

Research on the Economic Benefit Realization Path and Mechanism of Digital Transformation in the Tourism Industry

Jicheng Wang *

Department of financial mathematics, Xi'an Jiaotong-Liverpool University, Suzhou, 215000, China

* Corresponding Author Email: Jicheng.Wang22@student.xjtlu.edu.cn

Abstract. This research focuses on the economic benefits of digital transformation in the tourism industry against the backdrop of the post-pandemic era and the "Digital China" strategy. Utilizing literature analysis and multi-case comparison methods, it systematically explores the internal mechanisms by which digital transformation creates economic benefits through three main paths: revenue increase, cost reduction and quality improvement, while also analyzing the characteristics of different implementation models. The study finds that digital transformation achieves revenue increase through precise marketing, dynamic pricing, and experiential value-added. Realizes cost reduction through process automation, intelligent management, and scientific decision-making. Accomplishes service quality improvement through experience optimization and brand upgrading. The research further identifies the main risks and challenges currently faced, proposes corresponding countermeasures, and provides theoretical reference and practical guidance for the digital transformation of the tourism industry.

Keywords: Digital transformation; economic benefits; realization path; tourism industry.

1. Introduction

1.1. Research Background and Significance

With the advent of the post-pandemic era and the deepening implementation of the Digital China strategy, the tourism industry is undergoing an unprecedented digital transformation. The epidemic not only accelerated the industry's demand for intelligent and contactless services, but also changed the psychological state and consumption pattern of tourists, promoting a significant increase in their demands for service quality and health and safety [1]. In this context, digital technology has become the core driving force for reconstructing the industrial ecosystem and innovating value. Simultaneously, the "Digital China" strategy provides solid policy support and infrastructure guarantees, vigorously promoting industrial chain collaboration and intelligent operations, thereby giving rise to new business models and revenue growth points. The theoretical significance of this research lies in deepening the application of digital transformation theory in the tourism field, explaining the economic benefits generation mechanism of digital transformation in tourism from both the value source and target dimensions; At the practical level, it helps tourism enterprises choose appropriate digital transformation paths and optimize resource allocation. Policymakers can use this to formulate more targeted plans to promote the healthy and synergistic development of the regional tourism digital economy [2].

1.2. Research Question

Digital transformation creates significant economic benefits for the tourism industry through diversified pathways and innovative models. Its core paths primarily including four major directions: enhanced smart service experiences, optimized operational efficiency, industrial ecosystem collaboration and innovative thinking [3]. Smart services utilize technologies such as VR and intelligent guided tours to enhance tourist immersion and satisfaction, thereby increasing revisit rates and consumption levels; Operational efficiency optimization significantly reduces labor and operational costs through intelligent ticketing, dynamic pricing, and resource scheduling systems; Industrial ecosystem collaboration breaks down information barriers via data platforms and cross-sector cooperation, maximizing the value of the industry chain; Innovative thinking opens up new

revenue streams and expands industry boundaries through virtual tourism, digital collectibles, and other means.

2. Literature Review

2.1. Definition of Key Concepts

Digital transformation refers to the strategic process of utilizing new-generation information technologies such as big data and cloud computing to comprehensively and systematically reconstruct and innovate a company's business models and value chain. Aiming to achieve enhanced operational efficiency, optimized user experience and innovation in value creation methods [3]. In the tourism industry, digital transformation is not only reflected in the application of technological tools but also signifies the intellectualization of services as well as the collaboration and innovative development of upstream and downstream industrial chains. Economic benefits refer to the tangible gains obtained through optimized resource allocation, cost savings, and value innovation. In the context of tourism digital transformation, economic benefits also encompass indirect and long-term gains such as enhanced market competitiveness, improved user experience, and industrial synergy [1].

