Digital Transformation in Tourism and Hospitality Management in Vietnam: Opportunities, Challenges, and Solutions

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Abstract
In the era of rapid technological advancement and the Fourth Industrial Revolution, digital transformation has emerged as a critical driver reshaping industries across the globe, including the tourism and hospitality sector. For Vietnam - a country rich in cultural heritage and diverse natural landscapes - tourism and hospitality hold strategic economic significance. In this context, digital transformation refers to the integration of digital technologies into all aspects of tourism operations, leading to fundamental changes in how businesses operate and create value for customers. This paper aims to explore the multidimensional nature of digital transformation in Vietnam's tourism and hospitality industry. Specifically, the study analyzes current trends, assesses the level of digital technology adoption among enterprises, identifies key opportunities and challenges, and proposes strategic solutions to accelerate the digital transformation process. By situating the issue within Vietnam's socio-economic landscape, the paper offers valuable insights for policymakers, industry leaders, and the academic community to foster sustainable and inclusive digital growth in this sector.

Keywords: Digital transformation, management, tourism & hospitality, opportunities, challenges

1. Introduction

In recent years, the concept of "digital transformation" has become increasingly familiar across various socio-economic sectors, especially as the Fourth Industrial Revolution (Industry 4.0) continues to unfold with growing depth and complexity. Digital transformation is not merely about integrating technology into business and production activities; it represents a comprehensive shift in managerial thinking, service delivery models, and customer experience frameworks. For the tourism and hospitality industry - characterized by intense competition and strong reliance on consumer trends and technology - digital transformation has played, and will continue to play, a critical role in reshaping the entire service ecosystem. In particular, the aftermath of the COVID-19 pandemic has intensified the urgency of restructuring the sector, improving adaptability, and enhancing operational efficiency - all of which underscore the need for accelerated digital transformation.

In Vietnam, the tourism and hospitality sector is a key pillar of the national economy, contributing significantly to GDP and generating millions of jobs each year. However, current realities reveal that the level of digital technology adoption within the industry remains limited and fragmented. While major corporations and international hotel chains have actively invested in smart management systems, digital platforms, and big data, the majority of small and medium-sized enterprises (SMEs) - which account for over 80% of all businesses in the sector - continue to face numerous challenges related to finance, human resources, and digital awareness. Additionally, disparities in technological infrastructure between regions, the lack of coordination among

stakeholders, and policy shortcomings have collectively hindered the pace and effectiveness of digitalization efforts.

Given these circumstances, the research team has chosen to undertake the study titled *"Digital Transformation in Tourism and Hospitality Management in Vietnam: Opportunities, Challenges, and Solutions"* with the aim of providing a comprehensive and in-depth analysis of the current state of digital transformation in this sector. The study not only seeks to examine the key opportunities and challenges faced by enterprises but also proposes practical solutions tailored to the specific conditions of Vietnam - particularly for SMEs and localities that continue to face difficulties in terms of infrastructure and resources.

In terms of methodology, the research adopts a mixed-methods approach to ensure both systematic and practical analysis. First, secondary document analysis is employed by synthesizing policy reports, academic studies, and industry analyses from both domestic and international sources related to digital transformation in tourism and hospitality. The study further applies theoretical frameworks such as the Technology Acceptance Model (TAM), the Technology–Organization–Environment (TOE) framework, and the Digital Maturity Model (DMM) to examine technology adoption behaviors, digital readiness levels, and influencing factors within enterprises. Additionally, case study and comparative analysis methods are used to assess differences across enterprise types and geographical regions. Based on these findings, the study proposes a series of strategic recommendations to promote and enhance digital transformation practices in tourism and hospitality management in Vietnam.

2. Theoretical Framework

Definition and Scope of Digital Transformation

Digital transformation refers to the application of technology to analyze and convert data obtained from digitized processes in order to generate greater value (Ha Tinh Provincial e-Portal, 2023). It goes beyond merely implementing digital tools; rather, it represents a fundamental rethinking of business models, customer engagement methods, and organizational culture.

According to Westerman et al. (2014), digital transformation is the use of technology to fundamentally enhance an organization's operational performance or market reach. In the tourism and hospitality industry, this transformation involves the deployment of technologies such as cloud computing, artificial intelligence (AI), big data analytics, the Internet of Things (IoT), and mobile platforms to improve customer experiences and operational efficiency.

