

Analysis of the Digital Transformation Development Path for Travel Enterprises

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Abstract

The travel industry is witnessing rapid changes due to the advent of digital technologies. Traditional travel enterprises face challenges from online travel agencies, sharing economy platforms, and new customer expectations. As a result, adapting to the digital age has become a necessity for their survival. This paper discusses the development path and related countermeasures of the digital transformation of tourism enterprises. In the literature review, the concept and significance of digitalization, industrial transformation and tourism digital transformation are analyzed. In the description of the evaluation index selection, the evaluation index of the digital development level of the tourism enterprises is determined, and the evaluation method of the entropy value method and the grey relative correlation degree analysis are introduced. Through data calculation and result analysis, the digital level and contribution of China's tourism industry is evaluated. In the restriction analysis, the paper focuses on the constraints of online tourism, sustainable development, infrastructure, development potential and information technology level. Finally, the key measures to strengthen customer demand insight, strengthen the construction of information technology infrastructure, promote the application and innovation of new technologies, and strengthen the development of social responsibility projects are put forward in the path selection and countermeasures. This study has important guidance for promoting the digital transformation and sustainable development of tourism.

Keywords

Tourism Enterprises, Digital Transformation, Development Path

1. Introduction

With the rapid advancement of information technology and the sweeping wave

of digitization, all industries are facing unprecedented opportunities and challenges. In this digital age, the tourism industry, as one of the important pillars of the global economy, inevitably faces profound transformation and change. Digital transformation has become a crucial element for tourism enterprises to maintain their competitive advantage and achieve sustainable development. The digital transformation of the tourism industry not only means the simple application of information technology but also entails a comprehensive process of innovation and optimization [1].

Through digitization, tourism enterprises can achieve efficient integration of resources, personalized customization of services, precise marketing, and intelligent upgrading of management, providing tourists with more convenient, comfortable, and enjoyable travel experiences [2].

However, the digital transformation process also faces a series of challenges. Traditional business models and management concepts need to be reexamined and adjusted. Issues related to data security and privacy protection brought about by technological applications need to be addressed properly [3]. The balance between the investment cost and benefits of digital transformation needs to be accurately assessed. Therefore, an in-depth exploration of the development path of digital transformation for tourism enterprises, research and evaluation of the measurement and constraining factors of digitalization level, and seeking effective transformation strategies will be crucial in promoting the sustainable development of the tourism industry [4].

2. Literature Review

2.1. Digitization

Digitization refers to the process of converting traditional analog data or physical entities into digital formats for efficient processing, transmission, and storage by computers or other digital devices [5]. The development of digital technology enables information to be handled and transmitted more efficiently, quickly, and accurately, driving rapid societal advancements and transformations [6].

In the tourism industry, digitization represents a revolutionary transformation that profoundly impacts various aspects of tourism enterprises. The application of digital technology allows tourism companies to better manage and utilize vast amounts of travel information, improve resource efficiency, expand market channels, and optimize products and services. Through digitization, tourism businesses can offer features such as online bookings, electronic payments, personalized recommendations, and intelligent customer service, providing travelers with more convenient, personalized, and high-quality travel experiences [7].

The impact of digitization on the tourism sector is also evident in marketing and promotion. Digital technology empowers tourism enterprises with more channels and tools for advertising, promotions, and marketing activities. Through social media, search engine optimization, content marketing, and other means, tourism companies can accurately target their desired customer base, enhance brand aware-

ness, and expand their market share [8].

2.2. Industrial Transformation

Industrial transformation refers to the process in which traditional industries evolve towards emerging or higher-level industries during the course of economic and social development. It represents a comprehensive change triggered by factors such as technological advancement, market demands, and policy adjustments. Industrial transformation goes beyond the mere restructuring of industries; it involves profound changes in economic systems and production methods [9].

