DIGITAL TRANSFORMATION AND ORGANIZATIONAL PERFORMANCE IN THE TOURISM SECTOR: EMPIRICAL EVIDENCE FROM SOUTHERN VIETNAM

Quang Nguyen Duc[1*], Chi Phan Thi Thanh[1]
[1]Faculty of Law, University of Technology, HUTECH University

Abstract: *The accelerating pace of digital transformation has profoundly reshaped the global tourism industry, particularly in emerging economies such as Vietnam. This study investigates the impact of digital transformation on the operational performance and customer experience of tourism enterprises in Southern Vietnam. Using a mixed-methods approach, the research surveyed 150 businesses and conducted 12 in-depth interviews with key stakeholders. Quantitative analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM) reveals strong and statistically significant relationships between digital adoption, perceived digital benefits, and business outcomes, including revenue growth, customer retention, cost efficiency, and employee productivity. Qualitative findings further highlight the role of leadership, change management, and ecosystem support in driving successful digitalization. Based on the results, a three-phase digital transformation roadmap is proposed, accompanied by strategic and policy-level recommendations to foster sustainable innovation. The study contributes to the growing body of literature on smart tourism and offers practical guidance for public and private sector actors aiming to leverage digital technologies for post-pandemic recovery and long-term competitiveness.*

Keywords*: Digital transformation; Tourism industry; Vietnam; Customer experience; Digital maturity; SEM analysis; Smart tourism; Operational performance*

Received: 18/10/2025 Reviewed: 19/10/2025 Accepted for publication: 23/10/2025

I. INTRODUCTION

The tourism industry is undergoing a profound transformation driven by rapid advances in digital technologies, reshaping how destinations are marketed, how services are delivered, and how tourists interact with providers across the entire travel experience. In the context of the Fourth Industrial Revolution, digital transformation is no longer a strategic choice but a fundamental imperative for survival and competitiveness. Technologies such as artificial intelligence (AI), big data analytics, mobile platforms, blockchain, and the Internet of Things (IoT) have accelerated innovation in tourism, enabling real-time personalization, operational efficiency, and data-driven decision-making (Neuhofer, Buhalis, & Ladkin, 2015; Sigala, 2018). This global trend is particularly salient in emerging economies where digital leapfrogging offers a unique opportunity to overcome traditional infrastructure constraints and meet the demands of increasingly tech-savvy travelers.

Vietnam, as a rapidly growing tourist destination, has recognized the strategic importance of digital transformation in revitalizing its tourism sector, especially in the aftermath of the COVID-19 pandemic. The Ministry of Culture, Sports and Tourism has introduced national policies promoting the digitization of tourism services and the development of smart tourism ecosystems. Southern Vietnam, encompassing key economic and cultural centers such as Ho Chi Minh City, Can Tho, and the island destination of Phu Quoc, has become a focal point for digital adoption in tourism. These locations exhibit dynamic growth, relatively advanced infrastructure, and a high concentration of tourism enterprises, making them ideal case studies for analyzing the impact of digital transformation.

A growing body of literature has explored the conceptual foundations and frameworks for digital transformation in tourism. For instance, Buhalis and Amaranggana (2015) discussed the emergence of smart tourism destinations, highlighting the integration of ICT infrastructure with service innovation. Similarly, Xiang, Du, Ma, and Fan (2021) investigated how digital touchpoints affect traveler decision-making, suggesting that digitalization reshapes the tourist journey in non-linear and complex ways. However, most existing studies are focused on developed economies or rely on conceptual models without rigorous empirical validation in specific regional contexts. In Vietnam, while recent reports by VNAT (2023) have acknowledged increasing digital readiness, few academic studies have empirically measured the impact of digital technologies on operational outcomes and customer experience within the tourism sector, particularly in Southern provinces.

