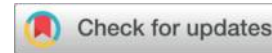




**Smart Tourism Technologies and Management Efficiency: A Tourism
Management Perspective**



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Abstract: Under the background of the digital economy, smart tourism technologies are gradually becoming a key driver of the travel industry's digital transition, and the mechanisms through which it affects tourism operational efficiency warrant further exploration. This paper examines Chinese listed tourism companies on the A-share market from 2010 to 2023, constructs a panel data model, and empirically examines the effect of wisdom tourism on tourism management efficiency, and tests the intermediary effect of information integration capabilities as well as the moderating effect of digital capabilities. The research results show that smart tourism technology can significantly improve tourism management efficiency; information integration capabilities serve as a partial mediating factor linking smart tourism tech and tourism management efficiency; and corporate digital capability can strengthen the promoting effect of smart tourism technology on management efficiency. The study indicates that smart tourism technology not only improves management efficiency by enhancing information processing and resource integration capabilities, but also exhibits more significant management effects in enterprises with stronger digital capabilities. This paper reveals the path of how smart tourism technology influences management efficiency from the perspective of tourism management, enriches related research on smart tourism, and provides references for the digital transformation of tourism enterprises and tourism management decision-making.

Key words: Smart tourism technology; Tourism management efficiency; Information integration capability; Digital capability

1 Introduction

As digital economy continues to develop with the help of digital, information and communication technology slowly start changing the digital transformation of traditional industry. During this period the tourism business has been growing through a different manner, there was this new growth consisting of digital things. In recent years, big data, artificial intelligences, data centers and so on are also widely used in the

fields of tourism service and travel management which promote the tourism industry towards more digital and smarter operation. According to relevant research, digital technologies such as collecting tourism-related data, sharing information among different stakeholders, conducting intelligent analyses of data, and sharing information among different stakeholders have the ability to improve the digital level of tourism industry so as to promote innovation in tourism management models. (Gretzel et al., 2021)^[1]. Under such circumstances, smart tourism has become a very important way for scenic spots to improve their management efficiency and competitiveness.

The role of digital platforms and data systems for tourism management is growing. Based on the research, digital technologies enable Tourism Authorities to access real-time tourist behavior data, market demands, which give decision-making data for the tourism industry (Xiang et al., 2022)^[2]. At the same time, digital platforms promote the exchange of information and resource integration, and can promote the coordinated development of tourism service systems and tourism management systems (Huang et al., 2023)^[3]. Thus, smart tourism technologies change both how tourists get info as well as give destinations technologies. Although the academic research of smart tourism is more now, but most of them focus on tourism experience, service innovation, and destination competitiveness. Take as an example, there are studies analyzing digital technologies impact on tourist satisfaction and experience from a behavior aspect (Neuhofer et al., 2021)^[4], others are exploring digital technologies impact on smart tourism ecosystem development from industry aspects (Gretzel et al., 2021)^[5]. However, the research on the influence of wisdom-based tourism on operational efficiency from a tourism management perspective is still quite little. In particular, with regard to tourism management, there is still no theoretical analysis and practical research on the application of digital technology to improve management efficiency through information integration and data analysis. At the same time, with the continuous progress of digitization, integration of information is also one of the factors that influence the organizational management efficiency. Relevant studies indicate that digital technologies can improve organizational performance by integrating dispersed information resources and enhancing information utilization efficiency (Verhoef et al., 2021)^[6]. In the tourism industry, smart tourism technologies achieve data integration and sharing through digital platforms and information systems, which not only contributes to more scientific decision-making in tourism management but may also further improve management efficiency. Therefore, analyzing the effect of wise tourism on tourism operation efficiency from the perspective of information integration holds significant theoretical importance.

