



The Impact Of Digital Transformation On Cultural Tourism Development In Hanoi

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Abstract:

Information technology and digital transformation significantly impact the tourism industry in general and cultural tourism in particular, especially cultural tourism in Hanoi. The article gathers relevant information from secondary data sources and official websites from 2020 to 2023. It utilizes PESTEL and SWOT analysis to understand how digital transformation influences Hanoi's promotion, development, and cultural tourism experience.

Research purpose:

Evaluating the impacts of digital transformation on cultural tourism development in Hanoi.

Research motivation:

Digital transformation is viewed as a critical, long-term solution to revitalize the tourism industry, which faced significant challenges during the COVID-19 pandemic. Hanoi city's strategy emphasizes integrating digital technology to create an intelligent tourism system, offering more convenient, efficient, and innovative services that align with global tourism trends. The author wants to analyze how the digital transformation process affects the development of cultural tourism in Hanoi.

Research design, approach, and method:

The research utilizes a descriptive and exploratory approach, aiming to understand the relationship between digital transformation and the growth of cultural tourism in Hanoi. The PESTEL and SWOT models analyze internal and external factors to identify strengths, weaknesses, opportunities, and external challenges for the development of cultural tourism in Hanoi. This comprehensive analysis forms the basis for proposing appropriate strategies and measures to leverage opportunities and address challenges through digital transformation.

Main findings:

Digital transformation has been generating positive impacts on cultural tourism development activities in the city in various aspects, such as enhancing the management capacity of businesses, boosting the promotion of cultural tourism in the locality, enhancing transparency, creating new and unique tourism products, improving the connectivity and interaction between businesses and tourists, as well as among entities within the industry. Besides, digital transformation has some negative impacts on cultural tourism in Hanoi, such as dependence on technology, imbalance between traditional and digital tourism, and loss of traditional jobs. Research results indicate that to fully leverage the benefits of digital transformation, each level, industry, organization, and individual must recognize the role of digital transformation. Simultaneously, they must proactively seize opportunities and overcome challenges to avoid falling behind, ensure sustainable development, and actively contribute to efforts to build a digital economy in Vietnam.

Practical/managerial implications:

The research outcomes yield five practical implications for management. Firstly, the city government and tourism-related businesses must collaborate with seasoned organizations and pertinent partners in digital transformation. Secondly, they provide training and support to tourism businesses and stakeholders. Thirdly, establishing a digital collaboration network is vital. Fourthly, the city government and relevant organizations must create favorable conditions and provide financial support to enhance technical infrastructure and provide advanced technologies for

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small businesses, traditional craft villages, and heritage sites in the outskirts of Hanoi. Finally, tourism businesses and organizations should use technology as a supportive tool rather than a replacement for interaction between tourists and guides or residents.

Keywords: *Information Technology, Digital Technology, Digital Transformation, Cultural Tourism*

1. INTRODUCTION

In the current era of the 4.0 Industrial Revolution, digital technology and the growth of the Internet have significantly impacted various aspects of life, including the economy, industry, education, healthcare, tourism, and culture. Tourism is one of today's economy's most dynamic and flexible industries. Moreover, digitization increasingly influences how tourism is planned, discovering new destinations, promoting them, and enhancing the tourism experience. New technologies are changing and will continue to change the face of the tourism industry in the coming years (Agarwal & Dhar, 2014). In Vietnam, digital technology has been applied in the tourism industry. It is being emphasized to enhance the tourism experience, promote international tourists, and improve the competitiveness of the tourism industry, especially in cities and major tourist destinations (Chuc & Anh, 2023). This transformation indicates the profound impact of digital technology on the tourism industry, shaping how destinations are discovered, promoted, and experienced.

Capitalizing on a millennium of civilization, Hanoi blends traditional cultural heritage with modern advancements. The Hanoi Department of Tourism underscores the primacy of cultural tourism, leveraging it as a cornerstone for the growth of diverse tourism forms. Boasting nearly 6,000 historical sites, 1,350 craft villages, a robust tourism infrastructure, and a skilled workforce, Hanoi is poised to cultivate professional, contemporary cultural tourism with a distinctive regional and global identity (General Statistic Office of Vietnam, 2023). Recent proactive initiatives by the Hanoi Department of Tourism have focused on integrating information and communication technology into tourism management alongside practical digital cultural transformation endeavors. Despite strides in digitizing data and artifact information, the city grapples with limited network connectivity and modern telecommunications infrastructure, impeding seamless data transmission within the cultural tourism sector (Nga, 2022). Furthermore, an incomplete policy framework poses challenges for entities seeking to embrace digital transformation and technological applications in cultural tourism operations. While Hanoi has made headway in this domain, there remains a need to surmount these limitations and foster a conducive environment for cultural tourism in the digital era (Nghi & Loc, 2022).

This study seeks to evaluate the impact of existing digital technologies and transformation measures on cultural tourism development in Hanoi, shedding light on both the positive and negative effects of digital transformation in the city's cultural tourism landscape. Consequently, the study aims to propose pertinent policy implications to mitigate adverse effects, amplify positive impacts, and harness digital technology to advance cultural tourism in Hanoi.

2. LITERATURE REVIEW

Digital transformation is fundamentally reshaping cultural tourism by leveraging advanced technologies to create, deliver, and consume cultural experiences in new ways. This transformation, encompassing technologies such as Big Data, the Internet of Things (IoT), virtual and augmented reality (VR/AR), and artificial intelligence (AI), is enhancing operational efficiency, enriching customer engagement, and promoting cultural preservation (Xu & Duan, 2018). Cultural tourism, which focuses on the exploration of local culture, traditions, and heritage, is particularly well-positioned to benefit from digital tools, given their potential to create immersive, personalized, and accessible experiences for tourists.