Technology Acceptance Model-TAM

Developed by Davis (1989), the Technology Acceptance Model (TAM) is one of the most widely used frameworks for explaining individuals' behavioral intentions to adopt technology. According to the model, the intention to use a particular technology is influenced by the user's attitude toward it, which in turn is shaped by two key factors: (1) perceived usefulness, and (2) perceived ease of use.

In the context of tourism, this model provides a theoretical foundation for understanding why certain digital tools - such as online booking systems or mobile check-in applications - are adopted more rapidly than others.
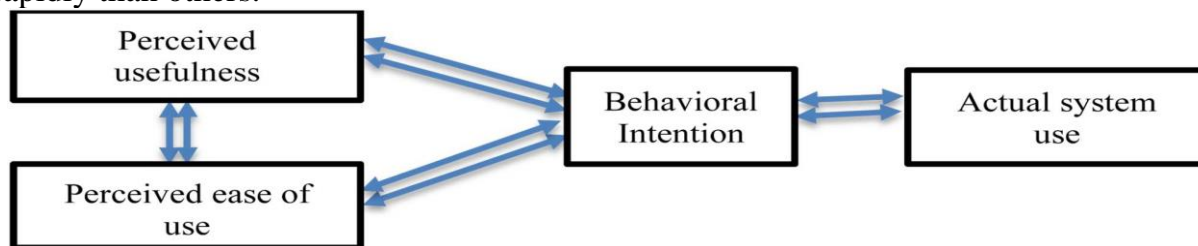

Figure 1. Technology Acceptance Model-TAM

Source: Davis (1989)

Digital Maturity Model - DMM

The Digital Maturity Model (DMM) provides a comprehensive framework for assessing an organization's digital capabilities across multiple dimensions, including customer experience, strategy, operations, organizational culture, and technology. Businesses in the tourism and hospitality sector can utilize this model to evaluate their current level of digitalization and identify areas requiring improvement.

For instance, Deloitte's Digital Maturity Model (2022) categorizes organizations into four levels - initial, developing, mature, and leading - based on the extent to which digital technologies are integrated into their operations.

Technology – Organization Environment Frame - TOE

The Technology–Organization–Environment (TOE) framework identifies three critical contexts that influence technology adoption: (1) **Technology** – the characteristics and level of innovation of the technology; (2) **Organization** – resources, size, and organizational readiness; and (3) **Environment** – competitive pressure and regulatory landscape. This theoretical framework is particularly well-suited to the Vietnamese context, where legal frameworks, organizational readiness, and market dynamics vary significantly across regions and enterprise scales.

The application of such theoretical models enables a more in-depth assessment of the level of digital transformation, the barriers to implementation, and the identification of strategic development pathways tailored to the tourism and hospitality sector in Vietnam.

3. The Current State of Digital Transformation in Vietnam's Tourism and Hospitality Sector

In recent years, the Vietnamese government has demonstrated a strong commitment to promoting digital transformation in the tourism sector through a variety of policies and development strategies. Since 2018, the Master Plan on Information Technology Application in Tourism for the period 2018–2020, with a vision to 2025 (Decision No. 1671/QĐ-TTg) has been enacted, prioritizing the development of smart tourism and the formation of a national digital tourism ecosystem. According to industry experts, digital transformation has become especially crucial for Vietnamese tourism enterprises in the post-COVID-19 period. As tourists' habits, expectations, and behaviors have undergone significant changes, businesses that fail to adopt digital solutions are likely to struggle to survive and grow in an increasingly competitive environment (tapchitaichinh, 2024).

The Vietnamese government has issued a number of strategic documents, such as the National Digital Transformation Program to 2025, with a vision to 2030, which identifies tourism as a priority sector. The Ministry of Culture, Sports and Tourism (MoCST) has also launched digitalization roadmaps for tourism authorities and localities. However, implementation at the provincial level remains inconsistent due to limitations in capacity and financial resources. Since 2018, with Decision No. 1671/QĐ-TTg approving the "Master Plan on the Application of Information Technology in Tourism for the period 2018–2020, with orientation to 2025," the government has set clear goals to develop digital tourism and smart tourism. Subsequently, Decision No. 411/QĐ-TTg issued in 2022 reaffirmed the commitment to sectoral digital transformation with a people- and business-centered approach (tapchitaichinh, 2024).

