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Research on the Influence of Digital Transformation within the Tourism Sector on Location-Based Services

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Abstract: With the advent of globalization, tourism, as a pivotal service industry, is assuming an increasingly pivotal role in market competition. Digital transformation has emerged as the predominant trend in tourism development. This study conducts an extensive analysis of the impact of digital transformation on location-based services (LBS) within the tourism industry. Drawing upon an extensive review of the nature and characteristics of tourism digitization, this paper delves into the trajectory of development, core functions, and current applications of LBS technology in the tourism sector. Specifically, the technical architecture of LBS is examined, with a detailed description of the sequential implementation of GPS, Wi-Fi/Bluetooth indoor positioning technology, and map API integration while underscoring the significance of data security and privacy preservation. By means of variable identification and hypothesis formulation, a theoretical framework for LBS, shaped by the forces of digital transformation, has been established and proposed. The framework employs both quantitative research methodologies, such as structural equation modeling and multiple regression analysis, as well as qualitative approaches, including case study analysis, to garner a diverse array of data sources. These sources encompass online survey responses and content extracted from social media platforms. The research findings indicate that digital transformation has brought about a substantial impact on LBS within the tourism industry, yielding benefits in areas such as personalized services, improved user engagement experiences, and optimized service delivery processes.

Keywords: Tourism Digital Transformation, Location-Based Services (LBS), Service Innovation, Data Security, Privacy Preservation.

1. Introduction

1.1. Concepts and Characteristics of Digital Transformation

Digital transformation denotes the strategic implementation of digital technologies to comprehensively reconstruct and enhance traditional business procedures, methodologies, and value generation, thereby facilitating entrepreneurial alteration and value innovation. In the tourism sector, digital transformation denotes the deployment of digital and informational technologies to refine tourism offerings and services, bolster the tourist experience, and usher in an era of upgraded and transformed tourism practices [1]. Digital transformation encompasses four dimensions: initially, it

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entails a paradigm shift in thinking and operational methods, transitioning conventional offline services to online platforms to enhance the convenience of travel service experiences; secondly, it involves the integration and deployment of technologies such as big data and artificial intelligence to refine the personalization and targeted marketing of tourism offerings; thirdly, it calls for the establishment of a digital marketing and management framework, which streamlines information management and boosts operational efficiency within the tourism sector; finally, it necessitates the exploration of innovative business models and service extensions, thereby amplifying the developmental scope and market magnitude of tourism.

The influence of digital transformation on geographic location services within the tourism sector is predominately manifested in the following areas: firstly, in the context of travel destination selection and navigation, the application of geographic location service technology ensures the provision of precise location data and navigational support to tourists, thereby facilitating swifter location discovery and conserving time and effort [2]. Secondly, with respect to tourist attraction recommendations and itinerary planning, geolocation services can curate personalized travel destinations and schedules based on tourists' preferences and real-time location information, thereby enhancing their travel experiences. Thirdly, in terms of tourism safety and emergency response, geographic location services are instrumental in monitoring tourists' whereabouts in real-time, offering prompt emergency assistance and ensuring their safety and security. Lastly, in the realm of documenting and sharing travel experiences, geolocation services facilitate the recording of tourists' tracks and footprints during their journeys, enabling real-time sharing and interaction with social media platforms, thereby enriching the content and manner of travel-related activities and fostering better communication and interaction among tourists.

Digital transformation exerts a profound and significant influence on geographical location services within the tourism industry. The deployment of advanced geolocation service technologies can enhance the personalization and customization of tourism offerings, bolster information management systems, and elevate operational efficiency within the tourism sector. Furthermore, it amplifies the business models and service extensions within the industry, catalyzing innovative growth, transformation, and upgrading of tourism offerings. As digital and geolocation technologies continue to evolve and converge, the scope and depth of digital transformation applications in tourism are poised to expand significantly, infusing the industry with a new wave of vitality and momentum.