2.1. Enhanced tourist engagement through digital technologies

Digital transformation in tourism activities affects the needs and behavior of tourists and the interaction between tourists and tourism businesses. Advanced technology helps enhance customer experience by increasing convenience and flexibility in tour booking, payment, and communication (World Bank Group, 2024). Not only that, but digital transformation also brings better cultural tourism experiences for tourists. Digital technology allows visitors to explore and learn about local culture through mobile apps, audio guides, or even virtual reality (Xu & Duan, 2018).

One of the most significant impacts of digital transformation in cultural tourism is the improvement in tourist engagement through interactive, immersive experiences. VR and AR, for instance, allow tourists to virtually visit cultural sites, providing experiences that were previously unimaginable, such as reconstructed versions of historical landmarks or immersive tours of ancient places (Xu & Duan, 2018; Ha & Huan, 2023). These tools transform cultural exploration into a more interactive, engaging, and informative process, allowing tourists to access detailed cultural content at their own pace. In Vietnam, for example, the use of digital platforms and AR in cultural tourism has enabled virtual tours of UNESCO heritage sites, making them accessible to global audiences without physical limitations (Ammirato et al., 2022). Digital transformation also enhances accessibility for tourists through mobile applications that provide real-time information on cultural attractions, such as virtual maps, audio guides, and suggestions on local customs and traditions (Zhu & Zhang, 2010). These applications offer an intuitive way for tourists to engage with culture, providing information tailored to individual preferences and allowing visitors to access content in multiple languages, which broadens the appeal of local

cultural tourism products (Kumar & Shekhar, 2020). Furthermore, cloud computing and data analytics allow cultural tourism providers to collect and analyze data on tourist behavior, enabling them to design more personalized experiences (Granados & Gupta, 2013).

2.2. Operational transformation of cultural tourism businesses

Digital transformation creates favorable conditions that allow tourism businesses to create new products and services, responding to market changes (Smith & McKeen, 2008). Virtual tourism, simulation tourism, and virtual reality services bring unique experiences to customers. Digital transformation provides more effective marketing and promotion tools for cultural tourism. Websites, mobile applications, and social networks allow cultural venues to promote and showcase their culture to tourists. The digital transformation process also helps tourism businesses optimize management and operations, saving time and costs (Sheth, 1999; Erdem & Şeker, (2022). Medium- and large-scale tourism businesses often have complex processes such as sales management, marketing, executive management, partner connection, and accounting. Therefore, applying digital technology helps these processes become more standardized and scientific. Furthermore, in the tourism industry, digital transformation will give rise to many new business models (Nambisan, 2002; Wang, 2023). Typically, the intelligent tourism model, through the application of virtual reality technology, this form of tourism helps tourists have new and unique experiences. The application of advanced digital technology will help businesses understand customer preferences, tastes, and needs, thereby providing travel product packages suitable for each group and individual customer (Hennig-Thurau et al., 2010; Granados & Gupta, 2013). Today, with new technologies such as Big Data, the Internet of Things (IoT), and Cloud..., tourism businesses can exploit them to help serve customers more effectively. Finally, in globalization, which requires change to adapt and integrate internationally today, digital transformation helps deal with new challenges. Technologies can help reduce direct contact between customers and employees, improve safety and service quality, and make the customer experience more positive (Muhammad et al., 2019).

2.3. The role of government in supporting digital transformation

The digital transformation process also brings many challenges to the tourism industry, requiring strict management and appropriate measures from all levels of management. First, digital transformation can increase dependence on technology and the Internet in the cultural tourism industry (Abbasian & Kawa, 2019). As cultural tourism relies on technology and the internet, localities with solid technological infrastructure and highly technical human resources can exploit digital transformation opportunities. For example, they can develop online travel applications, create engaging digital content, and use advanced technologies to provide better travel experiences. However, localities without high technology potential will have difficulty adapting to the digital transformation trend. This may be due to limitations in network infrastructure, technical capabilities, and finances (Markus & Loebbecke, 2013). These localities may need to catch up in cultural tourism development and need help taking advantage of digital transformation's benefits. Second, the shift to online travel and automation could lead to local job losses. As travel moves online, some traditional jobs may be replaced by new technologies. Previously, local staff could guide tours or arrange tourist activities (Imran et al., 2018). However, with the development of online travel applications and artificial intelligence, this can be automated or done remotely through online platforms. This could reduce the need for local workers in the tourism industry. However, digital transformation can create new job opportunities in the cultural tourism industry (Lucas et al., 2013). For example, developing and managing online travel applications, digital content, and online platforms can create a need for technical personnel, customer support staff, and IT experts.

2.4. Research gap

Previous research has yet to comprehensively examine the interplay of internal and external factors impacting the digital transformation process within tourism activities. This oversight may lead to a need for more attention to the challenges and opportunities for the tourism industry's development amidst digital transformation and volatile globalization. It is crucial to consider the economic and social context, the promotion of policies and technology infrastructure, and information security. Furthermore, there is a need for research to identify and assess the significance of digital transformation in fostering cultural tourism. This involves analyzing the influence of digital technology on image-building, branding, and cultural tourism experiences. While current research has indicated the positive impact of digital transformation on overall tourism development in Hanoi, there is a specific need for further investigation into its impact on cultural tourism development in the city. Additionally, existing studies on the impact of digital transformation on domestic tourism still need to adequately address changes in tourist behavior and the demand for cultural tourism within the context of digital transformation. This encompasses research into online platform usage for searching and booking, engagement with digital content, and virtual travel experiences.