2.2. Theoretical Basis

The theoretical foundation of digital transformation in the tourism industry is primarily rooted in the integration of value creation theory and digital technology enablement mechanisms. Value creation theory emphasizes that digital transformation expands value sources—extending from traditional ticket and accommodation revenues to virtual experiences, digital products, and cross-border collaborative benefits. Through real-time feedback and content generation, tourists become value co-creators, while enterprises and service institutions form value networks through collaboration, collectively promoting the synergistic development of the tourism industry [4]. The digital technology enablement mechanism systematically explains how technology drives transformation: big data and AI enable data-driven decision-making for tourist insights and resource scheduling, enhancing operational efficiency and market responsiveness; IoT and automation technologies significantly reduce labor costs and optimize service processes; AR/VR technologies reshape experience formats and consumption scenarios; cloud computing and digital platforms connect diverse entities, facilitating data interoperability and business collaboration [1]. The integration of these two elements constructs a systematic theoretical framework, providing a theoretical basis for analyzing the pathways and internal mechanisms of digital economic benefits generation.

2.3. Construction of the Analysis Framework

In the process of systematically analyzing the digital transformation of the tourism industry, a framework centered on value sources and target dimensions can be constructed. Its basic structure is as follows: the vertical dimension represents the value source, encompassing the three economic objectives of revenue increase, cost reduction, and quality improvement; The horizontal dimension represents the target, covering the three levels of tourist experience, enterprise operations, and industrial ecosystem. This provides a clear theoretical and practical tool for systematically understanding, planning, and evaluating digital initiatives.

3. The Economic Benefit Realization Path of Digital Transformation in the Tourism Industry

3.1. Precision Marketing

Providing users with personalized travel plans is a key method to enhance user stickiness. By leveraging in-depth mining and analysis of big data, platforms can accurately understand user needs

and design tailored itineraries. As an industry leader, Ctrip launched the tourism sector's first vertical large model--"Ctrip Wen Dao" as early as 2023. Starting from users' search content and habits, combined with previous travel preferences and supplemented by rich real-time data, it forms a comprehensive and multi-dimensional unique travel context. Additionally, leveraging its extensive brand partnerships and resource integration capabilities, Ctrip can recommend real-time discounts, hotel suggestions and other firsthand information that significantly enhances the travel experience. This not only boosts user satisfaction but also brings substantial traffic growth and revenue to Ctrip [5]. See in Fig. 1.

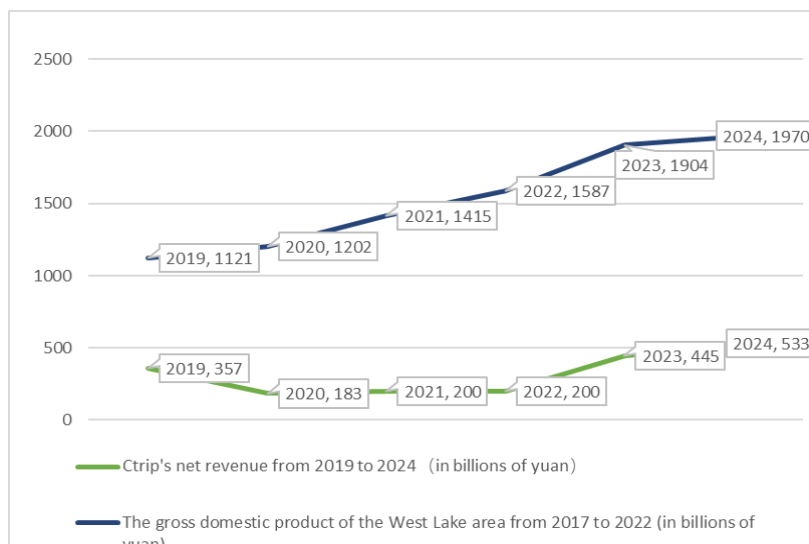


Fig. 1 Earnings change curve

3.1.1 Dynamic Pricing

Dynamic pricing has far surpassed traditional peak/off-peak season distinctions, becoming a critical strategy in the digital transformation of the tourism industry to enhance economic benefits and regional synergy. Leveraging big data and artificial intelligence technologies, hotels and scenic spots can not only significantly increase their own revenue but also effectively boost surrounding business operations. AI algorithms enable accurate predictions based on historical data, respond in real-time to emergencies and competitors' strategic adjustments, thereby allowing timely pricing adjustments to maximize revenue while maintaining market competitiveness [2]. West Lake Scenic Area successfully achieved a 35% increase in tourist visits during the off-season by implementing dynamic pricing. Furthermore, by establishing data-sharing mechanisms with transportation and commercial service providers, operators can gain a more comprehensive understanding of market demand to create more competitive personalized travel itineraries and bundled pricing options, providing tourists with more convenient and high-quality experiences, ultimately achieving win-win outcomes for multiple parties.

