Promoting Factor of Smart Technology Effecting Green Tourism

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Abstract. The primary objective of this study is to explore the promoting factors of smart technology in fostering sustainable development within the realm of green tourism. Various influential elements were scrutinized, including technology maturity, policy support, training and human resources, environmental awareness, tourism industry structure and scale, and financial investment. The study's findings highlighted the significant impact of widespread environmental consciousness, reasonable control of the tourism industry's structure and scale, and substantial financial investments in shaping the landscape of green tourism. These insights, derived from a sample of 400 stakeholders including tourism practitioners, cultural tourism officials, and experts from Hechi City, Guangxi, China, provide valuable guidance for policymakers, practitioners, and scholars. The research underscores the belief that smart technology will continue to be a driving force in the growth of green tourism, contributing positively to both the tourism industry's advancement and the achievement of environmental sustainability goals.

Keywords: Intelligent Technology, Green Tourism, Sustainable Development, Promoting Factor.

1   Introduction

In recent years, the global focus on sustainable development has intensified, leading to significant interest in incorporating green practices across various industries, particularly in tourism. While the tourism sector has experienced remarkable growth and contributed substantially to economic development globally, this expansion has raised concerns regarding its environmental impact. There is an urgent need to adopt sustainable practices to preserve natural resources and cultural heritage for future generations. In response to these challenges, smart technologies have emerged as promising solutions to drive green transformation in the tourism industry. These technologies, including artificial intelligence, the Internet of Things (IoT), virtual reality, and data analytics, among others, offer innovative ways to enhance operational efficiency, resource management, and customer experiences. Simultaneously, they help mitigate the environmental footprint associated with tourism activities.

A compelling case study for exploring the application of smart technologies in the tourism sector is the region of Hechi in Guangxi, China. Hechi, with its abundant ecological and cultural resources, has the potential to become a leading sustainable tourism destination. However, striking a delicate balance between tourism development and environmental conservation remains a critical challenge. This research holds significant value by providing profound insights into the impact of smart technologies on promoting green transformation within Hechi's tourism industry. Understanding the effective application of these technologies to address environmental challenges while enhancing the overall tourism experience is crucial for achieving sustainable tourism development in the region. This study adds to both academic and professional understanding of the factors influencing the successful integration of smart technologies in promoting green practices within the tourism industry. Consequently, it facilitates more informed decision-making and effective policy formulation for sustainable tourism development.

2   Related Work

In the current research, the application of smart technology in the tourism industry has garnered significant attention. Gössling's study (2020) [1]meticulously analyzed the impact of technology maturity in the tourism sector, providing empirical support for our choice of "Technology maturity" as an independent variable. The research by Lu et al. (2021)[2] highlighted the pivotal role of policy support in the sustainable growth of smart cities and the green tourism industry. Additionally, El Archi et al. (2023) [3]emphasized the strategic importance of training and human resources in the establishment of smart tourism destinations and sustainable tourism development. Shafiee et al. (2022)[4] delved into how smart technologies contribute to the development of sustainable tourist destinations using a system dynamics approach, emphasizing tourists' concern for environmental sustainability. Furthermore, Borges-Tiago et al. (2022)[5] explored variations in smart technology applications among tourism enterprises of different sizes from a scientometric perspective, providing a comprehensive understanding of technology adoption in the industry. Finally, Tan et al.'s study (2022) [6]presented empirical cases regarding the relationship between financial investment, smart technology, and green tourism, deepening our understanding of the role of financial support in the integration of smart technology into green tourism. These studies establish a solid basis for choosing "Green Tourism" as the dependent variable. This selection aligns with the pressing need for sustainable development in society and mirrors the tourism industry's transition towards eco-friendly practices. Delving into the link between smart technology and green tourism not only supports sustainable tourism industry growth but also guides environmentally responsible practices.