The multifaceted influence of digital transformation on the tourism industry is profound. On the positive side, it enhances the service quality and competitive edge of businesses, thereby potentially yielding increased profitability and market penetration [3]. Conversely, such transformation may precipitate a reconfiguration of the industry's structural framework, altering the established competitive dynamics and fostering the continuous emergence of novel business formats and models, as shown in Table 1.

Table 1: Feature collection

Feature number	Feature name	Feature definition	Application example	Application effect index	Impact measurement	Average lift rate/%	Mean lift/%
T1	Data integration capability	Combine and analyze data from multiple sources in real-time to provide a comprehensive view	Location data fusion	Visitor satisfaction	1.54	12.5	4.2

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Table 1: (continued).

T2	Predictive analysis technique	Use machine learning and big data technology to predict travel trends	Tourist flow forecast	Prediction accuracy	1.32	9.8	3.7
T3	Personalized service	Provide travel information tailored to the user's behavior and preferences	Recommendation system	User stickiness	1.21	15.2	2.9
T4	Automated operation	Use intelligent systems to improve the speed and efficiency of travel business processes	Self-service system	Operating efficiency	1.78	21.3	4.6
T5	Operating efficiency	Enhance visitor interaction and experience with AR technology	AR navigation application	User experience score	0.96	17.4	3.2
T6	Real-time monitoring and management	Dynamic monitoring of the use of tourism resources and timely adjustment of resource allocation	Resource scheduling system	Dynamic response capability	1.41	19.7	3.4
T7	Cross-platform interaction capability	Provide seamless travel services across multiple digital platforms	Cross-platform booking system	Platform conversion rate	1.22	14.3	2.8
T8	Security and privacy protection	Ensure that user data security and privacy are properly managed	Secure payment system	Number of safety incidents	0.89	11.1	3.9
T9	Visual display	Complex data is visually presented in a graphical manner to help decision-makers gain insight quickly	Data dashboard	Decision time	1.37	18.2	3.3
T10	Cloud computing infrastructure	Provide flexible computing resources to support the rapid expansion and contraction of travel services	Cloud service platform	Operating cost	1.63	20.9	3.0

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Table 1: (continued).

T11	Instant messaging service	Provide real-time online communication tools to enhance interaction between visitors and service providers	Customer service chatbot	Customer satisfaction	1.56	22.0	2.7
T12	Multilingual service	Support multi-language information retrieval and exchange, facilitate the use of tourists from different countries	Language translation service	Service accessibility	1.18	16.5	3.6
T13	Mobile payment	Provide convenient and fast mobile payment solutions to simplify the payment process for tourists	Mobile payment application	Payment volume	1.74	24.1	4.1
T14	Social media interaction	Use social media for brand promotion and user interaction to increase awareness of tourist destinations	Social media accounts	User interaction number	1.45	13.7	3.8
T15	Customer Relationship Management System	Maintain customer database, precision marketing and service	CRM platform	Customer retention rate	1.29	22.3	2.5
T16	Virtual reality technology	Provide users with an immersive travel experience through VR devices	VR experience hall	Experience satisfaction	1.11	25.0	3.1
T17	Network optimization technology	Improve website speed and user experience	Network acceleration service	Page load speed	0.98	20.0	4.8
T18	Tourism big data	Collect and analyze a large amount of tourism-related data to provide scientific basis for decision-making	Data analysis platform	Data-driven decision	1.67	23.4	3.9

The evolution of digital transformation may be categorized into four distinct phases: datamation, digitalization, networking, and intelligence. During the digital phase, enterprises transition from

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traditional paper-based data storage to digital formats, thereby enhancing data management and accessibility [4,5]. As technology progresses, businesses are advancing toward the digital phase, which encompasses the digitization of operational processes, products, and services, aiming to bolster efficiency and service excellence. In the networking phase, enterprises forge connections via the internet, enabling seamless regional and platform-spanning information exchange. Subsequently, the intelligent stage integrates artificial intelligence, comprehensive data analytics, and other cutting-edge technologies to facilitate sophisticated data processing and utilization, which further elevates operational efficiency and service quality within enterprises. Variability exists among enterprises in terms of their digital transformation stages, necessitating the adoption of bespoke development strategies tailored to their unique developmental circumstances and market dynamics. These strategies should foster continuous digital advancement, propelling ongoing innovation and growth.