3.1.2 Experiential Value-Added

Compared to the traditional "ticket economy" VR experiences have not only rescued museums during the pandemic but also infused them with new vitality. For audiences, it represents a revolution from viewing to experiencing—an opportunity to get close to precious cultural relics and personally engage with history. Breaking the traditional limitation that "cultural relics require distance"[6]. For museums, it is not merely a tool to attract visitors but also a powerful technological means to achieve the eternal preservation of cultural relics. High-precision scanning and VR technology create comprehensive digital archives for relics, while also helping reduce damage caused by inappropriate environmental factors during exhibitions. The Palace Museum in Beijing, for instance, has utilized VR/AR technologies to launch virtual exhibitions and build online digital platforms, offering remote access and educational services globally. This effectively promotes cultural relic preservation, cultural display, and international dissemination [3]. Thus, from a macro perspective of cultural

heritage, digital means enable civilizational memory to transcend temporal and spatial constraints, achieving broader and more immersive dissemination and continuity.

3.2. Cost Reduction

3.2.1 Intelligent Management

The integration of smart energy and intelligent inventory management is actively driving the tourism industry toward a greener and more sustainable phase. The former continuously monitors the usage of various facilities, detects abnormal consumption and prevents energy waste. Which aligning perfectly with the growing eco-friendly travel philosophy among tourists. The latter not only optimizes inventory reserves, reduces operational costs and minimizes material waste, but also leverages data analysis of customer preferences and consumption behaviors to help hotels and other tourism service providers accurately grasp market dynamics and demand changes [7]. This facilitates the development of products and service packages that better meet market demands.

3.2.2 Scientific Decision-Making

The data cockpit system integrates, stores and conducts in-depth analysis of multi-source data, providing managers with intuitive and scientific key data as a basis for decision-making. By closely aligning data analysis results with real-time consumption trends, the system enables tourism organizations to reconfigure resources and optimize product and service structures, thereby comprehensively enhancing market competitiveness [8]. Additionally, the system possesses robust early warning capabilities, leveraging historical and real-time data to effectively prevent issues such as traffic congestion and overcrowding caused by excessive tourist flow. This ensures visitor safety while significantly improving their travel and visitation experiences.

3.2.3 Process Automation

Digital tickets utilize technologies such as mini-programs and QR codes, have created highly convenient ticket purchasing and verification services, successfully achieving both the maintenance of a "one person, one ticket" order and the reduction of operational costs. For tourists, this has minimized the previously rampant issue of ticket scalping and allowed for better anticipation of visitor flow to enable more efficient planning of visit schedules. For scenic areas, while reducing labor costs and resource consumption, it enables more accurate market data-driven pricing and decision-making to maximize profits [9]. Huangguoshu Scenic Area, by constructing a smart system of "one center + four platforms" integrated with facial recognition, real-time monitoring and intelligent scheduling systems, achieved an 80% improvement in entry efficiency. Through data prediction and dynamic resource allocation, the average visitor stay time was extended to 6 hours and secondary consumption increased by 20%. See in Fig. 2.