Leading hotel chains and travel companies in Vietnam have increasingly integrated a range of digital platforms, including Property Management Systems (PMS), Customer Relationship Management (CRM) systems, mobile applications, and AI-powered chatbots. These firms also utilize data analytics to segment customers and optimize revenue strategies. For instance, several five-star hotels in Hanoi and Ho Chi Minh City have reported significant improvements in operational efficiency and customer satisfaction following their digital transformation. Building on this momentum, the Vietnam National Administration of Tourism (VNAT), in collaboration with major technology corporations such as VNPT, FPT, and MobiFone, has launched several digital platforms, including the *"Safe Travel in Vietnam"* app, the national tourism database system, the

national tourism directory, smart travel cards, and electronic ticket management systems. These initiatives represent the foundational components of a connected digital tourism ecosystem that links government agencies, local authorities, businesses, and travelers (tapchitaichinh, 2024).

Small and medium-sized enterprises (SMEs) - which account for over 80% of tourism businesses in Vietnam - often lack the financial capacity and human resources necessary to implement digital systems. Many of these businesses still rely on traditional booking methods, have a limited online presence, and have yet to adopt digital marketing strategies. Access to affordable technologies and digital literacy remains a major challenge. For tourism enterprises, digital transformation is no longer a matter of choice but has become a strategic imperative. It impacts organizational structures, human capital, business models, and internal management systems. Particularly in the context of the COVID-19 pandemic, many businesses accelerated the adoption of technologies such as mobile applications, AI-powered chatbots, virtual reality (VR), and rating and review systems - not only to comply with health protocols but also to enhance the customer experience (tapchitaichinh, 2024).

The hospitality industry in Vietnam is one of the country's key service sectors, playing a significant role in driving GDP growth and creating employment opportunities. According to the Vietnam National Administration of Tourism (VNAT), as of 2022, Vietnam had a total of 32,313 accommodation establishments, offering 611,352 rooms, among which 1,576 hotels were rated three stars or higher, accounting for approximately 334,487 rooms. This notable figure reflects the rapid expansion of Vietnam's tourism accommodation infrastructure over the past decade (VNAT, 2022). Despite these developments, experts agree that Vietnam's hospitality sector still holds vast growth potential. According to the World Tourism Organization (UNWTO), Vietnam is emerging as one of the most attractive destinations in the Asia–Pacific region and is well-positioned to become a leading global tourism hub in the coming years (UNWTO, 2022). The sharp increase in both international and domestic tourist arrivals presents substantial opportunities for the hospitality industry to expand its scale, enhance service quality, and invest in digital transformation. Furthermore, VNAT statistics indicate that Vietnam's hospitality sector experienced an average annual growth rate of 15% during the period from 2010 to 2022, underscoring its strong and stable development trajectory (VNAT, 2022).

Case study: Local Practice – The Case of Khanh Hoa Province
Khanh Hoa is one of the leading localities in Vietnam actively implementing digital technologies in tourism development. Its digital transformation efforts include the development of a smart tourism ecosystem, digital mapping of local attractions, multilingual e-ticketing systems, and 3D digitization of heritage sites. These initiatives are considered positive steps toward the modernization of provincial-level tourism governance (Nguyen Duy Truong, 2022).

However, the province's Information and Communication Technology (ICT) Index has shown a slight decline in recent years, dropping from 0.39 in 2018 to 0.28 in 2020, placing it 18th out of 63 provinces and cities nationwide. The digital skills and human capital sub-index has also decreased, indicating that digital transformation in Khanh Hoa still faces challenges related to human resources and technological infrastructure. Only around 20% of businesses in the province have undertaken concrete digital transformation actions, with most limited to basic technology applications (Nguyen Duy Truong, 2022).

4. Opportunities and Challenges for the Tourism and Hospitality Industry in the Context of Digital Transformation
Digital transformation presents significant opportunities for Vietnam's tourism and hospitality industry to enhance service quality, reduce operational costs, and strengthen global competitiveness. These opportunities are reshaping the business landscape, influencing how services are designed, delivered, and experienced by customers.