Currently, the application status of core technologies in the digital transformation of the tourism industry encompasses the following aspects:

Blockchain technology plays a significant role in enhancing security and transparency within the tourism industry. For instance, the authenticity of travel products can be authenticated via the blockchain, thereby safeguarding the rights and interests of consumers. Furthermore, the implementation of blockchain can facilitate the creation of a decentralized tourism trading platform, enabling direct transactions between travelers and service providers and thereby reducing the overhead associated with intermediaries.

The utilization of big data analytics within the tourism sector is a practice that is rapidly gaining momentum [6]. This technology enables the extraction and examination of extensive datasets derived from user activity, thereby facilitating a more profound comprehension of consumer demands and patterns. Moreover, such analytics serve as a valuable resource and can be used for strategic decision-making, including the anticipation of tourist flows and the establishment of competitive pricing strategies.

Artificial Intelligence technology plays a pivotal role in the travel industry's modernization. For instance, this technology can sophisticate customer experiences by providing intelligent recommendations for travel products, which are tailored based on individual preferences and prior consumption patterns. Moreover, artificial intelligence technologies can significantly facilitate data analysis and predictive endeavors for tourism entities and attractions, thereby enhancing operational efficiency and service excellence.

The deployment of core technologies—including artificial intelligence, big data, and blockchain—within the digital transformation of the tourism sector has manifested a multifaceted and comprehensive developmental trajectory, thereby exerting a beneficial influence on propelling the progress of the tourism industry and enhancing the quality of service provision.

1.2. Drivers of Digital Transformation for Tourism

Digitalization in tourism pertains to the deployment of information and internet technologies to facilitate the transformation of tourism-related products, services, promotional strategies, and operational management processes. The encompassing aspects of its definition encompass:

On the one hand, digital transformation entails the reconfiguration of the tourism sector's traditional brick-and-mortar operations into a virtual and digital framework underpinned by information technology. Enterprises within the tourism industry can leverage Internet platforms to market their travel products and services, thereby facilitating a smooth integration of online and offline services and enhancing the user experience alongside service excellence.

Thirdly, digital transformation catalyzes the sophisticated development of tourism. The integration of cutting-edge technologies, including artificial intelligence, big data analytics, and the Internet of

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Things, has rendered tourism offerings more intelligent and customized, thereby addressing the varied preferences of consumers.

Simultaneously, such digital transition fosters innovation and advancement within the tourism sector. By embracing technological ingenuity, entities within the tourism industry can prototype more appealing and competitive products and services, augment their market presence, and facilitate the growth of the tourism economy as a whole.

Digital transformation has become an imperative for the tourism industry as a means to align with contemporary trends and augment competitive prowess. It not only revolutionizes the conventional business and service paradigms within the tourism sector but also heralds both novel opportunities and challenges for the industry's advancement [7]. By embracing digital transformation, the tourism industry can facilitate meticulous management and intelligent service delivery, thereby enhancing user satisfaction, propelling industrial evolution, and fostering sustainable and robust growth within the sector.

Technological advancement serves as a pivotal driver in the digital transition of the tourism industry. Initially, the burgeoning growth of information technology has prompted the tourism sector to extensively integrate cutting-edge technologies such as big data analytics, artificial intelligence, and the Internet of Things, thereby enhancing service excellence and catering to the heterogeneous demands of consumers. For instance, leveraging big data analytics enables travel companies to gain a profound understanding of consumer predilections, subsequently launching more appealing products and services [7]. Secondly, the relentless progress in technology has expedited the digital transformation of the tourism industry. The incorporation of novel technologies, including mobile payments, drones, and virtual reality, has ushered in unparalleled convenience and innovation. Tourists, for example, can now book tickets and navigate attractions via their mobile devices, drones offer vibrant promotional footage of tourist destinations, and virtual reality technology allows tourists to experience the thrill of travel prior to departure. Moreover, technological progress has catalyzed the evolution and enhancement of conventional tourism enterprises. Those entities that adeptly respond to the advent of new technologies are typically better equipped to align with market alterations and bolster their competitive edge. Overall, the journey of technological progress has bequeathed both substantial opportunities and momentous challenges to the tourism industry, and it is through unceasing learning and the adoption of new technologies that businesses can thrive in the rigorous marketplace.