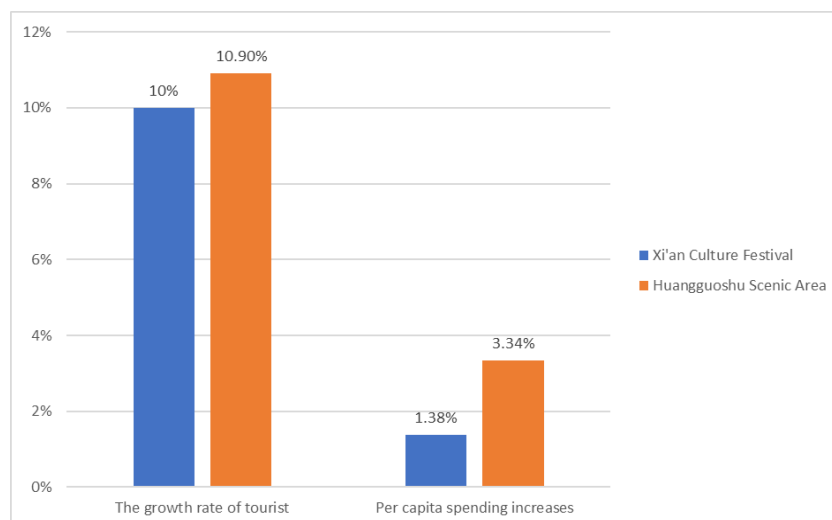


Fig. 2 The growth rate of data after the implementation plan of the two places in 24 years

3.3. Quality Improvement

3.3.1 Experience Optimization

Intelligent guided tours are a crucial component of the digital transformation in the tourism industry. Whether through personalized guided tours or intelligent Q&A systems, they provide a satisfying and relaxed experience for large and diverse groups of tourists. The former delivers content and destination guidance based on tourists' interests and preferences, effectively alleviating prolonged congestion and waiting times at attractions. This initiative not only enhances visitor satisfaction but also helps attraction facilities understand the needs of the broader tourist base, optimizing internal resource allocation and service content [10]. Intelligent Q&A systems cater to the increasingly strong curiosity and diverse demands of modern tourists. By analyzing high-frequency questions, the layout within the venue will be improved to further optimize the visiting environment and enhance the comfort and sense of participation of tourists.

3.3.2 Brand Building and Image Enhancement

The development of tourism brands represents a shift tailored to the spiritual demands of modern tourists, where cultural landscapes and traditional heritage are increasingly emphasized and promoted. This initiative relies on core characteristics to build a cultural system, enhancing the added value and reputation of local products and tourism-related information. By gaining tourist appreciation and recognition, it boosts regional visibility and significantly contributes to local economic development [11]. For example, the "Thirteen Dynasties Ancient Capital Culture Festival" in Xi'an effectively promotes the culture of the ancient capital through digital means. Online campaigns were conducted via platforms like Bilibili, and AR/VR technologies were utilized to create immersive experiences. While stimulating economic growth, this approach also expanded the scope of cultural dissemination and heritage preservation [3]. Furthermore, the application of digital technologies directly targets public interests and preferences, providing decision-makers with innovative ideas and data support. For instance, the emerging cultural and creative products in the market today represent a perfect blend of traditional culture and popular IPs. This not only benefits the marketing and promotion of local cultural tourism but also offers tourists immersive cultural experiences, deepening their travel impressions while effectively fostering widespread cultural dissemination and emotional resonance.

3.3.3 Smart Destination Construction

Smart construction is a collaborative effort between the government and scenic areas, where data sharing and resource reallocation create efficient benefits for multiple stakeholders. The government acts as both a guide and a regulator. Their responsibilities lie in formulating rules, promoting cooperation, investing funds, facilitating industrial innovation, optimizing the marketing environment, and driving the development of the entire city. For scenic areas and enterprises, this brings dual consumption dividends from increased tourist flow and innovative products. On the basis of a wonderful travel experience, consumers can also have a deeper perception and integration into the local cultural atmosphere. In recent years, the smart tourism platform vigorously promoted by Shandong Province has achieved remarkable success. Services such as one-stop tourism and automated management cover the entire province, improving resource utilization while attracting more tourists. The continuous optimization of its mobile services, always centered on tourist experience and promotional effectiveness, has further amplified the influence of smart tourism [12]. See in Fig. 3.