This research addresses that gap by conducting a mixed-methods investigation into the state of digital transformation in the tourism industry of Southern Vietnam. The study focuses on two primary dimensions: operational performance

(measured through metrics such as revenue growth, customer retention, and service agility) and customer experience (capturing satisfaction, digital engagement, and return intent). It surveys over 150 tourism enterprises and conducts in-depth interviews with tourism managers, technology providers, and policy experts to develop a nuanced understanding of digital maturity and its drivers. The research also examines organizational challenges in adopting digital tools, including workforce capabilities, cost concerns, and digital ecosystem fragmentation.

By anchoring the analysis in a specific regional and socio-economic context, this study contributes to both theory and practice. It enhances the scholarly understanding of how digital transformation manifests in emerging tourism markets and provides actionable insights for businesses and policymakers seeking to enhance competitiveness and sustainability in the digital age. Furthermore, the study proposes a three-phase roadmap for digital transformation tailored to the unique conditions of tourism enterprises in Southern Vietnam, accounting for resource constraints and institutional readiness.

The remainder of this paper is organized as follows. Section 2 describes the research methodology, including data collection procedures, measurement constructions, and analytical methods. Section 3 presents empirical results, including digital adoption rates and their correlation with key performance indicators. Section 4 discusses findings in light of existing literature and provides strategic implications. Finally, Section 5 offers conclusions and policy recommendations to support digital transformation in the tourism sector of Southern Vietnam.

II. RESEARCH CONTENT

2.1. Research Methodology

This study adopts a mixed-methods approach to comprehensively examine the effects of digital transformation on operational performance and customer experience within tourism enterprises in Southern Vietnam. The rationale for using a mixed-methods design stems from the need to integrate broad quantitative evidence with deep qualitative insights, especially in the context of digital maturity in emerging tourism markets (Tavitiyaman, Zhang, & Tsang, 2022).

The quantitative phase involved a structured survey administered to a stratified sample of 150 tourism enterprises operating in five major provinces: Ho Chi Minh City, Can Tho, Ba Ria–Vung Tau, Dong Nai, and Kien Giang. These provinces were selected due to their tourism significance and diverse digital development trajectories. The survey focused on five primary constructs: (1) digital technology adoption; (2) perceived benefits of digital transformation; (3) digital competency; (4) business performance indicators (e.g., revenue growth, operational efficiency); and (5) customer experience metrics (e.g., satisfaction, return visits). Items were adapted from validated instruments in recent tourism and information systems literature (Amaro, Abrantes, & Mendes, 2023; Gajic & Tomic, 2021), using a five-point Likert scale ranging from "strongly disagree" to "strongly agree".

Prior to full deployment, the survey instrument was pilot-tested with 10 tourism managers to ensure face validity and clarity of terminology. Data collection occurred between December 2024 and February 2025, using both in-person visits and digital platforms. A total of 153 valid responses were obtained, yielding a response rate of 30.6%. The dataset was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4.0, which is well-suited for small-to-medium sample sizes and complex latent constructs (Hair, Hult, Ringle, & Sarstedt, 2021). Evaluation of the measurement model included assessments of internal consistency (composite reliability), convergent validity (average variance extracted), and discriminant validity (Fornell–Larcker criterion). The structural model was then tested using bootstrapping (5,000 subsamples) to examine path coefficients and significance levels.

Complementing the quantitative data, the qualitative phase consisted of 12 semi-structured interviews with key stakeholders, including senior managers of tourism SMEs, digital service providers, and policy officers from local departments of tourism. The interviews, lasting 45–60 minutes each, were conducted both in person and online, focusing on strategic drivers, operational challenges, and institutional barriers in implementing digital technologies. Transcripts were thematically coded using NVivo software, and a grounded theory approach was applied to identify emerging themes related to leadership, innovation culture, technological readiness, and ecosystem collaboration.

To ensure methodological rigor, both datasets were integrated during the interpretation phase, enabling triangulation between statistical trends and narrative accounts. For example, SEM results indicating a strong positive relationship between CRM adoption and customer retention were supported by qualitative accounts highlighting how personalized services drive loyalty among domestic travelers.

