided to sports tourists	4
		Evaluating the Quality of Sports Tourism Services	Organizing specialized tours for attending sports events and interacting with athletes	3
			Aligning service prices with their quality and perceived value from the perspective of sports tourists	5
	Prioritization of Sports Tourism Services	Essential and Core Sports Tourism Services	Addressing the essential needs of sports tourists and providing the necessary infrastructure	7
			Assessing the needs of sports tourists and prioritizing services based on their demand	5
			Providing tourism information offices, maps, and directional signage in tourism destinations	9
		Motivational Sports Tourism Services	Providing specialized consulting services in sports activities and physical fitness	8
			Organizing educational classes and seminars on sports and health	6
			Providing awards and financial incentives for participation in sports events	8
Supply Performance	Sports Tourism Service Technology	Technology and Management Systems	Utilizing software applications and information management systems to accelerate request processing	6
			Employing rapid communication tools (e.g., online chat and mobile applications) to facilitate effective communication with sports tourists	5

Sports Tourism Service Innovation	Time Management	Optimizing internal processes to reduce waiting times and expedite service delivery	3
		Implementing effective planning for the allocation of human and financial resources to essential activities	4
	Accelerating the Development of New Services	Accelerating the development of new services to ensure prompt responses to sports tourists	3
		Using surveys and other data collection tools to identify the needs and expectations of sports tourists	5
		Accurately forecasting changes in sports tourism demand	3
		Determining the optimal timing for introducing new sports tourism services	4

The findings revealed that the factors influencing the role of capacity management in the sports tourism service supply chain were organized into 88 key statements, 22 initial codes, 9 concepts, and 4 organizing themes. Overall, the factors influencing the role of capacity management in the sports tourism service supply chain were classified into four organizing themes: Supply Capacity, Supply Accessibility, Supply Quality, and Supply Performance. Figure (1) illustrates the thematic network developed in the present study.