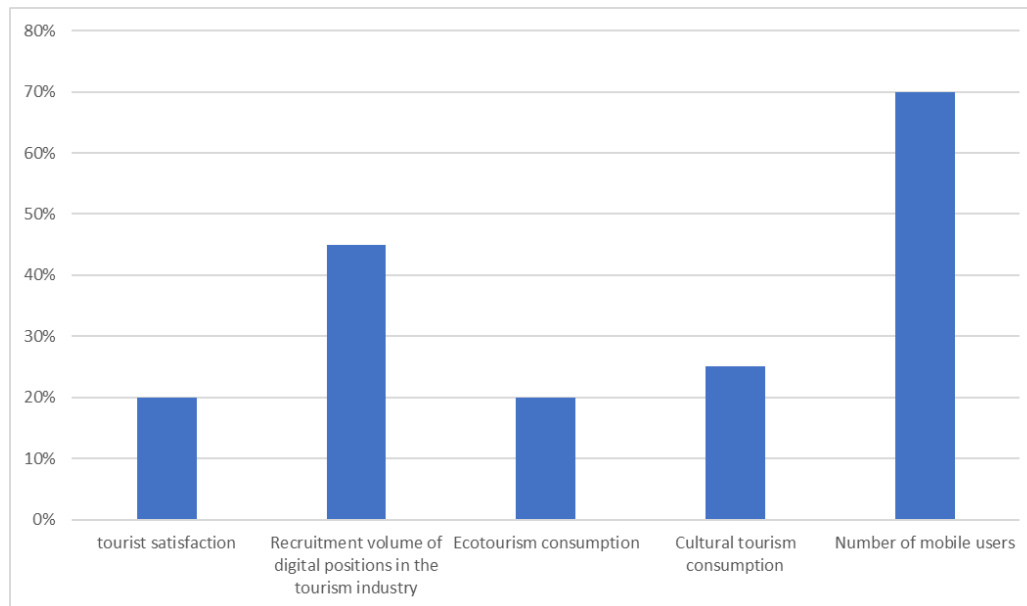


Fig. 3 Digitalization Achievements (Growth Volume) of Shandong Province in 2022

4. Risk Challenges and Countermeasures

Although the digital transformation of the tourism industry boasts broad prospects and significant benefits, this process is not smooth sailing. It's bound to face risks and challenges from multiple aspects such as technology, differentiation, communication, and talent. Managers must deeply understand these challenges and formulate corresponding strategies to survive and thrive in the torrent of digitalization.

4.1. Risks

Public concern regarding data security is particularly pronounced. Surveys indicate that over 75% of users express apprehension about enterprises holding their personal data [13]. In the event of a data breach, significant financial losses could be incurred by both individuals and businesses, undermining the hard-earned trust in big data among the public. Additionally, personalized recommendations carry potential ethical and fairness issues. Merchants can earn additional profits by assigning unmatched prices to products based on customers' historical data, preferences, and psychological price ranges. Finally, the reliability of big data remains highly contested. As a highly dynamic industry, tourism analyses based solely on historical data may fail to keep pace with real-time changes and emerging trends [14]. More alarmingly, if the tourism industry becomes overly reliant on digital technologies, any errors in core data could lead to operational paralysis, resulting in severe social incidents and substantial financial losses.

The "digital divide" is particularly evident among tourism enterprises. Large cultural-tourism conglomerates and renowned scenic spots, leveraging robust financial resources and advanced technological capabilities, continuously drive digital transformation and intelligent upgrades, steadily enhancing their market competitiveness and brand influence. In contrast, numerous small and medium-sized tourism enterprises, constrained by limited resources and technological weaknesses, find it difficult to keep up with the pace of technological changes, which leads to their gradual marginalization in market competition and the risk of being swallowed up or eliminated. [14]. the development of the digital divide among regions also shows differentiation. According to the survey, the imbalance of regional economy has been negatively affected to a certain extent by the imbalance of tourism development. Whether measured by tourism revenue, regional visibility, digital infrastructure, or talent pool, the eastern region significantly outperforms the western region[15].