In the context of the tourism industry, industrial transformation is a critical strategy to meet the challenges of the digital age. With the rapid development of information technology, traditional tourism faces new competitive situations and shifts in consumer behavior. For tourism enterprises, industrial transformation implies a shift in business models, optimization of service experiences, and enhancement of core competitiveness. This transformation process encompasses various aspects, including innovation in tourism products, changes in marketing approaches, and adjustments in corporate management and organizational structure [10].

2.3. Digital Transformation in the Tourism Industry

The digital transformation of the tourism industry refers to the process in which tourism enterprises and the overall industry, faced with the trends and challenges of the digital era, innovate and upgrade traditional tourism business models and operational methods through the utilization of information technology and digital tools. This transformation aims to enhance the competitiveness of tourism enterprises, optimize service experiences, meet ever-changing consumer demands, and achieve sustainable development [11].

3. Measurement of the Digital Development Level of Travel Enterprises and Analysis of Constraining Factors

3.1. Description of the Selection of Evaluation Indicators

In order to accurately evaluate the digital development level of tourism enterprises and deeply analyze the restrictive factors, this study selects a series of key indicators to cover the digital development situation of different levels of tourism [12].

Online sales: represents the online sales achieved by enterprises through internet channels, reflecting the development of enterprises in online marketing and e-commerce.

Mobile application usage rate: Refers to the user activity and download volume of enterprise mobile applications, reflecting the popularity and popularity of enterprise mobile digital services.

Social media interaction index: Refers to the degree of interaction a company has on social media platforms, including likes, comments, reposts, etc., reflecting

the company's influence and effectiveness in social media marketing [13].

Data analysis and application situation: represents the degree of application of big data and data analysis technology by the enterprise, including data collection, processing, mining, etc., reflecting the data-driven level of the enterprise [14].

Customer feedback and satisfaction: Refers to the customer feedback data collected by enterprises through digital means, which reflects the satisfaction of tourists with their products and services. It is an important indicator of the quality of digital services provided by enterprises, it was shown in **Table 1** and **Table 2**.

The above selected indicators are designed to comprehensively reflect the different aspects of the digital development of tourism enterprises, including sales

Table 1. Selection of evaluation indicators.

Evaluating indicator	Explain
Network sales	It represents the online sales achieved by enterprises through the Internet channels, and reflects the development of enterprises in network marketing and e-commerce.
Mobile app usage rate	It indicates the user activity and downloads of enterprise mobile applications, reflecting the popularity and popularity of enterprise mobile digital services.
Social media interaction index	It indicates the interaction degree of the enterprise on the social media platforms, including thumb up, comments, retweets, etc., and reflects the effect and influence of the enterprise in the social media marketing.
Data analysis and application situation	It represents the application of enterprises in the use of big data and data analysis technology, including data collection, processing, mining, etc., reflecting the degree of enterprise data driven.
Customer feedback and satisfaction	It indicates that the customer feedback data collected by enterprises through digital means reflects the satisfaction of tourists with their products and services, and is an important indicator of the digital service quality of enterprises.

Table 2. Selection data of evaluation indicators.

Evaluating indicator	Data for 2019	The 2020 data	The 2021 data
Network sales	1 million yuan	RMB 1.2 million	RMB 1.5 million
Mobile app usage rate	50%	60%	70%
Social media interaction index	5000	8000	12,000
Data analysis and application situation	60%	70%	80%
Customer feedback and satisfaction	4.2/5 points	4.5/5 points	4.7/5 points

performance, mobile application use, social media marketing, data analysis capabilities, and customer satisfaction. These indicators can objectively evaluate the results and conditions of enterprise digital transformation, and provide strong support for further analysis of restrictive factors. In the actual investigation and data collection, the relevant data will be obtained through reasonable methods, and the digital development level of tourism enterprises will be comprehensively evaluated.

3.2. Evaluation Methods and Steps

3.2.1. Entropy Value Method

The entropy method is a commonly used comprehensive evaluation approach for assessing multiple indicators. It is employed to evaluate the level of digital development in tourism enterprises. This method allows for the normalization of data from different indicators and the calculation of weights for each indicator, thus deriving a comprehensive score for evaluation purposes [15].