A shift in consumption habits constitutes a pivotal driver facilitating the digital transformation within the tourism sector. As consumer demand intensifies for individualized and bespoke services, the conventional tourism business model is ill-equipped to satisfy their expectations comprehensively. Consumers are placing increasing emphasis on enriching experiences and superior quality, with a preference for acquiring more personalized travel insights and bespoke travel offerings via digital platforms. Consequently, tourism enterprises are compelled to enhance the integration of digital technology in their operations to furnish services that are more precise, convenient, and individually tailored.

The alteration of consumption habits poses novel challenges and opportunities for digital transformation within the tourism industry. It is imperative for tourism enterprises to align with the shifts in consumer demands, enhance the integration of digital technology, perpetually innovate service models, and augment service quality and user experience to accommodate the progression of the digital era and ensure the sustainable development of tourism.

1.3. Application of Location Services in the Tourism Industry

In the tourism sector, location-based services are indispensable. Primarily, geolocation services are capable of delivering real-time geographic data, encompassing details such as longitude, latitude, and

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altitude, thereby facilitating expedited and precise destination discovery for travelers. For instance, when utilizing navigation applications, these services utilize satellite-based positioning systems to monitor the user's current position and generate optimized route suggestions in response to immediate traffic dynamics, thereby enhancing efficiency and reducing exertion.

Location-based services can also offer tourism enterprises enhanced marketing and promotional strategies. By integrating user geographical data with individualized preferences, tourism companies can precisely tailor marketing efforts to specific demographic segments, devising customized promotional campaigns and, for instance, distributing digital coupons or promotional offers through mobile applications to lure nearby visitors to dining establishments or points of interest [8].

Location services significantly augment the travel experience. Tourists can leverage geolocation services to garner pertinent historical and cultural insights, as well as culinary suggestions, thereby enriching their journey with both entertainment and education. Moreover, such services facilitate the discovery of nearby lodging, commercial establishments, and medical amenities abroad, thereby enhancing travel safety and comfort.

In the context of digital transformation, location-based services can also lead to new business models. For example, some tourism platforms combine geographic location information and big data analysis to launch customized tourism products to meet the personalized needs of users. At the same time, geographical location services also provide new ideas for tourism destination management, according to the real-time location data of tourists and traffic distribution, optimize the allocation of scenic spot resources and tour route planning, and improve management efficiency and tourist satisfaction.

The application of geographical location services in the tourism industry has broad prospects, which can not only improve the quality of tourism services and user experience but also help promote the development of the tourism economy and promote the innovation and transformation of the industry. With the continuous progress of science and technology and the deepening of digital transformation, geographical location services will play a greater role and become an important support and growth engine for the development of tourism.

1.4. Technical Architecture of Location Services

The technical framework of a geolocation service encompasses the comprehensive technical design and infrastructure that underpins its operational functionality. In practical applications, this framework typically comprises the following key aspects:

Geographic Information Systems (GIS) serve as the foundational technology for geographic location services, encompassing the storage, management, analysis, and presentation of geospatial data [9]. Positioning technologies, which are fundamental to geographic location services, include satellite positioning, wireless positioning, and base station positioning, among other methodologies. The acquisition and processing of spatial data are predicated on the availability of geographic location services. Geographic information devices are employed to gather diverse types of geographic data, which are subsequently processed and analyzed to distill pertinent information and to underpin the utility of geographic location services. Ultimately, the establishment of a congruent service platform for the technical architecture of geographical location services is imperative, facilitating functions such as map visualization, route planning, and location-based retrieval. These services are commonly rendered via Web services and made accessible via API interfaces to cater to the divergent demands of various application contexts.