4.2. Challenges

When promoting digitalization, scenic areas commonly face severe issues of "data silos" and communication challenges in cross-departmental and cross-system collaboration. Often, the information systems of various departments or enterprises are independent and the data standards are inconsistent. The data storage and management methods at each link are distorted, and there is a lack of a standardized data sharing mechanism [16], which restricts the overall operational efficiency of the scenic area and the in-depth analysis of user behavior by big data. Simultaneously, advancing system integration and data fusion requires addressing both technical and talent-related issues. These two core drivers directly determine the effectiveness and sustainability of the digitalization process. In terms of talent, the industry requires interdisciplinary professionals who are not only proficient in technologies such as data analysis, software development and artificial intelligence but also possess a deep understanding of tourism business logic. However, small and medium-sized enterprises lacking both technical expertise and talent face the practical dilemma of being unable to utilize systems even after investing heavily in their implementation, exacerbating the existing divide [14]. In terms of investment, digital transformation requires sustained and substantial funding to keep pace with rapidly evolving technologies. Without this, it becomes difficult to maintain competitiveness and innovation speed in a highly dynamic market. From basic hardware and software infrastructure to technology development and talent cultivation, and further to ongoing operational, promotional, and updating efforts, each step demands significant financial resources.

4.3. Countermeasures and Suggestions

From the government perspective, efforts should first be made to curb the expansion of leading enterprises through legal means, establish data standards, provide financial support and create a favorable operating environment for small and medium-sized enterprises to break the constraints of data silos [17]. Secondly, it is essential to integrate advantageous resources across different regions and industries, develop regional brands through differentiated positioning and promote sustainable regional development by expanding the tourism industry chain [15]. Simultaneously, the government should encourage localities to cultivate digital talents to mitigate the impact of the "digital divide"[17].

Enterprises and scenic areas should proactively establish and improve internal supervision systems, integrating moral risk prevention and control throughout the entire process of digital transformation [17]. By offering training courses, organizing technical exchanges and hosting expert lectures, they can enhance their teams' digital literacy and innovation capabilities while actively promoting the integration of traditional culture and new-era technologies. Externally, enterprises should promote data transparency, establish shared databases with upstream and downstream industrial chains and collaboratively develop personalized products and services to enhance overall competitiveness.

For tourists, it is essential to embrace the digital tourism ecosystem with an open mindset, actively provide feedback on their genuine experiences and help enterprises continuously optimize their offerings. Simultaneously, users should strengthen their awareness of data security and privacy protection, cautiously authorize the use of personal data and build robust security defenses while enjoying digital conveniences.

5. Conclusion

The digital transformation of the tourism industry achieves economic benefits through three core pathways: revenue increase, cost reduction, and quality improvement. The revenue increase path relies on methods such as precision marketing, dynamic pricing, and experiential value-added to significantly enhance per-customer spending and revisit rates; The cost reduction path utilizes process automation, intelligent management and data-driven decision-making to effectively lower operational costs and improve resource utilization efficiency; The quality improvement path focuses on experience optimization, brand upgrading, and smart destination construction to enhance tourist satisfaction and industrial competitiveness. Different transformation models exhibit distinct

differences in investment scale, applicable entities, and risk-return profiles, providing diverse options for various tourism stakeholders. Furthermore, this study constructs an analytical framework centered on "value sources and target dimensions" systematically categorizing the economic benefit generation mechanism into four key aspects: data-driven decision-making, resource optimization, network restructuring, and the dual enhancement of experience and efficiency. This deepens the application of digital transformation theory in the tourism sector and provides theoretical support for subsequent research. In practical implementation, enterprises should select appropriate digital transformation paths based on their scale and resource conditions, prioritize data security and ethical risk prevention, strengthen internal-external collaboration and talent development. The government needs to promote regional collaboration and enhance the digital capabilities of small and medium-sized enterprises through policy guidance, financial support and standard setting, alleviate the "digital divide" and drive the healthy and sustainable development of the tourism industry.

The case coverage of this study is limited, primarily focusing on developed eastern regions and large scenic areas, with relatively few cases from central and western regions or small and medium-sized enterprises. Data collection mainly relies on publicly available materials and corporate disclosures, lacking first-hand research data, which may affect the universality and depth of the conclusions. Future research could further explore the impact mechanisms of digital transformation on the socio-ecological sustainability of tourism, investigate business model innovations driven by emerging technologies such as artificial intelligence and the metaverse. Strengthen case studies and empirical analyses of digital transformation pathways for small and medium-sized enterprises and underdeveloped regions. This would enrich the theoretical framework and enhance its practical guidance value.