First, enhancing customer experience and personalization: Digital tools allow businesses to tailor services to individual customer preferences through data analytics and AI. Personalized services - such as customized travel itineraries, dynamic pricing, and loyalty programs - not only improve customer satisfaction but also increase retention rates. For example, a hotel using an AI-integrated CRM system can track guest preferences and automatically suggest and deliver suitable services at scale.

Second, expanding market access for tourism and hospitality businesses: Online travel agencies (OTAs), mobile apps, and social media platforms enable businesses to reach broader global markets. Even small enterprises can promote their services internationally through cost-effective digital marketing tools. For instance, a homestay in Sapa can attract foreign tourists via Instagram and TripAdvisor without needing an overseas representative office.

Third, optimizing operations and reducing costs: Digital transformation allows businesses to automate booking processes, implement contactless check-in/out systems, and adopt smart room technologies, thus minimizing staffing needs and human errors. Cloud-based property management systems (PMS) increase operational efficiency, while AI-powered chatbots provide 24/7 customer support. These innovations accelerate service delivery, reduce labor costs, and improve accuracy.

Fourth, enabling data-driven decision-making: Access to real-time data empowers businesses to make more accurate decisions regarding pricing, inventory management, and marketing strategies. Advanced analytics tools help identify market trends, customer behaviors, and operational bottlenecks, allowing organizations to develop flexible and adaptive strategies.

Fifth, promoting smart and sustainable tourism while strengthening ecosystem integration: Digital transformation fosters smart tourism through technologies like the Internet of Things (IoT), which support energy monitoring, resource optimization, and eco-friendly operations. Virtual reality (VR) and augmented reality (AR) offer alternative tourism experiences that reduce ecological footprints while enhancing user engagement. Digital platforms also facilitate collaboration among stakeholders - such as hotels, travel agencies, transportation providers, and tour guides - through integrated booking systems and shared data infrastructure, thereby enhancing service connectivity and customer value.

Despite its vast potential, digital transformation in Vietnam's tourism and hospitality sector continues to face significant challenges. These barriers slow down the adoption of technology - particularly among small and medium-sized enterprises (SMEs) - and threaten the long-term sustainability of digital development across the industry..

First, financial constraints and investment barriers: Many tourism businesses, especially small and medium-sized enterprises (SMEs), lack the financial resources to invest in advanced digital technologies. The high costs associated with acquiring, deploying, and maintaining digital systems - including software licensing, data security, and skilled personnel - make it difficult for them to compete with larger corporations. Moreover, limited access to credit and a lack of understanding of digital return on investment (ROI) further widen the financial gap.

Second, limitations in human resources: One of the core bottlenecks in digital transformation is the shortage of digitally skilled personnel. Many employees in the tourism and hospitality sector lack formal training in digital tools, data analytics, or even basic IT skills. This issue is particularly acute in rural and remote areas, where professional development opportunities remain limited. Additionally, mid- and senior-level managers often exhibit a lack of innovation mindset, slowing down organizational transformation.

Third, technological infrastructure and accessibility issues: Digital infrastructure remains inconsistent, with unstable internet connections, outdated hardware, and limited access to cloud computing services, particularly in non-urban regions. Tourism businesses in mountainous and island areas face major difficulties due to poor bandwidth, unreliable electricity, and a lack of technical support services.

Fourth, challenges in policy and regulatory frameworks: Although national strategies for digital transformation exist, the legal environment is still evolving and often fragmented. Issues such as vague data privacy regulations, lack of system interoperability standards, and inconsistent enforcement across provinces contribute to investor hesitation. Furthermore, licensing and tax policies have not kept pace with emerging technology-based business models. In addition, many businesses continue to operate under traditional frameworks, lacking a sense of urgency or innovation mindset. Fear of failure, unclear understanding of digital benefits, and the absence of internal "change champions" hinder transformation efforts. The lack of a clear change management strategy is also a common weakness across the sector.

5. Solutions to Promote Digital Transformation in Tourism and Hospitality Management in Vietnam

In the context of the tourism and hospitality sector recovering from the COVID-19 pandemic and entering a period of profound transformation driven by the Fourth Industrial Revolution, proposing concrete solutions to accelerate digital transformation has become an urgent necessity. These solutions must ensure coherence, inclusiveness, and adaptability, while also being aligned with Vietnam's specific conditions - particularly for small and medium-sized enterprises (SMEs), remote areas, and localities with limited resources.