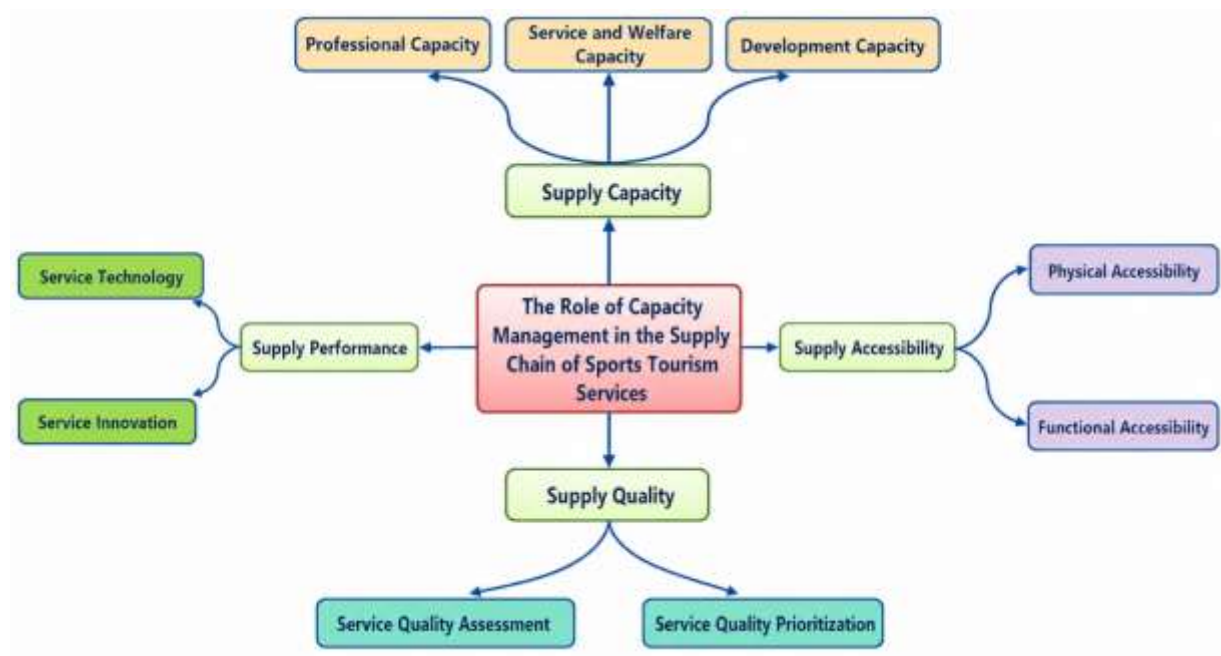


Figure 1. Thematic Analysis Network

Discussion

The findings of the present study indicated that the factors affecting capacity management in the sports tourism service supply chain can be categorized into four major themes: supply capacity, access to supply, supply quality, and supply performance. Capacity management in the sports tourism service supply chain is a complex and multidimensional process that requires effective coordination and optimal management across multiple levels. This process encompasses the management of resources, infrastructure, services, and the diverse needs of sports tourists throughout all stages, from demand forecasting to service delivery. Effective capacity management enables organizations and service providers to accurately anticipate and respond to fluctuations in sports tourism demand. During periods of high demand, particularly during major sporting events, holidays, and peak tourism seasons, capacity management helps organizations prevent capacity shortages and overcrowding. This process involves the optimal allocation of critical resources, including sports facilities and equipment, human resources, accommodation capacity, and transportation services. Heebkhoksung et al (2024) concluded that coordination among supply chain stakeholders, including tourism service providers and sports organizations, plays a pivotal role in the successful implementation of capacity management. Such coordination can be strengthened through the adoption of advanced technologies, including integrated management systems and information sharing platforms. Interview participant (P₅) highlighted this issue as follows: “One of the fundamental challenges in the sports tourism service supply chain is capacity management. The capacity of sports tourism service providers depends on various resources, including human resources, equipment, infrastructure, and services that may be outsourced to other companies. During periods when demand falls below the available capacity, part of this capacity remains underutilized, resulting in resource waste. Conversely, during periods of peak demand, the existing capacity may be insufficient to meet the increased demand, leading to reduced service quality and tourist dissatisfaction”. Therefore, sports tourism service organizations should adopt appropriate capacity management strategies, such as adjusting capacity in response to fluctuations in demand and maintaining reserve capacity to accommodate peak demand. These strategies not only facilitate more efficient and higher quality service delivery but also help prevent congestion, enhance the overall tourist experience, optimize resource utilization, and reduce unnecessary operational costs.

Conclusions

The findings of the present study revealed that supply capacity plays a significant role in the supply chain of sports tourism services. Supply capacity encompasses all tangible and intangible resources that can influence the quality of tourists experiences. It refers to the capability of infrastructure, equipment, personnel, and facilities to meet existing demand while preventing overcrowding and service quality deterioration. In particular, during major sporting events such as football tournaments, the Olympic Games, or marathons, the availability of stadiums, hotels, transportation systems, and other essential facilities is indispensable. Within this context, specialized capacity, welfare capacity, and development capacity constitute the three fundamental dimensions of supply capacity, each playing a critical role in creating a

comprehensive and high quality experience for sports tourists. Specialized capacity, in particular, addresses the specific needs of tourists and athletes by providing specialized equipment and services tailored to different sports or sporting events. This capacity may include the provision of specialized medical services for athletes, dedicated equipment for adventure sports such as skiing and cycling, or exclusive facilities for professional athletes. Consequently, specialized capacity plays a vital role in delivering high quality services that comply with professional standards. In this regard, participant (P₇) stated: “Specialized capacity in sports tourism not only addresses the immediate and specialized needs of athletes and tourists but also creates a unique and distinctive experience for them. Particularly during major sporting events, the provision of advanced medical facilities and specialized equipment can make a substantial difference in service quality. For example, on a skiing tour, appropriate technical equipment and the presence of specialized medical personnel can not only ensure tourists safety but also increase their confidence, enabling them to enjoy a pleasant and worry free experience”. Therefore, specialized capacity serves not only as an operational requirement for meeting specific needs but also as an important factor in attracting professional athletes and sports tourists seeking unique experiences. Establishing such capacities and addressing the specific requirements of each type of sporting event enable sports tourism service providers to deliver professional and differentiated experiences based on high quality standards. Welfare capacity is another essential component of sports tourism, as the provision of welfare services is just as important as the sporting event itself. Tourists should have convenient access to accommodation, healthcare services, food services, and other welfare facilities. Hotels, restaurants, and transportation services, particularly during major sporting events, must be designed and provided according to the specific needs of sports tourists and the physical characteristics of the event. Higham & Wada (2024) concluded that the provision of high quality welfare services not only enhances sports tourists satisfaction but also serves as a key factor in attracting and retaining tourists over the long term. Therefore, investment in the development of welfare capacity and the improvement of service quality should be considered an integral component of sports tourism development strategies. In this regard, participant (P₂) stated: “In sports tourism, providing welfare services not only has a direct impact on tourists satisfaction but also shapes their overall event experience. Particularly during large scale sporting events, the quality of accommodation, catering, and transportation services can significantly influence tourists comfort and convenience. For example, during a major competition, if accommodation facilities or restaurants are not appropriately designed to meet the specific needs of athletes and spectators, this may reduce tourists satisfaction and even damage the reputation of the destination. Therefore, special attention must be devoted to these aspects of capacity to ensure that tourists can conveniently benefit from all welfare services”. Similarly, Cheunkamona et al (2022) concluded that welfare services constitute one of the key pillars of success in sports tourism and play a decisive role in attracting and retaining tourists. They argued that the sports tourism experience extends beyond the sporting event itself, as tourists’ comfort and well being throughout their journey and during their stay at the destination are equally important components of the overall experience. High quality welfare services, including comfortable accommodation, appropriate food services, and convenient access to