3   Method

This study focuses on tourism-related enterprises and management institutions in Hechi City, Guangxi, China. In-depth interviews were conducted with three experts from the

local university, Hechi University, for comprehensive research. The sample group includes various types of businesses within the tourism industry, such as hotels, travel agencies, scenic area management departments, and other tourism service providers. According to the data from the government work report in 2023, Hechi City attracted 35.08 million tourists, generating a total tourism consumption of 40.1 billion RMB. The city boasts 63 scenic areas with a 4A-grade rating, and the region has over 260,000 tourism practitioners. To ensure comprehensive data collection, a variety of survey methods will be employed. Following the sampling table provided by Krejcie and Morgan (1970, page 57), a sample size of 384 is recommended for populations equal to or greater than 1,000,000. Consequently, a random sampling approach was utilized, conducting on-site surveys in Hechi City and collecting a total of 400 samples. Detailed data are presented in Table 1 below:

Table 1. shows general information

Variables		Frequency	percentage
Sex	female	221	55.3
	male	179	44.8
	Total	**400**	**100.0**
Occupation	Tourism practitioner	110	27.5
	Scenic area manager	101	25.3
	Government tourism officia	95	23.8
	Travel expert	94	23.5
	Total	**400**	**100.0**

4 Experiments and Results

In the empirical phase of this study, we meticulously crafted the survey questionnaire and performed comprehensive data analysis to uphold the credibility and accuracy of our research. For the questionnaire design, a systematic approach was employed, ensuring the clarity and relevance of the questions. A pre-test was conducted to collect feedback from respondents, and necessary adjustments were made accordingly. To evaluate the questionnaire's reliability, we applied internal consistency testing methods, including Cronbach's Alpha coefficient, all of which surpassed 0.9. This indicates the rationality of the questionnaire design, as illustrated in Table 2.

Table 2. Research reliability analysis

Reliability Statistics	
Cronbach's Alpha	N of Items
0.914	29

A Cronbach's Alpha coefficient above 0.7 is considered to demonstrate good internal consistency.

Furthermore, we utilized statistical techniques such as factor analysis to confirm the questionnaire's validity. This method allowed us to establish correlations between questions, ensuring that the measured variables constituted distinct factors or dimensions. The outcomes presented a Kaiser-Meyer-Olkin Measure of Sampling Adequacy of 0.708, with a significance level of 0.00, affirming the rationality of the questionnaire design, as illustrated in Table 3.

Table 3. Research validity analysis

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.708
	Approx. Chi-Square	3433.345
Bartlett's Test of Sphericity	df	21
	Sig.	0

A KMO Values above 0.6 are acceptable, while those surpassing 0.8 demonstrate excellent fit.

In summary, this study utilized regression analysis, as illustrated in Table 4, to identify the influencing factors of smart technology on green tourism. The findings highlight the roles of various elements, including technology maturity, policy support, training and human resources, environmental awareness, tourism industry structure and scale, and financial investment in promoting green tourism. Notably, financial investment emerged as a pivotal driver, displaying a substantial positive correlation with the growth of green tourism. However, technology maturity, policy support, and training and human resources did not exhibit significant impacts within this model. Overall, the model accounted for 35.8% of the variance in green tourism, with financial investment standing out as the most influential factor. These results are statistically significant (*P< .05,**P< .01,***P< .001), emphasizing their reliability and practical relevance.

Table 4. The results of the analysis of the regression coefficient Smart Technology affect Green Tourism.