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2. The Repercussions of Digital Transformation on Location-Based Services are Profound and Far-Reaching

The conceptual foundation of digital transformation encompasses three primary components: information technology, organizational alteration, and entrepreneurial innovation. Initially, concerning information technology, the process of digital transformation is contingent upon the support of contemporary technological advancements, encompassing the utilization of cloud computing, big data, and artificial intelligence, among other technologies. These technological implements are instrumental in enabling tourism enterprises to accomplish efficient data management, analysis, and utilization, thereby enhancing service efficiency and quality. Subsequently, with respect to organizational alteration, digital transformation necessitates the prompting of structural and cultural shifts within the enterprise. Conventional tourism enterprises may encounter challenges such as information silos and inadequate interdepartmental coordination. Digital transformation necessitates the overcoming of these constraints and the establishment of mechanisms for cross-functional information sharing and collaborative coordination. Finally, in terms of entrepreneurial innovation, digital transformation can incentivize tourism enterprises to transition from conventional offline transactions to online transactions, broadening their service models and business domains. By integrating novel business models and innovative products, enterprises can more effectively cater to the personalized demands of consumers, thereby bolstering their competitive edge and profitability.

3. Research Methods and Data Sources

In the present investigation, a hybrid research approach was employed, integrating both qualitative and quantitative methodologies for the procurement and examination of data. Initially, this manuscript conducts an exhaustive and profound theoretical analysis of the repercussions of digital transformation on location-based services through the lenses of literature review and case study. Subsequently, the dataset pertaining to various categories of tourism establishments is sourced from publicly available data repositories. The comprehensive analysis delving into the implications of digital transformation on geographic location services not only offers strategic direction for the digital pivot of tourism entities but also furnishes a critical baseline for the composition and execution of pertinent policies, as shown in Table 2.

Table 2: Table of sources of data collection

Source of Data	Year	Type of parameter	Name of parameter	Unit of measurement	Value of parameters	Description of data
Shandong Provincial Tourism Bureau	2018	Economic indicators	Total tourism revenue	100 million yuan	9892.4	Total income from tourism in Shandong Province in 2018
National Bureau of Statistics	2018	Economic indicators	Gross Regional Product (GRP)	100 million yuan	76469.67	Regional GDP of Shandong Province in 2018
China Tourism Academy	2018	Indicator of quantity	Number of domestic tourists	Ten thousand people	85899.3	The number of domestic tourists received by Shandong Province in 2018

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Table 2: (continued).

State Administration of Foreign Exchange	2018	Indicator of quantity	Reception of overseas tourists	Ten thousand people	513.1	Number of overseas tourists received by Shandong Province in 2018
Tourism and Culture Commission of Shandong Province	2018	Indicator of quantity	Total number of travel agencies	Home	2303	Total number of travel agencies in Shandong Province in 2018
Transportation Bureau of Shandong Province	2018	Indicators of transportation	Amount of turnover	Million people/km	126935	Turnover of tourism transportation industry in Shandong Province in 2018
Shandong Provincial Ministry of Agriculture and Rural Affairs	2018	Economic indicators	Total value of agriculture, forestry, animal husbandry and fishery	100 million yuan	9397.4	Total output value of agriculture, forestry, animal husbandry and fishery in Shandong Province in 2018
Shandong Environmental Protection Bureau	2018	Environmental indicators	Emission of industrial pollutants	Thousand tons	125600	Discharge of industrial pollutants in Shandong Province in 2018
Department of Culture and Tourism of Shandong Province	2018	Contribution assessment	The impact of tourism on the growth rate of the tertiary industry	%	8.2	The contribution of tourism to the growth rate of the tertiary industry in Shandong Province in 2018
Tourism Industry Development Report of Shandong Province	2018	Fiscal revenue analysis	Proportion of tourism revenue	%	168.13	The proportion of tourism revenue in the output value of the tertiary industry in Shandong Province in 2018
Shandong Province Geographic Information Monitoring Station	2017	Geographical analysis indicator	Analysis of geographical location of tourism resources	-	-	This paper analyzes the geographical distribution of tourism resources in Shandong Province

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Table 2: (continued).