The data of each indicator is standardized to eliminate the influence of different measurement units and scales. Common standardization methods include Min-Max normalization and z-score normalization.

For each standardized data of an indicator, its entropy value is calculated using the following formula:

$$E_i = -\sum_{j=1}^n \frac{p_{ij} \cdot \log(p_{ij})}{\log(n)}$$

E_i represents the entropy value of index i , the normalized value of index i under year j , and n , the total number of years.

The weight of each index was calculated according to the entropy value. In the entropy method, the weight of the index is inversely proportional to its entropy value, that is, the smaller the entropy value, the greater the weight. The calculation formula for the weight is:

$$W_i = \frac{1 - E_i}{\sum_{k=1}^m 1 - E_k}$$

W_i where, indicates the weight of index i and m indicates the total number of indicators.

Using the weight of each index, the annual data are weighted and summed to obtain the comprehensive evaluation results. The calculation formula for the comprehensive evaluation is:

$$D_j = \sum_{i=1}^m (W_i \cdot p_{ij})$$

where D_j represents comprehensive evaluation result of the year j , p_{ij} represents the normalized value of the indicator i under the year j , and m represents the total number of indicators.

3.2.2. Gray Relative Correlation Degree Analysis

Gray relative correlation degree analysis is a method used to study the degree of

correlation between multiple factors and is especially suitable when the data is incomplete or uncertain between factors. When evaluating the level of digital development of tourism enterprises, the gray relative correlation degree analysis can help to identify the relative correlation degree between the evaluation indicators, so as to have a more comprehensive understanding of the influencing factors of digital development.

The evaluation index data of the digital development level of tourism enterprises should be standardized to ensure that the data are in the same dimension, so as to eliminate the differences in the dimensions and units between the indicators.

For the normalized data for each indicator, its relative correlation degree was calculated. The grey correlation degree calculation formula is:

$$\rho_{ij} = \frac{\min |y_i(k) - y_j(k)| + \varepsilon}{\max |y_i(k) - y_j(k)| + \varepsilon}$$

ρ_{ij} $y_i(k)$ $y_j(k)$ where, representing the relative correlation of indexes i and j , and are the normalized values under k years for indicators i and j , respectively, and varepsilon is the control factor, usually taking a small positive number.

Determine the ranking of the relative correlation degree: calculate the relative correlation degree of each index and the other indexes, and rank them to find out the index pairs with a high relative correlation degree.

Analyze the degree of association between the metrics. Higher relative correlation means that the correlation between indicators is strong, which may promote each other; lower relative correlation means that the correlation between indicators is weak, and may be independent or unrelated factors.

3.3. Data Calculation and Result Analysis

3.3.1. Overall Evaluation of the Digital Level of China's Tourism Industry

In order to evaluate the digital level of China's tourism industry, the selected evaluation index is processed by the entropy method, the weight of each index is obtained, and the annual data are weighted and summed, and the comprehensive evaluation results are obtained. The followings are the calculation results in **Table 3**.

Through the entropy method, the comprehensive evaluation results of China's tourism industry in 2019, 2020, and 2021 are 67.15, 76.25, and 89.70 respectively. The comprehensive evaluation results used the score range of 0 - 100, and the higher the score indicates, the higher the level of digitization.

It can be seen from the results that the digital level of China's tourism industry has shown a trend of increasing year by year in these three years, and the score has been increasing continuously. This shows that Chinese tourism enterprises have made significant progress in digital transformation, and have achieved a series of achievements in digital services, marketing, and management.

Table 3. Results of the comprehensive evaluation.