Based on the above background, the present study examines the mechanisms through which smart tourism technologies influence the efficiency of tourism management and further analyzes the role played by information integration capabilities in this process. By conducting an empirical study using data from Chinese tourism-related listed firms, this paper aims to reveal how smart tourism technology affects tourism management efficiency, and provides theoretical references and practical insights for the digital governance of tourism destinations. At the same time, this study helps enrich theoretical perspectives on wisdom-based tourism while providing new research evidence to support the digital transformation of the tourism sector.

2 Literature Review

2.1 Research on Smart Tourism Technology

The concept of smart tourism was first proposed by Gretzel (2015) ^[7], who believed that smart tourism is a tourism ecosystem driven by information technology. The swift advancement of information and communication systems has made digital-driven travel an increasingly vital model for driving the digital transformation within the industry. In recent years, it is widely recognized in academic circles that intelligent tourism is a novel development model in the tourism industry that leverages foundational data such as large data, the interconnection of objects, advanced artificial intellect, and data cloud computing, which integrates tourism information resources and service systems to achieve intelligent tourism services, management, and decision-making (Shasha et al., 2025)^[8]. Against the backdrop of the rise of smarter cities in the digital economy, smart tourism has not only changed the way tourists travel, but also promoted innovation in destination management models.

In recent years, scholars have mainly defined smart tourism from the perspectives of digitization and data-driven approaches. Koo (2025) ^[9] points out that the core of wisdom travel lies in data-driven approaches and the integration of digital technologies, and destination management systems through data-driven and digital technology integration, thereby improving the operational efficiency and value creation capabilities of the tourism industry. At times, some research suggests that the essence of smart tourism lies in the real-time sharing and intelligent analysis of tourism information through technological platforms, thereby providing tourists with more accurate and personalized tourism services (Chuang, 2023) ^[10]. Smart tourism is gradually seen as a multi-party collaborative tourism ecosystem. Bhuiyan et al. (2022) ^[11] note that the digital travel tourism ecology is jointly constituted by multiple stakeholders, including governments, tourism enterprises, technology platforms, and tourists, and achieves information interaction and value co creation through data sharing and technology platforms. In this ecosystem, digital platforms and information systems have become important infrastructure connecting different entities, thereby promoting the upgrading of the overall operation mode of tourist destinations. Big data technology can help tourism management agencies analyze tourist behavior and demand, thereby achieving tourist flow forecasting and optimizing the allocation of tourism resources (Wang, 2024) ^[12]. At the same time, mobile Internet and intelligent platform also provide new channels for tourism services, enabling tourism enterprises to realize information sharing and service innovation through digital platforms (Polukhina, 2025) ^[13]. In addition, smart tourism technologies are also being widely applied in the development of smart tourist attractions, integrated service platforms, and tourism information systems, thereby driving the industry's digital transformation

Overall, existing research has primarily focused on the role of digital tourism in enhancing visitor experiences, tourism services, as well as boosting destinations' competitiveness; however, studies examining how digital tourism technologies improve tourism management efficiency through information integration and data sharing remain limited. Thus, it has become crucial to delve deeper into the mechanisms through which smart tourism technology on management efficiency from the perspective of tourism management.

2.2 Research on Tourism Management Efficiency

And management efficiency is very importance organisaiton's capability score. This shows how much input go towards output. In the study of travel and tourism, management efficiency is often closely related to factors such as tourism resource allocation, tourism service operation, and destination management capabilities. As the tourism industry continues to expand, how to improve its operational efficiency through scientific management has gradually become a key focus of academic research.

The efficiency of tourism management is primarily reflected within the rational distribution and optimal usage of tourism assets. The development of digital technology enables tourism management agencies to more accurately grasp the demand of the tourism market through data analysis, thereby optimize tourism asset allocation and improve the industry's overall operational efficiency (Li et al., 2022) ^[14]. By analyzing tourism data, tourism managers can better coordinate the relationship between tourism resources and tourist demand, improve the holistic management standards of tourist destinations. The efficient management of tourism also reflected in the management ability during the operation of tourism services. In recent years, as digital technology continues to advance, an increasing number of studies are focusing on its application in tourism management. Barbu et al. (2024) ^[15] note that technologies such as digital platforms, digital trip planning tools, online travel service systems, and social media serve a critical roles in tourism enterprise management, operations, and marketing. Digital tools can improve the operational efficiency and management capabilities of tourism enterprises. Moreover, digital technology helps tourism businesses optimize management decisions through data analysis and information sharing, thereby improving business performance.