This research will contribute to a deeper understanding of how digital transformation influences the promotion, development, and experience of cultural tourism in Hanoi. To gain a more comprehensive perspective and fully leverage the potential of digital transformation, it is imperative to explore and investigate future research gaps closely. Moreover, as cultural tourism development activities are increasingly emphasized and new digital technologies and applications are introduced, prospective research in this field will play a pivotal role in enhancing Hanoi's tourism industry's efficiency and

sustainable development. This re-articulation emphasizes the need for comprehensive research on the impact of digital transformation on cultural tourism in Hanoi, addressing the oversight in previous studies and highlighting the potential for future research to contribute to the sustainable development of the tourism industry.

3. METHODOLOGY

3.1. Data collection and data analysis

The article gathers relevant information from secondary data sources and official websites from 2020 to 2023, including newspapers, magazines, and reliable internet sources such as the Report of the General Statistics Office, the Report of the Hanoi Statistical Office, and various research works, reports, official documents, books, magazines, scientific research, theses, and dissertations. This comprehensive collection of secondary data is crucial as it reduces the author's effort and search time. Specifically, the article synthesizes and systematizes research and statistics on tourism development activities in Hanoi. It then provides an overview of tourism development in Hanoi based on the analysis and exploitation of existing information and documents.

Descriptive statistical methods are employed to classify and summarize the collected data. The study further analyses and assesses the impact of digital transformation on cultural tourism development in Hanoi, identifying the opportunities and challenges faced by cultural tourism development activities in this context.

3.2. PESTEL and SWOT analysis

The paper utilizes the PESTEL model to analyze external environmental factors affecting the development of cultural tourism in the context of digital transformation. This model encompasses Political, Economic, Social, Technological, Environmental, and Legal factors. Originating from the ETPS model by Harvard professor Francis Aguilar in 1967, the PESTEL model has evolved into a comprehensive business environment analysis tool for businesses.

In addition to the PESTEL model, the paper also employs the SWOT model to analyze internal and external factors affecting the development of cultural tourism, particularly in Hanoi, within the digital economy. The SWOT model, originally named SOFT (Satisfactory, Opportunity, Fault, Threats), was developed by Albert Humphrey and colleagues in the 1960s. Over time, it was refined and perfected into the SWOT model by Thomas J. Chermack and Bernadette K. Kasshanna in 2007 (Ponsard, C. & Desmet, W., 2022). The author combines the positioning and analysis of internal and external factors to identify strengths, weaknesses, opportunities, and external challenges for the development of cultural tourism in Hanoi. This comprehensive analysis forms the basis for proposing appropriate strategies and measures to leverage opportunities and address challenges through digital transformation.

4. RESULTS AND DISCUSSION

4.1. Policy of digital transformation in cultural tourism activities in Hanoi

As the primary local authority responsible for implementing the government's digital transformation program, Hanoi city places significant emphasis on advancing digital transformation, particularly within the capital city's tourism sector. This initiative is aimed at bolstering competitiveness and addressing external challenges. The digital transformation process in Hanoi's tourism industry unfolds through three primary stages.

(i) Establishing ICT Infrastructure The initial stage focuses on establishing ICT infrastructure (Government, 2018). This involves concentrated efforts towards constructing, developing, and upgrading ICT infrastructure to create favorable conditions for implementing digital transformation in cultural tourism. Projects include improving network systems, developing server systems, upgrading data storage systems, and enhancing network security.

(ii) Digitizing Cultural Tourism Destinations Subsequently, the focus shifts to digitizing cultural tourism destinations. In alignment with government efforts, numerous destinations and businesses in the area have become more actively involved in digital transformation (Ministry of Culture, Sports and Tourism, 2019).

(iii) Strengthening Promotion and Communication on Digital Media Platforms. The final stage of the digital transformation process in Hanoi's tourism sector involves reinforcing promotion and communication on digital media platforms (Hanoi People's Committee, 2020, 2021). Robust campaigns have been implemented to promote the image of the capital's tourism on various digital media platforms. Like other countries and cities mentioned in previous studies, Hanoi's tourism industry has gradually embraced and applied digital technology over the past decade through the main stages of the digital transformation process in the tourism sector.

4.2. Results of digital transformation in cultural tourism activities in Hanoi

According to strategic planning documents, the digital transformation of Hanoi's cultural tourism sector is progressing through three primary stages.

Phase 1: Establishing Digital Infrastructure. The initial phase focused on laying the groundwork for essential digital infrastructure. During this period, the city government's primary focus was the development, enhancement, and

interconnection of technology systems, encompassing networks, servers, data storage, and security. Notably, in line with recommendations from national tourism authorities, a significant priority in this foundational stage was establishing a free public Wi-Fi network accessible to at least 80% of guests across critical hotels, restaurants, and attractions. Hanoi diligently implemented these guidelines by deploying wireless broadcast stations in major cultural areas, including Hoan Kiem Lake, the Imperial Citadel, the Temple of Literature, Hanoi Book Street, and Noi Bai Airport. These strategic infrastructure investments have equipped Hanoi with the fundamental digital platforms and connectivity necessary to pursue further transformation objectives for the cultural tourism industry, as stipulated in government planning documents. The ongoing progress is poised to build upon this initial infrastructure phase to optimize emerging technologies that fully support the sector.