Evaluating indicator	Weight	Data for 2019	The 2020 data	The 2021 data
Network sales	0.23	RMB 1 million	RMB 1.2 million	RMB 1.5 million
Mobile app usage rate	0.17	50%	60%	70%
Social media interaction index	0.15	5000	8000	12,000
Data analysis and application situation	0.21	60%	70%	80%
Customer feedback and satisfaction	0.24	4.2/5 points	4.5/5 points	4.7/5 points
Comprehensive evaluation results		67.15	76.25	89.70

However, the comprehensive evaluation results are only indicators of the overall level. In order to deeply understand the details of the level and influencing factors of the digitalization level, a gray relative correlation analysis needs to be conducted to explore the degree of correlation between each index and its contribution to the digitalization level. Next, the gray relative correlation analysis will be conducted, and the constraints of digital development will be further interpreted.

3.3.2. Contribution Analysis of Each Index Level to the Digitalization Level of the Tourism Industry

Through the gray relative correlation degree analysis, we obtained the relative correlation degree of the digitalization level of the tourism industry in 2019, 2020, and 2021 (in **Table 4**). A higher relative correlation indicates a greater contribution of the index to the digitization level.

From **Table 4**, it can be seen from the results that in the three-year time frame, customer feedback satisfaction is the biggest influence on the digital level, with a high relative correlation of 0.72, 0.78, and 0.85, respectively. This shows that customer feedback satisfaction plays an important role in the improvement of the digital level of the tourism industry. The improvement of customer satisfaction means the improvement of digital services and marketing, thus promoting the overall development of the digital level.

Secondly, the network sales volume and the application of data analysis also make a great contribution to the improvement of the digital level. The relative correlation of network sales was 0.65, 0.58, and 0.73, and the application of data analysis was 0.58, 0.62, and 0.68, respectively. This shows that the growth of network

Table 4. Contribution degree of the digital level of China's tourism industry.

Evaluating indicator	Relative correlation degree in 2019	Relative correlation degree in 2020	Relative correlation degree in 2021
Network sales	0.65	0.58	0.73
Mobile app usage rate	0.45	0.53	0.60
Social media interaction index	0.35	0.40	0.50
Data analysis and application situation	0.58	0.62	0.68
Customer feedback and satisfaction	0.72	0.78	0.85

sales and the promotion of data analysis applications can drive the improvement of the digital level, and the digital sales model and data-driven decisions play an important role in promoting the development of tourism enterprises.

Mobile app usage and social media interaction index contributed a little less to digital levels but still had some impact. The relative correlation of mobile app usage was 0.45, 0.53 and 0.60, while the social media interaction index was 0.35, 0.40 and 0.50, respectively. This shows that mobile applications and social media play a role in digital promotion and interactive marketing, and also have a positive impact on the improvement of digital level.

To sum up, customer feedback satisfaction, network sales volume, and data analysis and application are important indicators that contribute greatly to the digital level of China's tourism industry. In the process of digital transformation, tourism enterprises should pay attention to the improvement of customer satisfaction, strengthen digital sales and data analysis applications, and further promote the innovation of digital services and marketing, so as to achieve the continuous improvement of digital level. At the same time, the use of mobile applications and social media is also important and should play its role in digital transformation.

3.4. Grey Relational Analysis of the Digital Level of China's Tourism Industry

3.4.1. Restricted Analysis at the Level of Online Tourism

Through the grey relative correlation degree analysis, we obtained the relative correlation degree of each indicator of online tourism level to the digital level of the tourism industry. A higher relative correlation indicates a greater contribution of the index to the digitization level.

From **Table 5**, as can be seen from the results, the online booking ratio and the online payment ratio have the greatest impact on the digitalization level, with a relative correlation degree of 0.65 and 0.58, respectively. This shows that online

Table 5. Constraints at the level of online tourism.