In addition, in terms of tourist management, the efficiency of tourism management is also reflected in the management of tourist flow and the maintenance of tourism order. With the continuous expansion of tourism scale, tourist destinations are facing problems such as excessive concentration of tourist flow and uneven utilization of resources. Through smart tourism technology and data analysis tools, tourism management agencies can achieve monitoring and dynamic regulation of tourist flow, thereby improving the management efficiency of tourist destinations (Kusumawardhani, 2024) ^[16].

Over past years, as digital transformation has progressed, some studies now explore the impact that emerging tech has on tourism management efficiency. Liu et al. (2024) ^[17] found through empirical research and data analysis that digital technologies can enhance travel system operational efficiency through information integration, thereby improving destination management performance. But true as well is that most of the studies tend to investigate the effects of forming digital technologies as the tourism industry from a large scope viewpoint and therefore, there's no investigation on how smart tourism technologies would affect the efficiency of the tourism management.

Given this, with smart tourism technologies advancing rapidly, exploring the intrinsic relationship between smart tourism technologies and the effectiveness of tourism management in great depth has immense value in adding to the theoretical framework of the field of tourism management.

2.3 Research Hypotheses

The general penetration of tech adds more pep to travel economy, as smart tourism tech evolves to become the driving force of management efficiency. To create data sharing platforms, information and communication networks with smart tourism technology in order to eliminate information barriers and make accurate information and data for decision-making by the government, thus making a leap in management standards. Based on the study of the existing research, it is proved by many studies that the role of digital technology in improving the efficiency of tourism management has been confirmed (Sigala, 2020) ^[18]. In light of this, this paper posits that there is a positive correlation between smart tourism technology and tourism management efficiency, and accordingly proposes the following hypothesis:

H1: Smart tourism technology has a significant positive impact on tourism management efficiency.

In addition, smart tourism technology can facilitate the aggregation and shared access to tourism information assets. Through digital platforms and information systems, tourism management agencies can more efficiently integrate tourism data resources, improve information utilization efficiency, and promote the improvement of tourism management efficiency. Previous studies have shown that digital technology can improve organizational management efficiency and promote optimization of tourism management systems through information integration (Barbu et al., 2024) ^[19]. Therefore, the ability to integrate information may play a significant role in bridging the gap between smart travel technology adoption and travel management efficiency. Based on this, this article proposes a second research hypothesis:

H2: Information integration capabilities serve as a bridge between smart tourism technology adoption and tourism management efficiency.

Finally, different tourism companies vary in their digital capabilities. When enterprises have strong digital capabilities, they are more likely to utilize smart tourism technology for information integration and data analysis, thereby further improving management efficiency. Research indicates that digital capabilities can enhance a company's effectiveness in applying technology and improve organizational performance.(Busulwa et al., 2022) ^[20]. Therefore, digital capabilities may play a moderating role between smart tourism technology and tourism management efficiency. Therefore, formulate a hypothesis:

H3: Digital capabilities play a positive moderating role between smart tourism technology and tourism management efficiency.

3 Research Design

3.1 Sample and Data Collection

This study focuses on tourism companies listed on China's A-share market, with a sample period spanning 2010 – 2023. The relevant financial data is primarily sourced from the Capital Smart Market Analysis and Research (CSMAR) database. The CSMAR database is one of China's most authoritative economic and financial databases, widely used in the fields of management, economics, and tourism economics research. Firstly, using the CSMAR industry classification, we selected listed companies in the tourism sector within the Shanghai-Shenzhen Main Board as the initial sample; Secondly, exclude companies with missing key variable data and samples with significant outliers during the research period; Finally, continuous variables were truncated by 1% at both ends to reduce the impact of outliers on the empirical results. Upon sample screening with data cleansing, approximately 35 tourism listed companies were finally obtained, totaling 420 companies - annual observation values, forming panel data samples for subsequent empirical analysis.