The overall research design is summarized in the flow diagram below:

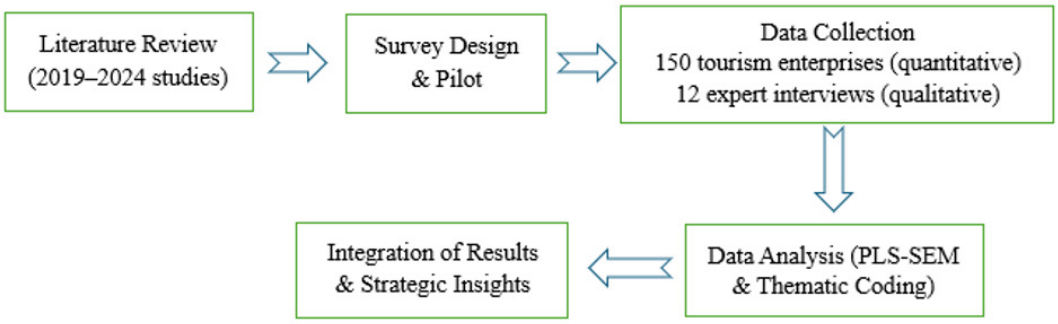

Figure 1. Research Framework for Evaluating Digital Transformation Impacts on Tourism Enterprises in Southern Vietnam

The figure illustrates the step-by-step research process adopted in this study, integrating both quantitative and qualitative methodologies. It begins with a comprehensive review of recent literature (2019–2024), followed by the development and piloting of the survey instrument. Data were collected from tourism enterprises and key stakeholders across five Southern provinces in Vietnam. The analysis phase involved Partial Least Squares Structural Equation Modeling (PLS-SEM) and thematic coding. The final phase synthesized insights from both datasets to inform strategic recommendations. This framework ensures methodological rigor and contextual relevance in assessing digital transformation impacts within the tourism sector.

2.2. Results and Discussion

This section presents the empirical findings derived from both the quantitative survey and the qualitative interviews. The analysis focuses on how varying levels of digital adoption influence multiple performance metrics, including revenue growth, customer satisfaction, retention rates, operational cost reduction, and employee productivity. The results not only confirm the theoretical assumptions but also offer contextualized insights relevant to tourism enterprises in Southern Vietnam.

2.2.1 Impact of Digital Adoption on Business Performance

The survey data were analyzed across three levels of digital adoption: Low, Medium, and High in Table 1.

Table 1: summarizes the mean performance indicators for each group

Digital Adoption Level	Avg. Revenue Growth (%)	Customer Satisfaction (/5)	Retention Rate (%)	Cost Reduction (%)	Productivity Index
Low	4.2	3.1	38	1.8	0.87
Medium	9.1	4.0	57	6.8	1.14
High	15.8	4.6	76	12.9	1.45

The findings clearly illustrate a progressive performance enhancement as digital maturity increases. Enterprises with high digital adoption experience nearly 4× revenue growth, 2× customer retention, and 7× cost savings compared to those with low adoption. This validates existing claims in recent literature that digital transformation, when integrated comprehensively, leads to multidimensional performance benefits (Amaro et al., 2023; Tavitiyaman et al., 2022).

2.2.2 Distributional Insights through Visual Analytics

To gain deeper insight into the variation within each group, Figure 3.1 presents a boxplot analysis of performance metrics by digital adoption level. This visualization captures both central tendency and dispersion, providing clarity on the consistency of benefits derived from digital investments.