public or private transportation, can substantially enhance tourists satisfaction and increase their intention to revisit the destination. Development capacity also represents a critical factor in the sustainable growth of the sports tourism service supply chain. This dimension refers to the ability of service providers to expand and improve infrastructure and services in response to the growing demand of sports tourists. Such development may include constructing or upgrading sports facilities, expanding public transportation systems, increasing accommodation capacity, and investing in recreational and welfare facilities. Development capacity not only strengthens and expands existing services but also enables more effective utilization of the current and potential capacities of sports tourism by adapting to future demands. Giango et al (2022) concluded that investment in education and human resource development constitutes an inseparable component of development capacity. The involvement of local communities and service providers in areas such as event management, customer service, and emerging technologies can significantly improve service quality and increase tourist satisfaction. Overall, capacity management within the sports tourism service supply chain should adopt an integrated and coordinated approach focusing simultaneously on these three key dimensions. The combination of specialized capacity, welfare capacity, and development capacity enables sports tourists to enjoy high quality and satisfying experiences while ensuring the optimal utilization of available resources and facilities. Such an integrated approach reduces pressure on infrastructure, enhances the satisfaction of both tourists and athletes, and ultimately improves the overall quality and sustainability of sports tourism services.

The findings of the present study indicated that supply quality plays a significant role in the sports tourism service supply chain. Supply quality refers to the level of standards and satisfaction associated with the sports services and facilities received by sports tourists. In the sports tourism industry, high quality supply encompasses modern facilities, high safety standards, appropriate hygiene, and professionally delivered services. The quality of sports tourism services directly influences sports tourists' overall experiences and can significantly affect their future decisions to revisit the destination or recommend it to others. Competitiveness within this industry is highly dependent on the quality of supply. Evaluating and prioritizing tourism services are among the key dimensions in assessing and improving the sports tourism industry (Tian et al., 2023). The evaluation of tourism service quality involves identifying and assessing the various factors that influence service quality. Nguyen et al (2025) concluded that a direct relationship exists between supply quality and sports tourists' satisfaction. Delivering high quality services not only enhances sports tourists' satisfaction but also improves the image and reputation of the destination. Likewise, based on the findings of Kerdpitak (2022), supply quality in the tourism service supply chain plays a vital and direct role in attracting and retaining sports tourists. The quality of sports tourism services, particularly during major sporting events or professional sports tours, should comply with international standards, as any shortcomings or deficiencies may substantially reduce sports tourists' satisfaction and negatively affect their overall experience. The findings of the present study demonstrate that high quality supply includes modern facilities, high safety standards,