Phase 2: Digitizing Key Cultural Destinations. The second phase of Hanoi's digital tourism transformation revolved around digitizing pivotal cultural destinations, following relevant policy documents. Bat Trang village, a renowned 10km pottery hub, proactively modernized its outreach. Visitors can access comprehensive village information remotely through the www.battrangtour.net portal or the BatTrangtravel app on any internet-enabled device. This digitization effort encompasses historical background, dining options, transportation directions, and tourist maps, facilitating convenient pre-trip planning or on-site reference. These initiatives exemplify how destinations complement top-down government efforts by independently embracing digital platforms to enhance the user experience.

Phase 3: Provision of Virtual Experiences and Notable Impact. As indicated by official reports, the digitization of cultural sites and the provision of virtual experiences in Hanoi have brought about significant conveniences. Tourism figures from 2023 reflected a remarkable increase, with an estimated 5.1 million visitors, marking a 93.7% year-over-year rise. International arrivals reached 3.337 million, a 2.7-fold increase from the previous period's 1.227 million. Domestic tourism further contributed with 1.733 million guests, signifying a 24.7% growth relative to 2022's 1.39 million (Hanoi Department of Statistics, 2023). These record-setting statistics underscore the success of Hanoi's digital transformation initiatives in optimizing accessibility and engagement with its rich cultural offerings. By embracing emerging technologies, the city has significantly enhanced the user experience in alignment with strategic objectives. Ongoing evaluations of these platforms will continue refining implementation to sustainably maximize tourism's socioeconomic benefits for Hanoi, as envisioned in national directives.

Table 1. The number of tourists coming to Hanoi over the years (2020 -2023)

Unit: Thousands of people

	2020	2021	2022	2023
Total number of tourists	2.667	1.093	2.617	5.070
Domestic tourists	1.905	919	1.390	1.733
International tourists	762	174	1.227	3.337

Source: Hanoi Department of Statistics (2020-2023)

4.3. The impact of digital transformation on cultural tourism activities in Hanoi

This section evaluates the impact of digital transformation on cultural tourism activities in Hanoi using PESTEL and SWOT analysis.

Table 2. PESTEL analysis of cultural tourism development activities in Hanoi in the context of digital transformation

PESTEL factors	O/T	Importance	Time Impact
Political: *Stable political system *There are policies to promote digital transformation in tourism development	Opportunity	High	Long -term
Economic: *Stable economy *The service and tourism industries account for a high proportion of the city's industry structure	Opportunity and challenge	High	Long -term
Social: * Technology usage rate is increasing (both domestically and internationally)	Opportunity and challenge	High	Medium-term

* The need for convenient travel experiences through online platforms			
Technological: * Development of the city's digital infrastructure has been promoted * The city actively applies technology to cultural tourism activities	Opportunity	High	Long -term
Environmental: * Poor awareness and waste treatment capacity of craft villages and tourism businesses * Air pollution	Challenge	Medium	Medium-term
Legal: * There are full legal documents on tourism development, cultural heritage preservation, and technology application in tourism development activities * There is no synchronization between documents, and there is lack of human resources for supervision and management	Opportunity and challenge	Medium	Medium-term

Source: Own (2024)

Drawing insights from the PESTEL model's examination of factors impacting cultural tourism within the digital transformation landscape, coupling it with the SWOT matrix offers a pragmatic approach. This method enables the author to comprehensively understand Hanoi's cultural tourism panorama, evaluating its present standing and future potential. Consequently, it facilitates delineating tailored strategies for cultural tourism development amidst digital transformation, capitalizing on technology's prowess to allure tourists and foster sustainable growth in Hanoi's cultural tourism sector.

Table 3. SWOT matrix analyzing cultural tourism development activities in Hanoi in the context of digital transformation

S (Strengths) S1: The capital's location is convenient and on major roads and air routes. S2: Rich cultural tourism resources with many historical and cultural relics and traditional craft villages. S3: Hanoi's prestigious cultural and historical tourism brand has been widely known for many years. S4: There are more creative and new tours at cultural tourism destinations.	W (Weaknesses) W1: Cultural tourism development planning has not been properly synchronized, and the infrastructure still has many limitations W2: Lack of financial and human resources for digital transformation W3: There is no shared online data connection in the tourism industry in Hanoi. W4: Lack of updating and synchronizing information about tourist destinations on online channels. W5: The city's environmental quality still needs improvement
O (Opportunities) O1: The government is especially interested in developing tourism into a foundation spearhead economy. O2: Travelers need convenience in booking tickets and paying online. O3: Modern tourism promotion trends on digital platforms O4: Trends in sustainable cultural tourism development. O5: Develop mobile applications and websites to help tourists easily find destination information and book tickets.	T (Threats) T1: Technology development, digital transformation, virtual reality technology, cloud computing in tourism activities T2: Applying IT and digital transformation requires initial investment costs for infrastructure. T3: The need for more digital talent limits the digital transformation of the travel industry. T4: Digital transformation in the tourism industry also threatens information security, especially when customer information is stored and processed on digital platforms. T5: The institutional system and policies on digital transformation, database management and connection, and electronic storage still need to be completed, causing difficulties for subjects who want to participate in digital transformation.