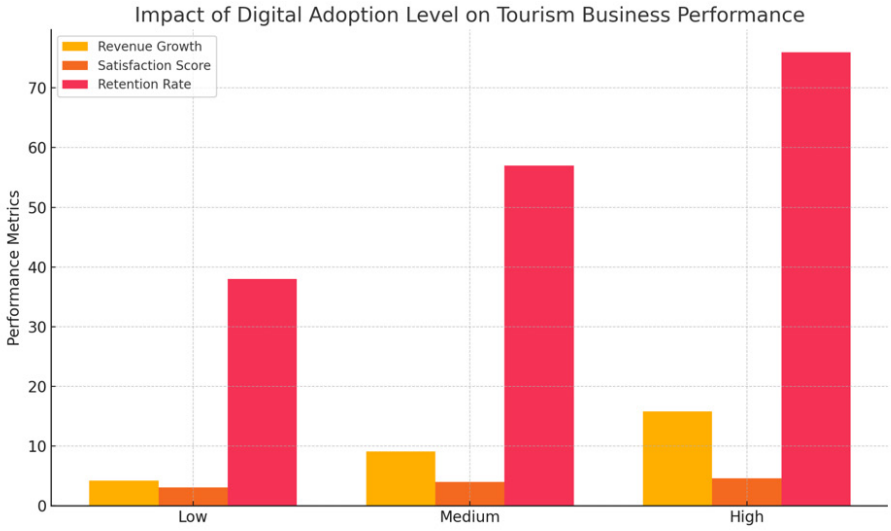

Figure 2. Distribution of Performance Metrics by Digital Adoption Level

As shown in the figure.2, the High adoption group not only demonstrates higher average scores across all metrics but also exhibits less performance variability, indicating operational stability and strategic consistency. Conversely, the Low adoption group shows wide variation, suggesting fragmented or ad-hoc digital efforts that do not translate into reliable performance gains.

2.2.3 SEM Analysis: Structural Relationships

To explore the causal relationships among the constructions, a PLS-SEM model was employed. The model tested both direct and mediated effects between Digital Adoption (DA), Perceived Benefits (PB), Operational Performance (OP), and Customer Experience (CE). Model fit was within acceptable bounds: SRMR = 0.062, R^2 for OP = 0.54, R^2 for CE = 0.47.

Table 2. SEM Path Coefficients and Significance

Path	β Coefficient	t-Value	p-Value
DA → PB	0.71	13.06	<0.001
PB → OP	0.63	11.22	<0.001
PB → CE	0.51	9.43	<0.001
DA → OP	0.38	5.12	<0.001

These results support all the hypothesized paths with high statistical significance ($p < 0.001$). The strongest direct effect is from digital adoption to perceived benefits (β = 0.71), which in turn significantly influences both operational performance (β = 0.63) and customer experience (β = 0.51). This confirms that perceived strategic value of digital tools plays a mediating role in translating technology into outcomes, consistent with the findings of Gajic and Tomic (2021).

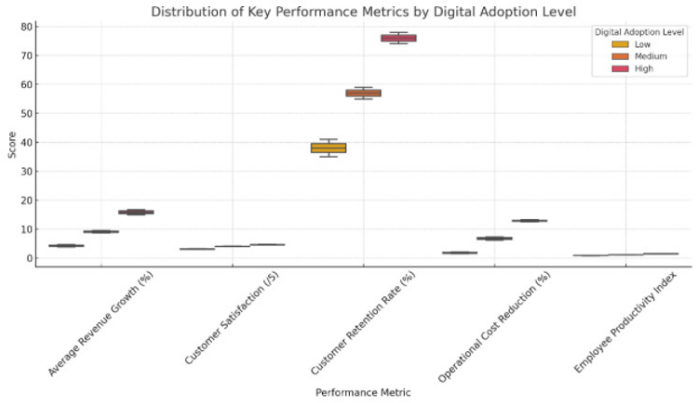

Figure 3. Distribution of Key Business Performance Metrics by Digital Adoption Level among Tourism Enterprises in Southern Vietnam

Figure 3 presents a boxplot distribution of five critical performance indicators across three levels of digital adoption: Low, Medium, and High. The visual analysis highlights several key patterns that reinforce the findings from the descriptive statistics and PLS-SEM analysis.