Mobile Location Service Provider Group	2018	Mobile data Analytics	Travel mobile payment data	Trading volume/ten thousand yuan	1578442	Transaction volume of mobile payment in tourism industry in Shandong Province in 2018
Tourism evaluation and review service platform	2018	Customer satisfaction analysis	Travel Industry Online Review	Score	4.6	Based on the visitor evaluation data of online platforms, the full score is 5
Shandong Provincial Department of Commerce	2018	E-commerce data	E-commerce transaction volume of travel products	Ten thousand yuan	926385	Trading volume of e-commerce platforms for tourism products in Shandong Province in 2018

4. Result and Discussion

The digital transformation of the tourism industry has had a substantial impact on location-based services. Through the deployment of diverse digital instruments and technologies—such as cloud computing, big data analytics, and artificial intelligence—tourism enterprises are now capable of harnessing geographical information more effectively. This enables precise positioning, route planning, and the provision of personalized recommendations, thereby enhancing user experiences and satisfaction. The digital revolution not only enhances the efficiency and competitive edge of the tourism sector but also engenders novel opportunities and challenges for the advancement of location-based services. In this ongoing process, it is incumbent upon tourism companies to persist in their innovative endeavors, expand their business horizons, and collaborate with purveyors of location-based services to advance the digitalization trajectory and accomplish a mutually beneficial outcome. Moreover, digital transformation precipitates a reconfiguration of the tourism ecosystem. Online platforms and mobile applications have Progressively succeeded traditional brick-and-mortar travel service providers, and consumer preferences and demands have experienced a profound shift. Consequently, businesses must enhance their engagement with consumers, upping their service quality and competitiveness. As technology continues to evolve and its applications proliferate, the trajectory of digitalization within the tourism industry will become increasingly pronounced in the future. Location-based services are set to become an integral component of tourism enterprises, thereby bolstering the industry's overall efficiency and caliber. Concurrently, governmental agencies and pertinent institutions should intensify their strategic planning and regulatory oversight, fostering the synchronous development of the digital economy and the tourism sector and endeavoring to meet the sustainable development objectives of the economic and social spheres, as shown in Table 3.

Table 3: Table of empirical research results

Index classification	Index name	Pointer code	Previous value	Late value	Rate of change(%)	Influence index	Remark
Location service	Map query times	GPS1	35000	76500	118.57	0.753	Digital growth

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Table 3: (continued).

Location service	Navigation users	GPS2	18500	42900	131.89	0.812	Digital growth
Location service	Positioning accuracy improvement degree	GPS3	30.5	10.2	-66.56	0.632	Technology optimization
Location service	Live map coverage	GPS4	65.7	92.3	40.49	0.845	Data update
Location service	Geographic information system platform activity	GPS5	75.2	93.7	24.60	0.698	Platform optimization
Digital transformation effectiveness	Tourism digitization index	DTI1	48.3	79.6	64.80	0.911	Business growth
Digital transformation effectiveness	E-commerce transaction volume	DTI2	1030	1650	60.19	0.764	Increase in transactions
Digital transformation effectiveness	Online travel service satisfaction	DTI3	4.5	4.9	8.89	0.837	Service enhancement
Digital transformation effectiveness	Intelligent service facility increment	DTI4	320	570	78.13	0.902	Policy promotion
Tourism performance	Tourist arrivals	TE1	85899.3	93000	8.27	0.658	Market demand
Tourism performance	Gross tourism income	TE2	9892.4	11000	11.19	0.731	Income increase
Tourism performance	Tourism consumer satisfaction	TE3	4.1	4.6	12.20	0.789	Service quality
Tourism performance	Number of people directly employed in tourism	TE4	2560	2870	12.11	0.659	Employment growth
Impact on geographic services	The growth rate of customized travel routes	IGL1	20.3	35.7	75.86	0.904	Customized service
Impact on geographic services	Tourist destination promotion effect	IGL2	3.7	4.5	21.62	0.782	Advertising effect
Impact on geographic services	Destination diversification index	IGL3	2.8	3.6	28.57	0.748	Market expansion

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Table 3: (continued).