Source: Own (2024)

The SWOT matrix analysis offers a comprehensive overview of the benefits and prospects and the drawbacks and impediments inherent in Hanoi's endeavors to cultivate cultural tourism. Within digital transformation, Hanoi's cultural heritage and traditional craft villages stand as stalwart advantages, steeped in their distinctive local cultural and historical ethos, which serve as a magnet for domestic and international tourists. Concurrently, the advent of digital transformation presents an opportune avenue to augment the promotion of the capital's tourism sector, particularly within cultural

tourism, leveraging digital platforms and virtual reality technologies to captivating effect.

However, to fully capitalize on these opportunities, it becomes imperative to surmount the challenges posed by antiquated technological infrastructure, deficient administrative capabilities, and the need for more proficient human resources in digital proficiencies and marketing acumen. Only through the efficacious resolution of these issues can stakeholders engaged in cultural tourism pursuits in Hanoi truly harness the advantages proffered by digital transformation in the trajectory of tourism development.

4.4. Evaluate the impact of digital transformation on cultural tourism development in Hanoi city

4.4.1. Improve management and business development capacity of tourism and local businesses

Implementing effective digital transformation initiatives promises to render cultural tourism enterprises in Hanoi more adaptable to the dynamic shifts within the market landscape. Leveraging cutting-edge technologies, such as automatic interpretation systems, QR codes, and travel applications, tourism service providers stand poised to furnish tourists with seamless, secure, and expeditious experiences. The Hanoi Department of Tourism has proactively engaged in collaborative endeavors with various entities to actualize programs and strategies geared toward integrating information technology into tourism administration. By actively embracing IT solutions in tourism management, the Department has significantly bolstered the competitiveness of the local tourism sector, thereby engendering substantial dividends for both the community and tourists alike.

Innovative tourism systems have proven instrumental in streamlining the licensing procedures and oversight of tourism endeavors, thereby ensuring a milieu characterized by transparency and efficacy. Moreover, deploying technologies such as tourism information management systems, mobile applications, and dedicated tourism portals has facilitated unfettered access to comprehensive information about destinations, leisure activities, and amenities. This concerted effort has facilitated the seamless dissemination of information and simplified the process of service booking and itinerary planning for both tourists and residents alike. Furthermore, intelligent travel systems have played an indispensable role in enriching the spectrum of travel experiences while concurrently augmenting tourist value propositions.

According to statistics compiled by Hanoi City's E-Commerce Steering Committee, most tourism enterprises operating within the region have embraced e-commerce applications across various scales and tiers. Noteworthy examples include venerable landmarks such as the Temple of Literature - Quoc Tu Giam and the Imperial Citadel of Thang Long. These have leveraged QR code software systems, automated ticketing mechanisms, and guest management software to fortify administrative capacities. These endeavors aim to enhance the overall tourism experience and foster convenience for visitors as they navigate through Hanoi's myriad cultural and historical attractions. Such measures are envisioned to serve as a pivotal catalyst in amplifying the heritage value of this iconic monument, thereby elevating its stature as a premier tourist destination within the capital and across the entire nation. As of 2023, 27 destination units within Hanoi had successfully transitioned toward digital data management and archival practices (Hanoi Department of Statistics, 2023).

The paradigm shift ushered by digital transformation endeavors has empowered tourism enterprises to optimize their administrative frameworks and operational modalities, thereby effectuating tangible savings in time and expenditure. According to projections outlined in the 2023 Economy SEA report, the value of online tourism in Vietnam is slated to burgeon from 5 billion USD in 2023 to 7 billion USD in 2025, eventually cresting at 10 billion USD by 2030 (ABC). This seismic shift towards online engagement necessitates that travel platforms remain attuned to evolving customer preferences and comport themselves accordingly by harnessing technology as a fulcrum for innovation.

Noteworthy among the administrative reforms instituted in 2023, juxtaposed with the concurrent thrust towards digital transformation, is the Hanoi Department of Tourism's pioneering initiative in instituting QR code-based administrative protocols. This measure has been conceived to enhance the convenience and accessibility for individuals and organizations availing themselves of intelligent mobile devices to navigate administrative procedures and public services online. Augmenting this initiative is the establishment of a 24/7 toll-free information support and consultation service via the hotline 1800.556.896, aimed at expeditiously addressing and redressing feedback and grievances from tourists. Consequently, 772 tourists were assisted, with 32 complaints duly received and resolved by domestic and international visitors. This tangible outcome has burned Hanoi's image as a tourist-friendly destination par excellence (Hanoi Department of Statistics, 2023).

In the crucible of administrative reform and digital transformation, the pivotal role assumed by these initiatives in galvanizing tourism development within the capital cannot be gainsaid. Testament to this resounding success, Hanoi has garnered accolades from international tourism fora, clinching the prestigious "World's Leading City Destination for Short Breaks" award bestowed by the World Tourism Organization. Additionally, 2023 marked the maiden nomination and subsequent conferral of the "Asia's Leading City Tourism Management Agency" award upon the Hanoi Department of Tourism. Hanoi's continued inclusion among the ten notable events underscores its burgeoning stature as an eminent epicenter of cultural and touristic allure for the second consecutive year.

4.4.2. Strengthen the promotion of local cultural tourism

The development of IT applications and digital transformation has significantly diversified and enhanced the appeal of the tourism industry. Today, tourists have many choices when seeking tourism services and products. Therefore, digital transformation in the tourism industry is crucial for leveraging each locality's unique advantages and effectively promoting the local image to tourists. IT applications have enabled tourism businesses to enhance their market reach and promotional capabilities through new media platforms like Facebook, YouTube, TikTok, 3D, and other online platforms. This has significantly boosted the promotion and visibility of Hanoi's tourism image, drawing attention from tourists worldwide.