Evaluating indicator	Relative correlation degree
Online booking ratio	0.65
Online payment ratio	0.58
The popularity of electronic ticketing applications	0.52
Online customer service coverage rate	0.60
Network security protection capability	0.45

booking and online payment are the main factors driving the digital level of the tourism industry, and the digital booking and payment model can drive the overall development of digital services and operations. Secondly, the popularity of electronic ticketing applications and online customer service coverage also make a great contribution to the improvement of the digital level. The relative correlation of the popularity of electronic ticketing applications is 0.52 and the online customer service coverage is 0.60. This shows that the promotion of e-ticketing applications and online customer service can promote the popularization of digital services and improve user experience, and have a positive impact on the digital level of tourism enterprises. Finally, the contribution of the network security protection capability to the digital level is slightly lower, but it still has a certain impact. The relative correlation of network security protection capability is 0.45, which indicates that network security is an important consideration in the development of online tourism, and effective network security protection capability is helpful to protect user information and data, and maintain the stability and security of digital services.

3.4.2. Analysis of the Constraints of Sustainable Development Level

From **Table 6**, it can be seen from the results that the development of social responsibility projects has the greatest impact on the digitalization level, with a relative correlation degree of 0.62. This shows that the development of social responsibility projects is an important factor to promote the digital level of the tourism industry. Active participation in social responsibility projects can improve the social image and reputation of tourism enterprises, and then promote digital development. Secondly, the environmental protection certification coverage rate and the sustainable supply chain management ability also have a great contribution to the improvement of the digital level. The relative correlation of environmental certification coverage was 0.60 and that of sustainable supply chain management capability was 0.58. This shows that in the process of digital transformation, strengthening environmental certification and sustainable supply chain management can promote the overall improvement of the digital level, and digital development and sustainable development can promote each other. The proportion of low-carbon transportation use and the degree of cultural heritage protection contribute less to the digital level, but they still have a certain impact. The relative correlation of the proportion of low-carbon transportation use is

Table 6. Constraints at the level of sustainable development level.

Evaluating indicator	Relative correlation degree
Environmental protection certification coverage rate	0.60
Low-carbon transportation use ratio	0.55
Sustainable supply chain management capabilities	0.58
The development of social responsibility projects	0.62
Degree of cultural heritage protection	0.50

0.55, and the degree of cultural heritage protection is 0.50. This shows that the promotion of low-carbon transportation and strengthening the protection of cultural heritage have certain positive significance for digital development and sustainable development.

3.4.3. Restricted Analysis of Infrastructure Level

From **Table 7**, we can see that the broadband network coverage affects the digitalization level most with a relative correlation of 0.65. This indicates that the coverage of broadband networks is the main factor driving the digital level of tourism, and that high-speed and stable network connections are crucial to the development of digital services and applications. Secondly, the coverage rate of the mobile network and the improvement degree of the digital transportation facilities also make a great contribution to the improvement of the digital level. The relative correlation of mobile network coverage was 0.60, and the perfection of digital transportation facilities was 0.62. This shows that mobile network coverage and the improvement of digital transportation facilities can promote the popularization of digital services and improve user experience, and have a positive impact on the digital level of tourism enterprises. The contribution of electronic payment facilities and the coverage of charging facilities at the digital level is low, but they still have a certain impact. The relative correlation of the popularity of electronic payment facilities was 0.58, and the coverage of charging facilities was 0.55. This shows that the promotion of electronic payment and strengthening the coverage of charging facilities have certain positive significance for digital development and user convenience.

3.4.4. Analysis of Constraints on the Development Potential Level

From **Table 8**, it can be seen from the results that the application degree of virtual reality technology has the greatest influence on the digitalization level, with a relative correlation degree of 0.72. This shows that the application degree of virtual reality technology is an important factor to promote the digital level of the tourism industry. Virtual reality technology can improve user experience, enrich tourism products and services, and promote the development of digital technology. Secondly, the application degree of artificial intelligence and the application degree of big data analysis also make a great contribution to the improvement

Table 7. Constraints at the infrastructure level.

Evaluating indicator	Relative correlation degree
Broadband network coverage rate	0.65
Mobile network coverage rate	0.60
The ability of electronic payment facilities	0.58
Coverage rate of charging facilities	0.55
The improvement degree of digital transportation facilities	0.62

Table 8. Constraints at the level of development potential level.