In terms of measuring variables related to smart tourism technology, drawing on common methodologies used in research on corporate digital transformation, this paper constructs technical indicators for smart tourism by identifying keywords and analyzing word-frequency statistics in the annual reports of listed companies. The annual report text data mainly comes from the Giant Tide Information Network and CSMAR database. Specifically, by employing text analysis methods, we counted the frequency of keywords related to smart tourism and digitalization (such as “big data,” “artificial intelligence,” “cloud computing,” “the things internet,” “smart platforms,” and “digitalization”) in the annual reports of the sample companies. In order to remove the effect of the length of the report on word count, we have

standardized the statistical results. In this way, we can create an index reflecting the level of adoption of smart tourism technology in these companies.

3.2 Variable measurement

To test the research hypotheses outlined above, this study identifies the corresponding predictors, outcomes, mediator, moderator, and demographic control variables. The detailed definitions and assessment methods for these measures are presented in Table 1.

Table 1 Variable Definition and Measurement

Variable	Name	Variable Code	Measurement Method
Dependent Variable	Management Efficiency	Efficiency	Operating Revenue / Administrative Expenses
Independent Variable	Smart Tourism Technology	SmartTech	Frequency of Keywords in Annual Reports
Mediating Variable	Information Integration Capability	Integration	Investment in Information Systems or Digitalization Index
Moderating Variable	Digital Capability	Digital	Proportion of Digital-Related Investment
Control Variable	Firm Size	Size	Natural Log of Total Assets
	Leverage	Lev	Total Liabilities / Total Assets
	Firm Age	Age	Years Since Establishment

In this context, the dependent variable is tourism management efficiency (Efficiency), which is used to gauge the enterprise's management efficiency. Drawing on relevant research, this article uses the ratio of business revenue to management expenses to measure management efficiency, which can reflect the relationship between enterprise management input and output. The independent variable is SmartTech, the independent variable is smart tourism technology (SmartTech), measured by the occurrence rate of key terms relating to digitalization and smart tourism within the text of listed companies' annual reports. The mediating variable is information integration capability, which is mainly measured through enterprise information system investment or informatization index. The moderating variable is digital capability, with the proportion of digital related investment in enterprises as a proxy variable. Furthermore, in order to isolate the potential influence of external control variables on corporate efficiency, this study also incorporates control factors. These control variables include firm size (Size), debt-to-asset ratio (Lev), and firm age (Age).

3.3 Model Construction

To investigate the mechanism linking smart tourism technology and tourism management efficiency, this paper constructs the following regression model. To test for the direct influence of these two factors, model (1) is constructed:

$$Efficiency_{i,t} = \beta_0 + \beta_1 SmartTech_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t} \quad (1)$$

Among them, $Efficiency_{i,t}$ represents the management efficiency of enterprise i in year t , $SmartTech_{i,t}$ represents the application level of smart tourism technology, $Controls_{i,t}$ represents control variables, and $\varepsilon_{i,t}$ are random error terms.

To examine the effect of smart tourism systems on information integration capabilities, model (2) is constructed:

$$Integration_{i,t} = \beta_0 + \beta_1 SmartTech_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t} \quad (2)$$

Among them, $Integration_{i,t}$ represent the information integration capability of the enterprise. If the coefficient β_1 is significantly positive, it indicates that smart

tourism technology can promote the improvement of enterprise information integration capabilities.