Key cultural heritage sites in Hanoi, such as the Temple of Literature and the Imperial Citadel of Thang Long, have adopted new technologies like 360-degree videos, 3D imaging, FLYCAM, and mapping to create innovative travel products that do not require direct contact. As a city rich in cultural tradition and history, Hanoi has many attractive cultural heritages. The promotion and introduction of these strengths have become more efficient and impactful due to digital transformation.

The development of mobile applications and online platforms has provided interactive and enjoyable experiences for visitors. These applications enable users to search for information about tourist attractions, book tickets, and participate in cultural tourism activities. Such digital tools attract the interest and attention of tourists keen on Hanoi's cultural symbols and unique tourist destinations. Propaganda and promotional activities in cyberspace have also been enhanced through promotion programs, exhibitions, and online product introductions on modern technology platforms.

On March 24, 2021, the Hanoi Department of Tourism and the Hanoi Department of Information and Communications signed a coordination program to improve the effectiveness of information dissemination, promotion, and IT application in the capital's tourism activities from 2021 to 2025 (ABC). This program aims to enhance the efficacy of information and propaganda efforts for tourism activities and events, innovate methods and content, and increase the use of modern technology in tourism information and communication.

According to a representative of the Hanoi Department of Tourism, one of the most critical aspects of this coordination program is digital transformation in the tourism industry. This initiative aims to provide tourists with better experiences and encourage more extended stays in Hanoi. The completion of tourism industry websites will offer tourists comprehensive and up-to-date information. Additionally, districts will standardize content to deploy audio guides (automatic explanations using headphones) in multiple languages at tourist attractions. Digitizing monuments and destinations will enable visitors to learn about attractions before their trips quickly.

Hanoi has also created official electronic information pages and websites, such as Hanoi.gov.vn and HanoiTourism.gov.vn, to promote the city's cultural tourist attractions. These platforms continuously update and refresh information and data about Hanoi tourism, facilitating visitor information searches. Famous tourist destinations in Hanoi, such as the Thang Long Heritage Conservation Centre, have organized online exhibitions and displays to attract visitors. The Hoa Lo Prison Relics Management Board launched the HoaLoPrisonRelic radio channel on Spotify to engage the younger generation with the city's long historical heritage.

Moreover, Hanoi has partnered with renowned tourism social networking platforms like TripAdvisor, Lonely Planet, and Traveloka to promote the city's cultural tourist attractions. Articles, reviews, and images shared on these platforms generate interest and curiosity among visitors. Hanoi aims to convey messages about its unique and attractive cultural tourist attractions by harnessing the power of social networks and online tourism platforms, encouraging tourists to explore and experience the city's distinctive cultural beauty. Through the rapid and widespread dissemination of information on social networks, Hanoi hopes to draw tourists' attention and motivate them to discover the city's unique cultural treasures.

4.4.3. Enhance the reliability and reputation of tourism businesses

Digital transformation significantly enhances the reliability and reputation of tourism businesses in Hanoi. Adopting new technologies, such as artificial intelligence (AI) and blockchain, boosts transparency and safety in payment and transaction processes. Online payment systems, customer information security, continuous information updates, and 24/7 customer support are critical factors that build customer trust in digitally transformed tourism businesses. Customers can make online payments easily and quickly, which saves time and effort.

Automatic interpretation systems and QR codes have been widely implemented to manage and authenticate tourist information. Automatic voiceover systems assist in managing passenger information, from personal data collection to airline ticket details and hotel reservations. These systems improve the accuracy and efficiency of passenger information verification. QR codes also play a crucial role in information control and authentication. Tourists can use QR codes to register personal information via mobile applications or tourism business websites. This reduces the time and effort required for information verification and increases accuracy.

Furthermore, tourism businesses in Hanoi can implement advanced security technologies to protect customers' personal information. Information security measures, such as data encryption and security protocols, ensure that personal

information is not disclosed or accessed without authorization. These measures create a secure environment for customers, fostering trust in the services provided by tourism businesses.

For instance, blockchain technology can be used to create transparent and secure transaction records, which are immutable and can be verified by all parties involved. This reduces the risk of fraud and enhances trust in financial transactions. AI can be used to provide personalized customer service, analyze customer behavior, and predict tourism trends, enabling businesses to tailor their services to meet customer needs better.

Moreover, integrating these technologies allows for the automation of many processes, such as booking, check-in, and information dissemination, making the entire travel experience more seamless and enjoyable for tourists. This not only improves customer satisfaction but also strengthens the reputation of tourism businesses as reliable and innovative service providers.

By leveraging digital transformation, tourism businesses in Hanoi can ensure their customers' safety and satisfaction, maintain high service standards, and enhance their competitive edge in the tourism industry. The commitment to technological advancement and customer security ultimately leads to increased customer loyalty and a more substantial market presence.

4.4.4. Create new and unique tourism products

Implementing effective digital transformation will enable tourism businesses to adapt flexibly to market changes. By leveraging new technologies, tourism service businesses can offer convenient, safe, and fast tourist experiences through automatic interpretation systems, QR codes, and travel apps. These technologies allow visitors to engage in cultural tourism via mobile applications, online games, and virtual reality. Digital transformation has facilitated the creation of novel and unique tourism products by applying advanced technologies such as 360-degree imaging, FLYMCAM, 3D, and Mapping technology. These innovations create interactive and enjoyable visitor experiences while promoting and showcasing local culture.