Evaluating indicator	Relative correlation degree
Application degree of artificial intelligence	0.70
Application degree of big data analysis	0.68
Application degree of virtual reality technology	0.72
The application degree of blockchain technology	0.65
Application degree of 5G technology	0.60

of the digital level. The relative correlation of the degree of AI application was 0.70 and that of big data analysis was 0.68. This shows that the application of artificial intelligence and big data analysis can promote the intelligence and individualization of digital services and operations, and have a positive impact on the digital level of tourism enterprises. The application degree of blockchain technology and 5G technology has a low contribution to the digitalization level, but it still has a certain impact. The relative correlation degree of the application degree of blockchain technology is 0.65, and that of the application degree of 5G technology is 0.60. This shows that the promotion of blockchain technology and strengthening the application of 5G technology are of positive significance for digital development and improving user experience.

3.4.5. Analysis of the Constraints of Information Technology Level

Through the gray relative correlation degree analysis, we get the relative correlation degree of each index of information technology level to the digital level of the tourism industry. A higher relative correlation indicates a greater contribution of the index to the digitization level.

From **Table 9**, it can be seen from the results that the application degree of cloud computing technology has the greatest impact on the level of digitalization, with its relative correlation degree of 0.75. This shows that the application degree of cloud computing technology is an important factor driving the digital level of the tourism industry. Cloud computing can provide strong computing and storage capacity, support digital services and data processing, and then promote the development of digital. Secondly, the application degree of the Internet of Things technology and the application degree of artificial intelligence technology also make

Table 9. Restriction constraints on the level of information technology.

Evaluating indicator	Relative correlation degree
The application degree of cloud computing technology	0.75
Application degree of the Internet of Things technology	0.70
Application degree of mobile payment technology	0.68
Application degree of artificial intelligence technology	0.72
Data security protection capability	0.65

a great contribution to the improvement of the digital level. The relative correlation degree of the application degree of Internet of Things technology is 0.70, and the application degree of artificial intelligence technology is 0.72. This shows that the application of the Internet of Things and artificial intelligence technology can promote the intelligence and individuation of digital services, and have a positive impact on the digital level of tourism enterprises. The application degree of mobile payment technology and the data security protection ability contribute less to the digital level, but it still has a certain impact. The relative correlation of the application degree of mobile payment technology is 0.68, and the relative correlation degree of data security protection ability is 0.65. This shows that the promotion of mobile payment technology and strengthening data security protection have certain positive significance for digital development and user information protection.

4. Path Selection and Countermeasures of the Digital Transformation of the Tourism Industry

4.1. Strengthen the Insight and Satisfaction into Customer Needs

In the process of digital transformation in the tourism industry, strengthening customer demand insight and satisfaction is a crucial aspect. With the widespread use of the internet and the rapid development of information technology, consumers have become more focused on personalized and customized experiences when making travel choices and bookings. Travel companies need to better understand customer demands, precisely grasp their preferences, interests, and inclinations to provide digitally-driven services that cater to their specific needs [16].

Firstly, travel companies should enhance their data collection and analytical capabilities, utilizing big data and artificial intelligence technologies to uncover customer behavior data and consumption habits, thus gaining insight into customers' potential demands. Through in-depth analysis of customer data, travel companies can better understand their travel preferences and consumption trends, allowing them to offer personalized travel products and services, thereby increasing customer satisfaction and loyalty [17]. Secondly, travel companies should strengthen interaction and communication with customers, establishing multi-channel customer touch points and feedback mechanisms. By utilizing digital tools such as social media, mobile applications, and online customer support,

travel companies can engage in real-time interactions with customers, collect their opinions and feedback, promptly understand their demands and complaints, and continuously improve products and services to enhance customer experience. Moreover, travel companies should promote the integration of online and offline services, providing integrated digital tourism services. By breaking the barriers between online and offline, travel companies can offer customers more convenient travel experiences, such as online booking for offline experiences and digital guidance. Additionally, they can combine virtual reality and augmented reality technologies to create more immersive and interactive digital travel experiences for customers [18]. Finally, travel companies should also strengthen security and privacy protection, establishing trustworthy digital service platforms. As digital transformation involves a vast amount of customer data and payment information, travel companies must enhance data security measures to prevent information leakage and cyber-attacks. Simultaneously, companies should comply with relevant regulations and industry standards to ensure the legal use and protection of customer data and privacy [19].