appropriate sanitary conditions, and professional service delivery. These factors not only enhance sports tourists' experiences but also serve as critical indicators of competitiveness within the sports tourism market. Sports tourists' satisfaction is directly associated with the quality of the services provided, such that superior service quality encourages repeat visitation and positive word of mouth recommendations. Conversely, neglecting service quality can reduce sports tourists' trust, increase dissatisfaction, and ultimately damage the reputation and credibility of the tourism destination. Another important dimension of service quality management is the prioritization of tourism services. In this regard, essential and core tourism services, including access to sports facilities, safety measures, and healthcare services, should receive the highest priority. These fundamental services represent the minimum requirements necessary to ensure sports tourists' basic satisfaction. In addition, motivational services, such as complementary recreational activities, unique tourism experiences, and additional leisure amenities, can further enhance the attractiveness of the destination, enrich sports tourists' experiences, and differentiate a sports tourism destination from its competitors. According to the findings of Tian et al (2023), improving supply quality in sports tourism contributes significantly to enhancing the competitiveness of the industry. Destinations that consistently and effectively invest in improving the quality of their services are more likely to attract greater numbers of sports tourists and establish themselves as preferred sports tourism destinations. Therefore, adherence to established quality standards and continuous attention to meeting sports tourists' needs and expectations should constitute fundamental priorities in the management of sports tourism.

The findings of the present study indicated that supply performance plays a significant role in the sports tourism service supply chain. Supply performance refers to the efficiency and effectiveness of service delivery in meeting the needs and expectations of sports tourists. High service performance reflects the optimal management of resources, responsiveness to customer expectations, and the timely and high quality delivery of services. Superior performance in the sports tourism sector contributes to attracting loyal sports tourists and enhancing the image of sports tourism destinations, whereas poor performance may result in customer dissatisfaction and the loss of potential visitors. For instance, effective planning, timely service delivery, and coordination among different supply chain stakeholders are essential for ensuring optimal service performance. Technology and innovation in tourism services are recognized as key determinants of supply performance and high quality service delivery in the sports tourism industry. In today's rapidly evolving environment, technology and management systems play a vital role in improving both the efficiency and effectiveness of service provision. Tourism service technologies, including information management systems, online reservation platforms, mobile applications, and smart technologies, can significantly enhance sports tourists' experiences by enabling faster, more accurate, and timelier service delivery. For example, online booking systems and tour management software facilitate more precise scheduling and efficient service provision, which are particularly important for sports tourists. Similarly, service innovation, which involves the development of new services and the ability to respond rapidly to changing conditions, can substantially improve the attractiveness of sports

tourism destinations and enhance overall service performance. Developing new services involves introducing innovative facilities and features that address the evolving needs and preferences of sports tourists. For example, incorporating augmented reality (AR) or virtual reality (VR) technologies into sporting events can create unique and immersive experiences for spectators and sports tourists. Furthermore, the ability to respond quickly to changing circumstances, such as adverse weather conditions or the immediate needs of sports tourists, can significantly improve sports tourists' satisfaction. In this regard, participant (P₆) stated: "Supply performance in sports tourism refers to the efficiency and effectiveness of service delivery. High performance in this area means optimizing resource management, adhering to accurate scheduling, and delivering high quality services. For example, precise planning of transportation schedules, accommodation services, and coordination among different service providers can create a positive and satisfying experience for sports tourists". High performance within the sports tourism sector not only contributes to attracting sports tourists but also promotes tourist loyalty and strengthens the image of sports tourism destinations. Sports tourists who enjoy a satisfying and memorable experience are more likely to revisit the destination and recommend it to others through positive word of mouth recommendations. In this regard, participant (P₂) commented: "Tourism service technology and service innovation are fundamental pillars for improving supply performance in sports tourism. The effective use of technology can enhance service scheduling, increase the accuracy of service delivery, and improve the overall sports tourist experience. Likewise, developing new services and responding rapidly to sports tourists' needs through innovation can attract new visitors and create unique and memorable experiences for them".

The success of the sports tourism service supply chain depends on the effective interaction and coordination of four key dimensions: supply capacity, access to supply, supply quality, and supply performance. Supply capacity should be aligned with both current and future demand to ensure that the diverse needs of sports tourists are effectively met. This requires accurate demand forecasting, strategic infrastructure planning, and the development of adequate capacity. In particular, organizations should be prepared to accommodate peak demand periods while simultaneously optimizing the utilization of excess capacity during off peak seasons. Such effective capacity planning can prevent overcrowding and service deterioration during periods of high demand while minimizing resource waste during periods of lower demand. Similarly, access to supply should be designed to enable sports tourists to access services and facilities conveniently, thereby enhancing their overall travel experience. This includes developing accessible transportation routes to sports venues, accommodation facilities, and other tourism services. Furthermore, the application of modern technologies, such as mobile applications for online reservations, real time information dissemination, and digital tourist guidance systems, can facilitate access to services and significantly improve the overall tourism experience. Within this framework, supply quality, particularly in terms of safety, hygiene, and professional service delivery, plays a crucial role in attracting and retaining sports tourists. Sports tourists place considerable importance on service quality in areas such as healthcare services, safety equipment, and compliance with international standards. Adherence to these