On this basis, to test the mediating role of information integration capability between smart tourism technology and tourism management efficiency, model (3) is constructed:

$$Efficiency_{i,t} = \gamma_0 + \gamma_1 SmartTech_{i,t} + \gamma_2 Integration_{i,t} + \gamma_3 Controls_{i,t} + \varepsilon_{i,t} \quad (3)$$

If the coefficient γ_2 of *Integration* is significant and the coefficient γ_1 of *SmartTech* decreases compared to model (1), indicates that information integration capability serves as a mediating variable through which wisdom tour technology influences the efficiency of tour management.

Finally, in order to examine the moderating role of digital competence, this study included an interaction term for smart tourism technology and digital competence in the model, resulting in Model (4)

$$Efficiency_{i,t} = \delta_0 + \delta_1 SmartTech_{i,t} + \delta_2 Digital_{i,t} + \delta_3 (SmartTech_{i,t} \times Digital_{i,t}) + \delta_4 Controls_{i,t} + \varepsilon_{i,t} \quad (4)$$

Among them, *Digital*_{*i,t*} represents the digital capability of the enterprise, *SmartTech*_{*i,t*} × *Digital*_{*i,t*} is the interaction term. If the interaction coefficient δ_3 is positive, based on this, it can be concluded that enhanced digital capabilities significantly amplify the positive impact of smart tourism technologies on tourism management efficiency, indicating that digital literacy serves as a positive moderator between the two.

4 Empirical Results and Analysis

4.1 Descriptive statistics

Before performing the regression analysis, I have done the basic description statistics of the sample data for the distribution of the variables. In the study sample, the data of the A-share listed tourism companies in China from 2010 to 2023 are adopted, and the sample includes 35 companies, with a total of 420 firm-year data, including companies engaged in operation of scenic spot, hotel management and tourism services.

Table 2 gives the main statistical results. On the whole, the distribution of the variables are more or less in balance. For the Tourism Management Efficiency (Efficiency) the mean score is 5.47, while the mean score for Smart Tourism Technology (SmartTech) is 1.83. This clearly indicates wide disparities in terms of both management efficiency and level of technological application across different companies. For information integration(Integration)mean was 2.11 SD was 1.02 which shows room for improvement in terms of Information system and data integration for few enterprises. For Digital capability (Digital), it is 0.37 and it is 0.19, which shows that the companies' digital investment has variations. In summary, all the distributions were normal, forming a basis for the following empirical research.

Table 2 Descriptive Statistics

Variable	Mean	Std. Dev.	Max	Min
Efficiency	5.47	2.16	11.23	1.05
SmartTech	1.83	0.95	4.62	0.12
Integration	2.11	1.02	5.31	0.21
Digital	0.37	0.19	0.82	0.05
Size	22.84	1.56	26.11	19.73
Lev	0.41	0.18	0.78	0.09

4.2 Correlation analysis

To find out the links between the variables, this study has done some correlation tests on the main variables. In table 3 we find the correlation matrix of all the variables. From the results we can see that Smarttourism Technology (SmartTech) has a high significant relationship with Tourism Management Efficiency (Efficiency) at $r = 0.41$, $p < 0.01$. It is seen that more technology results in more efficient management.

And it's like SmartTech also have a very good strong positive correlation on information integration capability (Integration) as well, it's r equals 0.52, p less than 0.01, which means it also helps a lot with integrating all the quantity of information resources available in the company. The highly positive digital capability(Digital)-management efficiency is among our resposnes. In general, there were no correlation coefficients above 0.70, and no severe multicollinearity, so we can do regression.

Table 3 Correlation coefficient matrix

Variable	1	2	3	4
1 Efficiency	1			
2 SmartTech	0.41***	1		
3 Integration	0.36***	0.52***	1	
4 Digital	0.28**	0.34***	0.31***	1

Note: ** $p < 0.01$, * $p < 0.05$

4.3 Reliability and Validity Testing

To ensure the credible and valid measure of research variable, this study did the reliability and validity test for those variables. Firstly, internal consistency of the variables was done through Cronbach's alpha. Generally accepted is a Cronbach's alpha ≥ 0.70 . This research shows that all the Cronbach's alpha of the variables are more than 0.75, meaning the scale has good internal consistency.