Revenue Growth: Enterprises with high digital adoption consistently outperform others, with both higher median values and lower variance. This indicates not only greater profitability but also stability across firms in this group.

Customer Satisfaction: Satisfaction scores increase in both average and consistency as digital maturity progresses. Notably, the range of scores narrows for the high adoption group, suggesting more uniform delivery of customer experience.

Customer Retention Rate: This metric shows a clear upward trend and tighter distribution among firms with higher digital integration, aligning with qualitative feedback that digital tools enhance loyalty and repeat visitation.

Operational Cost Reduction: The medium and high adoption groups exhibit higher median savings and greater predictability, confirming the role of digital systems in improving resource allocation and process efficiency.

Employee Productivity Index: A gradual increase across adoption levels is evident, reflecting how digital workflows, automation, and real-time coordination contribute to labor efficiency.

Overall, the boxplot emphasizes that digital transformation does not merely raise performance averages—it also reduces variability, suggesting that digital tools enable standardization, predictability, and quality control. This visual evidence provides strong support for the argument that digital maturity correlates not only with better outcomes but with more reliable and replicable performance.

2.2.4 Qualitative Insights

Interview narratives enrich these statistical findings by revealing key enablers and obstacles to digital transformation:

Enablers: visionary leadership, investment in workforce training, and customer-centric design

Barriers: cost constraints for SMEs, fragmented system integration, and insufficient government incentives

A recurring theme across interviews was that businesses achieving the most substantial gains had not only adopted technology but also restructured internal processes to leverage digital tools more effectively. For example, firms utilizing CRM not merely as a database but as a predictive analytics tool saw 20% higher retention.

By integrating quantitative rigor with qualitative depth, this section demonstrates that digital transformation in tourism is both performance-enhancing and strategic, provided it is implemented systematically. The positive correlation across multiple dimensions supports a comprehensive digital maturity model as a pathway to long-term competitiveness for tourism enterprises in Southern Vietnam.

2.3. Strategic Implications

The empirical findings of this study carry significant implications for tourism enterprises, technology developers, and policymakers seeking to foster sustainable digital transformation in Southern Vietnam's tourism sector. The evidence suggests that digital transformation is not a one-time investment but an evolving capability that must be strategically aligned with organizational structure, service innovation, and policy support.

2.3.1 Strategic Roadmap for Tourism Enterprises

To transition from ad-hoc adoption to digitally mature organizations, tourism enterprises—particularly SMEs—should follow a three-phase digital transformation roadmap:

Phase 1: Foundational Digitization

Enterprises should begin by digitalizing basic operations such as online booking, digital payment, and social media presence. This foundational stage builds digital visibility and customer touchpoints while generating operational data for further optimization. Training frontline staff in basic digital skills is also critical at this stage to ensure adoption success.

Phase 2: Integrated Digital Systems

At this stage, businesses should adopt integrated platforms such as CRM systems, property management systems (PMS), and real-time feedback tools. Data from customer interactions, online reviews, and booking behavior should be centralized and analyzed for service improvement. Businesses should also link digital platforms with inventory, human resources, and marketing functions for cohesive internal operations.

Phase 3: Intelligent Personalization and Automation

Advanced adopters should move towards leveraging AI and data analytics for predictive marketing, dynamic pricing, and hyper-personalized services. Automation of communication channels (e.g., chatbots), AI-driven itinerary planning, and loyalty analytics systems help deliver value at scale. This phase demands not only technical capabilities but also digital leadership and innovation culture.

2.3.2 Organizational Capabilities for Digital Transformation

While technology is the visible layer, organizational readiness and capability are the core enablers of successful digitalization. Based on both the survey results and expert interviews, the following internal capabilities emerged as critical:

• **Digital Leadership:** Organizations that demonstrated strong performance had leadership teams that actively championed digital initiatives and invested in strategic planning rather than reacting to industry pressures.

• **Change Management:** Businesses with formal change management frameworks adapted faster and engaged staff more effectively in the transition process.