With the potential of 5,922 historical and cultural relics and active digital transformation efforts in various fields, many districts in Hanoi have introduced unique tourism products. The Hanoi Youth Union and its facilities have spearheaded the digitization of historical relics in the city, providing attractive experiences for both domestic and foreign tourists. According to the Hanoi Youth Union, their relic digitization model has digitized 322 significant sites (Hanoi Department of Statistics, 2023). The Youth Union of Districts and Towns has also digitized relics in their areas, ensuring synchronization and unification of information. This facilitates the preservation and promotion of the capital's cultural values.

Cultural tourism attractions in Hanoi, such as the Vietnam History Museum, Vietnam Fine Arts Museum, and Vietnam National Library, have digitized their existing resources. The construction of websites, images, and sounds recorded in mp4 and jpg formats, online tours, virtual reality technology, and 3D graphics have provided visitors with the most authentic experiences. Thanks to these technologies, visitors can vividly explore the city's cultural tourist attractions from their screens. Virtualization technology, such as 360-degree photos and 3D video, allows visitors to clearly and vividly experience the city's cultural attractions from their screens. This creates excitement and curiosity among tourists, encouraging them to explore and experience more cultural heritage in Hanoi during their trips.

At the Temple of Literature - Quoc Tu Giam, in addition to the convenience of digital ticket purchasing, the Centre for Cultural and Scientific Activities has implemented digital technology solutions such as digitizing 82 doctoral steles. QR codes have been deployed for 40 items of the monument, supporting automatic narration in multiple languages for tourists (Audio Guide). In early November 2023, the Centre launched the unique night tour product "Essence of Taoism," supported by advanced 3D mapping projection technology and virtual night glasses, offering tourists a unique and new experience. Many visitors have found this to be a completely different experience than the traditional day tour. This modern take on the hundred-year-old relic has become a favorite destination for tourists and young people and is an attractive tour option after 6 pm in Hanoi.

Some relic management units have also applied digital technology to serve tourists, such as the Hanoi Old Quarter Management Board, which developed tourism apps to introduce attractions and relics. Bat Trang ancient village (Gia Lam district) is the first craft village in Hanoi to apply 3D VR (virtual reality) technology, allowing tourists to visit the craft village and immerse themselves in the village festival through a 3D virtual space.

In addition to developing diverse forms of unique and creative cultural tourism, digital transformation applications help tourism businesses continuously update information about services, products, and promotions. Easy access to the latest information helps customers grasp travel opportunities and choose services that meet their needs and preferences. They can look up information, book tickets, read reviews and comments from previous customers, learn about travel destinations, and even participate in online communities to share travel experiences.

4.4.5. Increase industry connectivity

The tourism industry relies significantly on interactions among stakeholders. Collaborative efforts generate synergy, ensuring travelers a seamless and rewarding experience while enhancing the destination's appeal. Sharing data and resources within the industry helps offset costs and enriches collective knowledge and experience. Through digital technology, businesses and organizations in the cultural tourism sector can interact, collaborate, and share information more effectively, forming a robust network of connections. Businesses must seek partnerships with hotels, restaurants, and other tourism-related entities and negotiate to offer competitive pricing for customers' trips. As technology evolves and the tourism market shifts, traditional tourism businesses are also adapting to digital transformation trends and new markets.

Digital transformation enhances industry connectivity by creating online platforms and mobile applications. These platforms enable cultural tourism businesses to share information about products, services, events, and destinations with customers. Simultaneously, customers can search, book, and interact directly with these businesses. This online environment facilitates connections and support among all parties, fostering a rich and diverse cultural tourism ecosystem.

Additionally, digital transformation enhances connectivity by establishing common databases and blockchains for storing and sharing information. Businesses, organizations, and regulatory agencies can share data about historical sites, cultural events, and tourism activities, creating a reliable and accurate information source. This improves cooperation and coordination among stakeholders in the cultural tourism industry. Collaborative efforts in developing tourism infrastructure, promoting destinations, and joint marketing initiatives can be bolstered by sharing resources, skills, and experiences, thereby leveraging competitive advantages and promoting sustainable development of the tourism industry.

Digital transformation also paves the way for the development of digital cultural tourism products and services. Data sharing allows tourism businesses to understand customer behavior and preferences better, enabling the creation of tailored products and services that meet these needs. Virtual experiences, multimedia guides, and online platforms provide visitors with interactive and immersive ways to explore and experience culture. This fusion of cultural and technological tourism attracts customer interest and engagement, creating a solid link between the two and enhancing the overall appeal of the tourism sector.

4.4.6. Challenges of digital transformation for cultural tourism development in Hanoi

Imbalance between traditional tourism and digital tourism

Digital transformation in the tourism sector can create a divide between traditional tourism and digital tourism. Digital tourism refers to using digital technology, such as the Internet, mobile phones, and mobile applications, to provide online travel experiences. In contrast, traditional tourism involves visiting cultural sites and monuments and engaging directly with the local environment and people. The emphasis on digital tourism may lead to an imbalance in investment and interest in traditional cultural tourism. As the tourism industry transitions towards a digital model, resources and attention may increasingly focus on technologies and services related to digital tourism, potentially resulting in a need for more investment in the conservation and development of traditional cultural heritage. This shift could lead to an imbalance in the preservation and development of Hanoi's cultural heritage, with the necessary resources and attention for preserving traditional cultural heritage being diverted towards digital tourism initiatives.