standards not only protects sports tourists' health and safety but also strengthens their confidence in sports tourism destinations. Moreover, the provision of professional services, including expert tour guidance, specialized medical support, and unique tourism experiences, can further enhance destination attractiveness and facilitate the attraction of new visitors. Likewise, high supply performance, which encompasses efficient resource management, accurate scheduling, and rapid responsiveness, can substantially improve sports tourists' experiences and enhance the competitiveness of sports tourism destinations. Service performance should ensure that sports tourists receive high quality services consistent with their expectations throughout every stage of their journey, from arrival to departure. Overall, the effective management of these four dimensions can significantly enhance sports tourists' satisfaction, attract more visitors, and strengthen the sports tourism industry. Through appropriate planning for supply capacity, improved accessibility to services, continuous enhancement of supply quality, and optimization of overall service performance, sports tourism destinations can provide sports tourists with positive, seamless, and memorable experiences. Such achievements not only foster sports tourists' loyalty but also contribute to the long term success and sustainable development of the sports tourism industry. Accordingly, effective capacity management in sports tourism can increase revenue through the optimal utilization of available resources, create additional employment opportunities, and support sustainable development by minimizing resource waste and protecting the environment. In this regard, the findings of the present study can provide valuable guidance for policymakers and decision makers seeking to improve capacity management in sports tourism destinations. For example, the adoption of demand forecasting models can enhance the efficiency of resource planning, while the development of capacity adjustment strategies can enable organizations to respond more effectively to fluctuations in demand. Furthermore, these findings may contribute to the formulation of more sustainable policies for managing sports tourism resources and provide a sound basis for more effective decision making in this field.

Research Recommendations

- The use of demand forecasting models based on historical data and market trend analysis can improve capacity management, particularly during major sporting events, by enabling more accurate predictions of the number of sports tourists and athletes.
- Developing intelligent transportation systems and implementing smart traffic management through advanced technologies can reduce travel time and enhance tourists convenience and accessibility.
- Organizing specialized training programs for employees and service providers particularly in sports event management, specialized medical care, tourist guiding, and customer service is essential for improving the professionalism and quality of sports tourism services.
- Establishing digital and traditional feedback channels to collect tourists opinions, suggestions, and complaints and utilizing this information for continuous service improvement can enhance tourist satisfaction and improve service delivery.

- Implementing integrated management systems to coordinate transportation, accommodation, catering, and sports services can automatically synchronize schedules and improve coordination among different service providers, thereby enhancing operational efficiency.
- Developing and implementing crisis management and emergency response protocols, particularly during major sporting events, including contingency plans and rapid response mechanisms, can minimize the negative impacts of unexpected incidents on tourists while ensuring service quality is maintained.

Research Limitations

- One of the main limitations of the present study is the qualitative nature of the data. Most of the data were collected through semi structured interviews and document analysis, which may have been influenced by the participants subjective perspectives and potential response biases.
- Another limitation is that the study focused on a relatively limited group of experts and was conducted within a specific time frame. Consequently, the generalizability of the findings to other contexts and populations may be limited.

Recommendations for Future Research

- Investigating the role of emerging technologies in optimizing sports tourism capacity management processes.
- Developing an operational and implementation framework for optimizing capacity within the sports tourism service supply chain.
- Examining the role of private sector investors, sports clubs, and tourism companies in optimizing sports tourism capacities.
- Identifying the factors influencing capacity management in major sporting events through case studies of events such as the Olympic Games, the FIFA World Cup, and the Asian Games.
- Investigating the role of social media in the capacity management of sports tourism services.

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CRedit authorship contribution statement

All authors contributed equally to the conceptualization of the study and the preparation of the original draft as well as the subsequent revised versions of the manuscript.

Conflict of interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

Ethical considerations

All ethical principles related to the conduct of the research, citation practices, reporting, and publication of the findings were observed accurately and appropriately. The authors avoided data fabrication, data falsification, plagiarism, and all other forms of research misconduct.

Data availability statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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