First, develop a clear digital transformation strategy and roadmap

Enterprises must first establish a well-structured digital transformation plan with long-term, medium-term, and short-term objectives aligned with their business models, customer segments, and internal capabilities. Such a strategy should not only focus on the adoption of technology but also on process innovation, governance, and operational models. At the same time, tourism authorities - including the Vietnam National Administration of Tourism and provincial Departments of Culture, Sports, and Tourism - should support the formulation of regional and local digital transformation roadmaps, especially for SMEs.

Second, enhance digital capabilities of the workforce

Human resources are a decisive factor in the success of digital transformation. Therefore, it is essential to invest significantly in training digital skills for staff in the tourism and hospitality sectors, including skills in management software (CRM, PMS), data analytics, digital marketing, and cybersecurity. Universities, colleges, and vocational training centers should update their curricula to integrate emerging tourism technologies and digital transformation competencies. For rural labor forces, free online courses and short-term training programs supported by government policies or international organizations should be introduced.

Third, provide financial and technological support for small businesses

Given that SMEs constitute a large proportion of the sector, tailored financial support policies are necessary, such as tax exemptions for digital technology investments, low-interest loans, or co-financing for small-scale digital transformation projects. The government could also negotiate with major tech companies to offer affordable hotel management software, booking systems, CRM tools, along with implementation support and user training for SMEs, particularly in underdeveloped areas.

Fourth, develop digital infrastructure and ensure data security

Digital transformation cannot proceed without a robust technological foundation. Thus, continued investment is required to upgrade digital infrastructure at tourist destinations, particularly through expanding broadband access, 4G/5G coverage, and establishing regional data centers and appropriate cloud computing systems. Moreover, the legal framework for personal data protection, digital identity verification, and AI governance should be improved to create a secure and trustworthy environment for businesses and tourists using digital services.

Fifth, promote innovation and foster a digital tourism ecosystem

Innovative tourism models such as virtual reality (VR), augmented reality (AR), digital tourism maps, and AI-powered tour booking tools should be encouraged. Tourism innovation hubs and tech start-up incubators should be established in major cities like Hanoi, Ho Chi Minh City, and Da Nang to nurture promising ideas. In addition, the development of open data platforms linking stakeholders across the ecosystem - from government agencies, travel companies, hotels, transport providers, and tour guides to tourists - will enhance the tourism experience and optimize operational efficiency.

Sixth, strengthen public–private partnerships and regional integration

Digital transformation is a complex process requiring close collaboration between the public and private sectors. The Public–Private Partnership (PPP) model should be vigorously applied in building tourism information systems, destination portals, digital maps, and integrated databases. Moreover, provinces should enhance regional cooperation in smart tourism, sharing data, experiences, and technologies to form a sustainable and effective tourism network.

Seventh, establish monitoring and evaluation mechanisms for digital transformation

Finally, a set of industry-specific digital transformation indicators should be developed for the tourism and hospitality sector, based on frameworks such as the Digital Maturity Model (DMM) or the Technology-Organization-Environment (TOE) framework. These indicators may include the proportion of digitized services, extent of digital platform usage in operations, percentage of staff trained in digital skills, and customer satisfaction with digital services. Periodic measurement will help identify bottlenecks in a timely manner and enable strategic adjustments accordingly.

Conclusion

Digital transformation is not merely a technological upgrade; it represents a profound shift in how the tourism and hospitality sector is structured, operated, and experienced. For Vietnam - a country rich in cultural and natural resources - digital transformation is a vital factor to sustain international competitiveness, promote sustainable tourism, and enhance service quality. This study has analyzed the opportunities, challenges, and practical roadmap for digital transformation in Vietnam's tourism and hospitality industry. From theoretical frameworks, current situation analysis, case studies, to strategic recommendations, the research affirms that success does not lie in isolated technology investments but in a comprehensive strategy that connects infrastructure, human resources, institutional frameworks, and a culture of innovation. As the industry recovers from COVID-19, digital readiness will determine its adaptability and growth potential. Stakeholders must collaborate to ensure that digital transformation delivers inclusive, comprehensive, and context-appropriate benefits aligned with national development goals. With strong commitment and effective implementation, Vietnam's tourism and hospitality sector can emerge as a regional leader in digital transformation across Southeast Asia.

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