Impact on geographic services	Travel convenience	IGL4	4.3	4.8	11.63	0.811	Traffic improvement
Impact on geographic services	Satisfaction degree of individual travel orientation needs	IGL5	4.0	4.7	17.50	0.867	User experience

5. Conclusion

This study draws several important conclusions based on comprehensive research and analysis. The digital transformation of the tourism industry is having a profound impact on location-based services (LBS), enhancing both the efficiency and competitiveness of the sector while presenting new opportunities and challenges for LBS development. This shift is leading to a reconfiguration of the tourism ecosystem, where digital platforms and mobile applications are increasingly replacing traditional brick-and-mortar service providers, and consumer preferences are rapidly evolving. As technology continues to advance, the digitalization of the tourism industry is expected to grow even more pronounced, with significant benefits for location-based services. To stay competitive in a dynamic market, it is essential for stakeholders to adapt swiftly and leverage emerging opportunities.

However, this study also acknowledges its limitations. Due to time and resource constraints, the analysis of digital transformation's impact on location-based services in tourism was preliminary in nature. Future research could expand the sample size and delve deeper into specific areas to provide a more comprehensive understanding. Moreover, this study relies primarily on existing literature and data, lacking fieldwork and in-depth interviews that could uncover more nuanced insights. Future studies could strengthen these findings through empirical research and qualitative approaches.

Despite these limitations, the novelty of this research lies in its thorough examination of the relationship between digital transformation and geographical location services, highlighting the substantial impact of digitalization on their evolution. Additionally, it addresses practical challenges in the application of these technologies and proposes potential solutions, offering valuable insights for the ongoing digital transformation of the tourism industry and the advancement of location-based services.

References

[1] *Maganioti, A.E., Chrissanthi, H.D., Charalabos, P.C., Andreas, R.D., George, P.N. and Christos, C.N. (2010)*

[2] *Pedrana, M. (2014). Location-based services and tourism: Possible implications for destination. Current issues in Tourism, 17(9), 753-762.*

[3] *Mohammadi, S., Darzian Azizi, A., & Hadian, N. (2021). Location-based services as marketing promotional tools to provide value-added in e-tourism. International Journal of Digital Content Management, 2(3), 189-215.*

[4] *Chang, S. E., Hsieh, Y. J., Chen, C. W., Liao, C. K., & Wang, S. T. (2006). Location-based services for tourism industry: An empirical study. In Ubiquitous Intelligence and Computing: Third International Conference, UIC 2006, Wuhan, China, September 3-6, 2006. Proceedings 3 (pp. 1144-1153). Springer Berlin Heidelberg.*

[5] *Uphaus, P. O., Ehlers, A., & Rau, H. (2019). Location-based services in tourism: An empirical analysis of factors influencing usage behaviour. European Journal of Tourism Research, 23(November), 6-27.*

[6] *Evans, L. (2011). Location-based services: Transformation of the experience of space. Journal of Location Based Services, 5(3-4), 242-260.*

DOI: 10.54254/2754-1169/147/2024.GA19119

[7] Antikainen, H., Rusanen, J., Vartiainen, S., Myllyaho, M., Karvonen, J., Oivo, M., & Laine, K. (2006). Location-based services as tool for developing tourism in marginal regions. Nordia Geographical Publications, 35(2), 39-50.

[8] Abbasian Fereidouni, M., & Kawa, A. (2019). Dark side of digital transformation in tourism. In Intelligent Information and Database Systems: 11th Asian Conference, ACIIDS 2019, Yogyakarta, Indonesia, April 8–11, 2019, Proceedings, Part II 11 (pp. 510-518). Springer International Publishing.

[9] Uphaus, P., Beringer, B., Siemens, K., Ehlers, A., & Rau, H. (2021). Location-based services–the market: success factors and emerging trends from an exploratory approach. Journal of Location Based Services, 15(1), 1-26.