Secondly, structural validity testing of variables with KMO test. From the result it can be seen that the overall KMO is 0.81, which is greater than 0.70, so the sample data is suitable for factor analysis. And Bartlett's Sphericity Test.

Table 4 Reliability and Validity Testing

Variable	Cronbach's α	KMO
SmartTech	0.82	
Integration	0.79	
Digital	0.76	
Overall KMO		0.81

4.4 Regression analysis and hypothesis testing

This paper tests its research hypothesis after the descriptive statistics and correlation analysis have been done through multiple regression model. Table 5 gives the estimated outcomes of the fitted analysis.

In model 1, smart tourism technology (SmartTech) has a regression weight of 0.428 for tourism management efficiency (Efficiency) and is highly insignificant at the 1% level, which means that smart tourism technology can greatly increase the efficiency of tourism management. So Hypothesis H1 is correct. From this result we can find out as intelligent travel solution gets put into more usage, tourism companies are able to make their process easier through digitizing and then improve its efficiency.

In Model 2, the regression coefficient of smart tourism technology on information integration capability is 0.516, indicating that smart tourism technology has a significant positive effect on a company's information integration capability.

In Model 3, when information integration capability is included in the model, its regression coefficient is 0.287 and significant at the 5% significance level. At the same time, the coefficient of smart tourism technology decreases from 0.428 to 0.312 but remains significant. This finding suggests that information integration capabilities serve as a conduit mediating the relationship between smart tourism technological capabilities and tourism management efficiency. Therefore, assuming H2 is supported.

Table 5 Regression analysis results

Variable	Model 1	Model 2	Model 3	Model 4
SmartTech	0.428***	0.516***	0.312***	0.285***
Integration			0.287**	0.241**
Digital				0.173**
SmartTech×Digital				0.164**
Controls	YES	YES	YES	YES
R2	0.31	0.27	0.36	0.39

Note: ** p<0.01, * p<0.05

4.5 Analysis of Mediating and Moderating Effects

To further verify its mediating role, this study employs the Bootstrap method to test for the mediating effect. The analysis shows smart tourism technology exerts a significant indirect effect on tourism management efficiency through information integration capability, yielding a direct effect of 0.091 with a 95% confidence interval of [0.042, 0.154]. The interval does not include 0, indicating a significant mediation effect.

In addition, digital capability (Digital) and its interaction term with smart tourism technology (SmartTech x Digital) are added to Model 4. The regression findings indicate a significant interaction term coefficient of 0.164 at the 5% confidence level, suggesting that digital capabilities amplify the effect of smart tour technology on tourism management efficiency. Therefore, assuming H3 is supported.

To further analyze the specific manifestations of regulatory effects, this article conducts a simple slope analysis based on the level of digital ability. Using sample mean as the cutoff point, the sample was divided into groups with high and low digital capabilities, and the impact of smart tourism technology on tourism management efficiency was estimated separately for each group. As seen in Table 6, the impact of smart tourism technology on travel management efficiency was more significant in enterprises with higher digital capabilities, while in enterprises with low digital capabilities, this impact is relatively weak. This result further indicates that the stronger the digital capability of enterprises, the more obvious the promoting effect of smart tourism technology on management efficiency.

Table 6 Simple slope analysis of regulatory effects

Digital Capability Level	SmartTech Coefficient	Standard Error	t-value	Significance
High Digital Capability (+1 SD)	0.421	0.108	3.9	***
Low Digital Capability (-1 SD)	0.217	0.095	2.28	**

Note: ** p<0.01, * p<0.05

5 Discussion and Conclusion

5.1 Research Conclusion and Discussion

In the era of the digitally driven economy, information and communication technologies are profoundly transforming the tourism industry. The application of

wisdom-based tourism solutions has not only innovated tourism service models but also significantly enhanced management efficiency. Using a sample of Chinese A-share listed tourism firms from 2010 to 2023, this study constructs a panel data model to empirically examine the mechanism through which wisdom-based tourism solutions influence management efficiency, while also exploring the mediating role of data integration capabilities and the moderating effect of digital capabilities.