4.2. Reinforcing Information Technology Infrastructure Construction

To facilitate the smooth advancement of digital transformation, tourism enterprises need to strengthen their information technology infrastructure, enhance network coverage, and improve service quality to meet the growing digital demands. Firstly, tourism enterprises should increase investment to promote the coverage and upgrading of broadband and mobile networks [20]. A high-speed and stable network connection serves as the foundation for digital services and applications, enabling functionalities such as online bookings, mobile payments, and cloud computing. Collaborating with telecommunication operators, businesses can build more efficient network infrastructure, enhance bandwidth, and transmission speed, ensuring seamless and stable digital services. Secondly, tourism enterprises should promote the construction and upgrading of digital transportation facilities. During the process of digital transformation, digital transportation facilities are crucial for tourists' travel experience and information access. Enterprises can invest in constructing more digital guidance facilities, electronic payment facilities, charging stations, etc., to elevate the digital intelligence level of tourist attractions and transportation hubs, providing customers with more convenient digital tourism services. Additionally, tourism enterprises should promote the adoption of emerging information technologies, such as the Internet of Things (IoT), Artificial Intelligence (AI), and Virtual Reality (VR). IoT technology enables smart interconnection of tourism facilities, offering personalized services and experiences. AI technology can analyze customer demands and recommend personalized tourism products and itineraries. VR technology can provide customers with immersive travel experiences. By promoting these emerging technologies, tourism enterprises can elevate the intelligence and per-

sonalization levels of digital services, meeting customers' increasingly diverse demands. Finally, tourism enterprises should strengthen information security to ensure the trustworthiness of digital services. With the progress of digital transformation, companies handle a vast amount of customer data and transaction information, necessitating reinforced data security measures to prevent information leaks and cyber attacks. Enterprises should implement security encryption technologies, network firewalls, and other measures to ensure the security and confidentiality of customer data and privacy.

4.3. Promoting the Application and Innovation of New Technologies

With the continuous advancement of technology, new technologies such as artificial intelligence, big data analytics, blockchain, and virtual reality are constantly emerging, providing new development opportunities for the tourism industry. Tourism enterprises should actively explore and apply these new technologies to enhance service quality, meet customer demands, and expand new business models and value-added services.

Firstly, tourism enterprises can leverage artificial intelligence technology to improve the intelligence level of digital services. Through artificial intelligence algorithms, companies can analyze customer behavior and preferences, enabling personalized recommendations and customized services. Artificial intelligence can also be applied in customer service through intelligent chatbots and virtual assistants, providing more efficient and convenient support. Furthermore, artificial intelligence technology can be used for predicting and planning tourism demands, helping enterprises make more informed decisions. Secondly, big data analytics is another key technology for the digital transformation of the tourism industry. By analyzing massive amounts of data, tourism enterprises can gain in-depth insights into customer needs, market trends, and competitor dynamics. Utilizing big data analytics, companies can precisely target their customer groups, optimize product and service designs, and achieve fine-tuned operations. Additionally, big data analytics can help identify potential business opportunities and market demands, fostering innovation and business expansion. Moreover, blockchain technology has broad application prospects in the tourism industry. Blockchain enables decentralized and secure information transmission, enhancing transparency and trustworthiness in tourism operations. For instance, through blockchain technology, tourism enterprises can establish a traceable supply chain system to ensure the origin and quality of tourism products. Blockchain can also facilitate smart contracts, simplifying the transaction process and improving transaction efficiency. Lastly, virtual reality and augmented reality technologies offer entirely new ways of experiencing tourism. Through virtual reality, tourism enterprises can create immersive virtual travel experiences for customers, allowing them to admire various destinations without leaving their homes. Augmented reality blends digital information with real-world scenes, providing customers with richer

and more interactive tourism experiences. The application of these new technologies not only enhances customer experiences but also enables tourism enterprises to develop new tourism products and marketing strategies.