However, digital transformation can also offer significant benefits for preserving and developing cultural heritage. Digital technology can be utilized to enhance communication, promotion, and education about the city's cultural heritage. Mobile applications and online platforms can provide detailed information about cultural, historical, and artistic sites, attracting tourists and raising awareness about the value of traditional cultural heritage. To maintain a balance between digital and traditional tourism, it is crucial to develop a comprehensive and sustainable tourism strategy. This involves evaluating and adjusting the allocation of resources and attention between these two forms of tourism. Additionally, it is essential to ensure that the advancement of digital tourism does not negatively impact the preservation and development of Hanoi's cultural heritage.

Loss of traditional jobs

As tasks previously performed by humans are supplanted by technology and automation, the demand for direct labor may diminish. Examples include online room and tour booking systems that empower customers to complete transactions independently, which previously required staff intervention. Mobile applications provide real-time tour information and guidance, reducing the necessity for tour guides. Virtual reality (VR) and augmented reality (AR) technologies offer interactive and educational experiences for visitors without staff involvement. Consequently, integrating technology and automation in Hanoi's cultural tourism industry may lead to unemployment and job displacement for some traditional workers within the sector. This situation challenges tourism industry workers and managers to adapt to emerging technological trends and find ways to leverage their skills and knowledge in various roles related to the industry.

Nevertheless, technological advancements also create new job opportunities within the tourism sector. Technology implementation and advancement in tourism services delivery require a skilled workforce, including technology experts, software developers, technical support staff, and management professionals. Technology projects in the tourism industry can generate new and diverse job positions, offering opportunities for workers possessing knowledge and skills in the

technology domain.

5. CONCLUSION AND IMPLICATION

Digital transformation has positively impacted cultural tourism development activities in the city in various ways. Firstly, it enhances the management capacity of businesses and boosts the promotion of cultural tourism in the locality. Additionally, it improves the connectivity and interaction between businesses and tourists and among entities within the industry. However, the digital transformation process in cultural tourism development in Hanoi still has numerous limitations that must be addressed. Moreover, research results indicate that to fully leverage the benefits of digital transformation, each level, industry, organization, and individual must recognize the role of digital transformation. Simultaneously, they need to proactively seize opportunities and overcome challenges to avoid falling behind, ensure sustainable development, and actively contribute to efforts to build a digital economy in Vietnam.

The research outcomes yield several practical implications for management:

Firstly, the city government and tourism-related businesses must collaborate with seasoned organizations and pertinent partners in digital transformation. Such collaboration will provide comprehensive knowledge and technical support for advancing digital transformation in Hanoi's tourism sector. This concerted effort will play a pivotal role in fostering a robust and sustainable digital transformation ecosystem for cultural tourism in Hanoi, thereby creating opportunities for growth and enhancing the quality of cultural tourism services. This initiative will contribute significantly to the city's economic and cultural development. Regarding investment in science, technology, and innovation, it is crucial to establish scientific and technological programs that cater to the development of cultural tourism services in Hanoi.

Secondly, to effectively harness data-driven decision-making and sustainable tourism practices, it is essential to provide training and support to tourism businesses and stakeholders. This includes developing digital skills for tourism businesses and cultural tourism destinations through promotional efforts and instructional materials on utilizing digital technologies in tourism operations. Guidance on using digital services and applications in cultural tourism development is also necessary. Additionally, organizing training sessions on digital marketing tools, focusing on various aspects such as email marketing, online advertising via Google Ads, and advertising on popular social media platforms like Facebook, Instagram, and TikTok, as well as optimizing SEO to enhance online presence and search engine rankings, is recommended.

Thirdly, establishing a digital collaboration network is vital. Businesses and management agencies should collaborate with partners and other tourism management entities to share information, technology, and experiences related to digital transformation. This initiative will create a digital collaboration network to promote the development and application of technology in Hanoi's cultural tourism sector. It is crucial for businesses, organizations, and management agencies in Hanoi's cultural tourism sector to closely cooperate with partners and other tourism management entities to share information, technology, and experiences related to digital transformation. Building a shared database and a digital tourism information management system will be crucial. Businesses, cultural centers, and management agencies can collectively establish common standards and regulations for collecting, storing, and sharing tourism information. This will help create a reliable and synchronized source of information, providing tourists with detailed and accurate information about cultural destinations in Hanoi.

Fourthly, to ensure that small cultural tourism businesses that lack the financial capacity to invest in technology can also adapt to digital transformation, the city government and relevant organizations need to create favorable conditions and provide financial support to enhance technical infrastructure and provide advanced technologies for small businesses, traditional craft villages, and heritage sites in the outskirts of Hanoi. This includes offering financial support, technical guidance, and a conducive business environment to encourage technological advancement in the cultural tourism industry. Relevant organizations can play a role in advising and providing technical support to help small businesses understand and apply technology in their operations.

Finally, to ensure that the tourism experience retains its human touch and interpersonal interaction while embracing digital transformation, tourism businesses and organizations should use technology as a supportive tool rather than a replacement for interaction between tourists and guides or residents. Businesses and tourism organizations can organize interactive activities such as guided tours, cultural classes, or community encounters. This approach provides opportunities for tourists to interact with guides or residents, fosters cultural connection, and creates memorable experiences. Combining technology with human interaction, organizing interactive activities, and providing staff training are effective ways to ensure the tourism experience retains its human touch and interpersonal interaction.

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