References

- [1] Liu Xinyang, Zhang Chunping. Post-Pandemic Era China Tourism Industry Development Path and Future Prospects. *Economist*, 2022, (08): 115-117.
- [2] Li Huiwei. Application of Big Data Technology in the Tourism Industry Information and Computer, 2025, 37(10): 25-27.
- [3] Zhu Guangbing, Lin Weina. Research on Digital Transformation and Sustainable Development of the Tourism Industry. *Cooperative Economy and Science & Technology*, 2025, (17): 14-17. DOI:10.13665/j.cnki.hzjjykj.2025.17.012.
- [4] Xia Shu, Chen Zhongke. Tourism Scenes in the Digital Era: Concept Integration and Value Creation. *Tourism Science*, 2022, 36(3): 1-16.
- [5] Zhang Shenhua. Analysis of Profit Models of Tourism E-commerce in China——Taking Ctrip as an Example. *Modern Business*, 2025, (02): 48-51. DOI:10.14097/j.cnki.5392/2025.02.034.
- [6] Jia Mingjie. Research on Optimization of Data-Driven Dynamic Pricing Strategy for Hotel Rooms. *International Public Relations*, 2025(3): 154-156.
- [7] Tong Tong, Lu Xiaoli. Research on Customer Satisfaction of H Hotel Based on Ctrip Travel Network Review Data. *Commerce Exhibition Economy*, 2025, (09): 84-87. DOI:10.19995/j.cnki.CN10-1617/F7.2025.09.084.
- [8] Huang Min. Solution for Data Cockpit Passenger Flow Statistics Visualization System. *Computer Enthusiast (Popular Edition) (Electronic Journal)*, 2022(1): 244-246. DOI:10.12277/j.issn.1673-7075.2022.01.082.
- [9] Wang Shaoran, Xu Chun. Application of GS1 in Digital Ticket Management. *Barcode & Information System*, 2022, (02): 6-7.
- [10] Zhang Yuanhua. Research on Museum Smart Service Model Based on Intelligent Guided Tour System. *Identification and Appreciation of Cultural Relics*, 2025, (10): 78-81. DOI: 10.20005/j.cnki.issn.1674-8697.2025.10.019.
- [11] Hu Yixin, Qu Zhenhui, Li Tiefeng. Methods for Building Tourism Brands and Economic Benefit Analysis in Heilongjiang Province. *Northern Economy and Trade*, 2020, (12): 155-157.

- [12] Wang Zhipeng. Research on the Measurement and Improvement Strategies of Digital Operation and Management Level of Tourism Industry in Shandong Province. Inner Mongolia University of Finance and Economics, 2025.
- [13] Ma Jun, Wang Bufang. Research on Artificial Intelligence (AI) Risk Management in Tourism Based on New Quality Productivity. China Collective Economy, 2025, (13): 185-188. DOI:10.20187/j.cnki.cn/11-3946/f.2025.13.031.
- [14] Du Juan, Zhang Han, Liu Yuejiao. Industry Digital Divide: Manifestations, Causes, and Countermeasures. Digital Transformation, 2025, 2(2): 22-30.
- [15] Wang Jiaying, Zhang Hui. Tourism Development, Spatial Spillover, and Regional Economic Imbalance. Tourism Science, 2021, 35(02): 73-94. DOI:10.16323/j.cnki.lykx.2021.02.005.
- [16] Zhang Suhui. AI Cultural Tourism Enters Deep Scene Mining Period, Data Silos Urgently Need Solving. Communication Information News, 2025-05-21(006). DOI:10.28808/n.cnki.ntxxx.2025.000169.
- [17] Yan Wei. Research on Security Risks of Digital Economy Empowering High-Quality Development of Tourism Industry——Based on Techno-Economic Paradigm Perspective. Guangxi Social Sciences, 2024, (01): 21-29.