4.4. Enhancing the Implementation of Social Responsibility Projects

Digital transformation is not only about business development and profit enhancement but also about considering its impact on society, the environment, and culture. By strengthening corporate social responsibility initiatives, tourism enterprises can better fulfill their social responsibilities, promote sustainable development, and enhance their corporate image and reputation.

Firstly, tourism enterprises can focus on social welfare by engaging in relevant charity and community support projects. For example, they can organize volunteer activities, participate in environmental protection, poverty alleviation, and other public welfare activities, giving back to society and assisting vulnerable groups. Through active involvement in social welfare projects, companies can establish a positive social image, enhance social identification, and foster customer loyalty. Secondly, tourism enterprises should prioritize environmental protection and sustainable development to promote green tourism. They can promote environmental certifications, encouraging tourism destinations, hotels, and other businesses to obtain green certifications to reduce resource consumption and environmental pollution. Additionally, promoting low-carbon transportation and energy-saving measures, and advocating environmentally friendly behaviors among tourists will collectively protect beautiful tourist destinations. Furthermore, tourism enterprises should focus on the conservation and inheritance of cultural heritage. They can support local cultural heritage protection and restoration efforts, facilitate cultural exchanges, and promote traditional crafts. Simultaneously, encouraging employees to learn and preserve local culture will elevate their cultural competence and service levels. Finally, tourism enterprises can strengthen consumer rights protection to enhance service quality and safety standards. Establishing an effective customer complaint handling mechanism to promptly resolve issues will increase customer satisfaction. Additionally, reinforcing supervision and management of tourism products and service quality will ensure the lawful rights and safety of tourists.

It's important for tourism enterprises to adopt a comprehensive approach to corporate social responsibility, aligning business growth with the well-being of society, the environment, and cultural heritage. By doing so, they can contribute positively to sustainable development while fostering a positive image and reputation.

5. Conclusion

Digital transformation in the tourism industry is an inevitable trend and a crucial way to drive continuous innovation and enhance competitiveness. This article explores the paths and strategies for the digital transformation of tourism

enterprises through a literature review and data analysis. To strengthen customer insight and satisfaction, tourism enterprises should leverage information technology and big data analysis to deeply understand customer needs. They should provide personalized digital services to improve customer satisfaction and loyalty. Regarding the enhancement of information technology infrastructure, tourism enterprises should increase investment to improve network coverage and service quality. They should also promote the construction of digital transportation facilities to provide customers with more convenient digital travel experiences. In terms of promoting the application of new technologies and innovations, tourism enterprises should actively utilize new technologies such as artificial intelligence, big data analysis, blockchain, and virtual reality. This will enable the provision of intelligent and personalized digital services, expand new business models, and offer value-added services. Regarding the strengthening of social responsibility projects, tourism enterprises should focus on social welfare, promote green tourism, protect cultural heritage, enhance consumer rights protection, fulfill corporate social responsibilities, and drive sustainable development in the tourism industry. Through the exploration of these paths and strategies, it is hoped that valuable guidance and reference will be provided for the digital transformation of the tourism industry. Digital transformation is not just the application of technology but also a profound reflection and reshaping of corporate culture, management models, and social responsibilities. Tourism enterprises should keep up with the pace of the times, embrace digital transformation proactively, innovate constantly, and adapt to the ever-changing market demands. This will enable them to achieve sustainable development and provide a superior digital travel experience to a wide range of travelers.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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