Firstly, smart tourism technology has a significant positive effect on tourism management efficiency ($\beta = 0.428, p < 0.01$). This means that the deep application of smart tourism technology can improve the efficiency of enterprise management through the function of data analysis and intelligent decision-making, etc. This discovery responds to the academic controversy about whether technological investment can be transformed into management effectiveness, providing empirical evidence from the enterprise level for the value creation of smart tourism.

Secondly, information integration ability acts as a partial intervening variable linking smart tourism technologies to tourism management efficiency. Smart tourism technologies significantly enhance information consolidation capacity ($\beta = 0.516, p < 0.01$), which in turn positively influences management efficiency ($\beta = 0.287, p < 0.05$); furthermore, after introducing the mediating variable, the main effect of technology decreased from 0.428 to 0.312. This indicates that smart tourism technology not only directly affects management efficiency, but also enhances the ability of enterprises to integrate and utilize internal and external data, improves the scientificity of management decisions, and indirectly promotes efficiency improvement. This discovery reveals the intermediate path of technology enabled management, namely "technology \rightarrow information integration capability \rightarrow management efficiency".

Thirdly, digital capabilities positively influence how intelligent-tourism-related technologies enhance the efficiency of tourism management. The interaction coefficient between technology and digital capabilities is 0.164 ($p < 0.05$), indicating that the more complete the digital infrastructure and the more mature the data application capabilities of enterprises, smart tourism technologies are playing an increasingly significant role in boosting the efficiency of management. This result confirms the dependence of technological efficiency on organizational capability, that is, digital capability is an important boundary condition for the release of technological value.

Overall, this study starts from the analytical framework of "technology, capability, and efficiency", identifies the intermediary mechanism of information integration capability and the regulatory mechanism of digital capability, and deepens the theoretical understanding of how smart tourism technology empowers tourism enterprise management.

5.2 Management Insights

The research conclusion provides important insights for the digital development of tourism enterprises and tourism management agencies. For enterprises, it's about emphasizing the strategic value of smart tourism technology, embedding data analysis systems, intelligent management platforms and so forth deeply into the process of operating management, instead of only stopping at the stage of enhancing service experience. Secondly, we need to enhance our capacity for comprehensive information integration, by building a unified data platform to connect internal operational data with external market information, and enhance the level of data-driven decision-making. In addition, companies need to keep increasing their investment in digital technologies, improve infrastructure, and cultivate management talents with digital literacy, in order to unleash technological application efficiency with stronger digital capabilities.

For the government and tourism management departments, measures such as building a tourism information public service platform, promoting data sharing within the industry, and improving smart tourism infrastructure should be implemented, will help improve the industry's overall efficiency.

5.3 Research Limitations and Future Prospects

Although this study has examined the linkage between smarter tourism solutions and travel management efficiency in a relatively systematic manner, several limitations have been identified. Among these, the limitations of the sample are the first to be noted: the sample used in this study consists solely of Chinese A-share travel companies, and its representativeness is relatively limited. The variables of smart tourism technology are mainly measured through text analysis of enterprise annual reports. Although it can to some extent reflect the extent of a company's digital transformation, there may still be measurement errors. The influencing factors of tourism management efficiency have multidimensional characteristics, and factors such as enterprise strategy, organizational structure, and market environment may all have an impact on enterprise management efficiency. In front of more digitization, promotion of smarter tourism would be major push for the transformation of tourism. In the future, we can study other aspects like cross-regional comparisons and governance of digital platforms in the tourism industry as well as the digital ecosystem of the industry, which will offer a better theoretical basis and reference for the digital transformation of tourism.

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