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	1.79	0.342		5.228	0
Technology Maturity	0	0.143	0	-0.001	0.999
Policy Support	-0.014	0.117	-0.014	-0.122	0.903
Training and human resources	0.104	0.128	0.111	0.812	0.417
Environmental awareness	-0.44	0.187	-0.356	-2.353	0.019*
Tourism Industry Structure and Scale	-0.581	0.218	-0.412	-2.661	0.008**
Financial Investment	1.506	0.107	1	14.062	0***

R2 = 0.358, *P< .05,**P< .01,***P< .001

5   Discussion

In promoting green tourism, respondents exhibited a clear environmental consciousness, reflecting tourists' awareness of and support for environmental conservation. This consciousness translated into tangible actions, including the use of public transportation, reduction in single-use plastics, and support for eco-friendly tourist destinations. The research findings revealed a significant level of environmental consciousness among respondents, particularly in the aspect of "Tourists' Environmental Consciousness." This aligns with Rachel Carson's (1968) environmental awareness theory, strengthening the credibility of our research conclusions. Regarding the tourism industry's structure and scale, all dimensions demonstrated exceptionally high levels, especially in "Tourism Supply and Demand Structure" and "Scale of Tourist Destinations." This consistency with Lambert Peter's (1960) Tourism supply and demand balance theory emphasizes the pivotal role of the tourism industry's structure and scale in promoting green tourism. The study found that factors such as tourism supply and demand structure and the scale of tourist destinations significantly influence green tourism, fostering diversity and opportunities for environmental protection and sustainable tourism practices. In terms of financial investment, our survey indicated positive evaluations across all aspects, particularly in "Allocation of Funds for Public Awareness Campaigns" and "Investment in Green Technology Research and Development." These findings align with Paul Hawken's (1999) Green industry development theory and previous green tourism research, validating our research conclusions. Moreover, financial investment plays a crucial role in driving green tourism, accelerating its growth, enhancing tourist experiences, and providing essential technological and economic support to tourism enterprises, thereby propelling the overall flourishing development of the green tourism industry. Regarding green tourism itself, high satisfaction levels were reported across all aspects, especially in "Sustainability Benefits of Green Tourism" and "Tourists' Engagement in Ecological Activities." This corresponds with Gro Harlem Brundtland's (1987) sustainability benefit theory, reflecting the enduring benefits of green tourism for the environment, society, and the economy. These discoveries underscore the significance of environmental consciousness, tourism industry structure and scale, and financial investment in promoting green tourism, providing robust support for its sustainable development.

6   Conclusion

In the context of Factors Driving the Impact of Smart Technology on Green Tourism, specific recommendations are proposed for different influencing factors. Firstly, considering the negative correlation between environmental awareness and green tourism, stakeholders in the tourism industry must intensify efforts to nurture tourists' environmental consciousness. Utilizing smart technology to disseminate environmental messages can actively encourage tourists to participate in ecological conservation activities. Secondly, to address the adverse effects of the tourism industry's structure and scale on green tourism, governmental bodies and tourism organizations can for-

mulate policies encouraging the development of smaller, more sustainable tourism enterprises. Providing training and resource support can facilitate the transition of the tourism industry towards more environmentally friendly practices. Thirdly, acknowledging the positive correlation between financial investment and green tourism, investors should be encouraged to increase their investments in green tourism projects. Governments can implement fiscal incentives to attract more funding towards the development of smart technology and green tourism infrastructure. Establishing transparent regulatory mechanisms is crucial to ensure that investment funds are genuinely allocated to environmentally friendly and sustainable projects. These recommendations, meticulously designed, aim to maximize the impact of smart technology in driving green tourism while mitigating potential negative influences, fostering the tourism industry's progression towards sustainable development.

In terms of future research, studies could explore the long-term impacts of technology adoption on green tourism, considering changes in market dynamics and environmental regulations. Comparative studies between different regions could provide insights into how regional characteristics influence the relationship between intelligent technologies and green tourism. Investigating tourists' behavior and preferences regarding green tourism and the role of technology in shaping these preferences could provide valuable insights. In-depth policy analysis could uncover the effectiveness of government policies in promoting green tourism and technology adoption. Additionally, focusing on emerging intelligent technologies and their potential applications in green tourism could pave the way for innovative solutions. Addressing these areas in future research could further enrich our understanding of the complex dynamics between intelligent technologies and green tourism, advancing the frontier of knowledge in this field.

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