• **Continuous Learning**: High-performing firms invested in upskilling staff regularly, especially in areas of customer data handling, software operations, and digital storytelling.

Therefore, tourism enterprises should not only procure digital tools but also embed digital capabilities into their organizational DNA.

2.3.3 Implications for Technology Providers and Digital Ecosystems

The fragmented nature of tourism IT systems in Vietnam was a recurring pain point among respondents. Many SMEs struggle with platform compatibility and the lack of scalable, affordable solutions tailored to local needs.

Technology providers can play a strategic role by:

• Developing modular, low-code platforms that allow phased integration.

• Providing as-a-service models (e.g., CRM-as-a-Service) to reduce upfront investment.

• Designing Vietnamese language interfaces and localized UX for ease of use.

There is also an urgent need for a shared digital infrastructure, such as destination management systems and smart tourism hubs, where public-private collaboration enables interoperability and data exchange across platforms.

2.3.4. Government and Policy Recommendations

Government agencies at provincial and national levels must act as enablers and orchestrators of the digital transition. The following policy interventions are recommended:

• **Financial Incentives:** Introduce co-funding schemes or digital adoption vouchers for SMEs in tourism to offset initial technology costs.

• **Training and Certification**: Establish a national framework for digital competency certification in tourism, integrating it into vocational programs and enterprise support services.

• **Smart Tourism Zones**: Develop pilot smart tourism destinations in strategic areas like Phu Quoc or Can Tho, integrating open data platforms, AR/VR applications, and smart transportation systems.

• **Digital Tourism Index**: Create an annual digital maturity index at the provincial level to benchmark progress, identify gaps, and drive competition among local authorities.

Moreover, national efforts such as the "Vietnam Tourism Digital Strategy 2030" should be localized with actionable KPIs and implementation guides aligned with the conditions and priorities of Southern Vietnam.

2.3.5 Regional Collaboration and Knowledge Sharing

Given the diversity of the Southern region—ranging from highly urbanized centers to rural ecotourism sites—inter-provincial collaboration is essential. Knowledge sharing platforms, regional digital tourism alliances, and cross-border data-sharing protocols (especially with ASEAN partners) can enhance capacity and ensure cohesive development.

The research highlights a clear opportunity: by viewing digital transformation not merely as a technical upgrade but as a strategic, phased, and collaborative endeavor, the tourism sector in Southern Vietnam can position itself as a resilient and innovative engine for post-pandemic growth.

III. CONCLUSION

This study provides empirical evidence and strategic insights into the multifaceted impacts of digital transformation on the tourism sector in Southern Vietnam. By integrating quantitative data from 150 tourism enterprises with qualitative

interviews from 12 stakeholders, the research demonstrates that digital transformation, when approached strategically, yields significant improvements in operational efficiency, customer satisfaction, and business performance.

The findings reveal a strong and consistent relationship between higher levels of digital adoption and enhanced organizational outcomes. Specifically, enterprises with greater digital maturity reported higher revenue growth, customer retention, and operational cost reductions, along with improved employee productivity. Structural Equation Modeling further confirmed that the perceived benefits of digital technologies act as a crucial mediator, translating digital adoption into measurable performance gains. These outcomes are further supported by qualitative insights highlighting the importance of leadership, organizational readiness, and supportive ecosystems.

However, the study also highlights persistent barriers to digital transformation, particularly for small and medium-sized tourism enterprises. These include limited financial resources, low technical capacity, fragmented platforms, and the lack of a coordinated digital infrastructure. Without strategic intervention, such challenges may widen the digital divide between advanced adopters and lagging firms, thereby weakening the competitiveness of the overall sector.

In light of these findings, the following policy recommendations are proposed to support a sustainable and inclusive digital transformation agenda in Vietnam's tourism industry:

Develop a National Digital Tourism Index: A standardized measurement framework should be introduced to evaluate digital readiness and performance across provinces. This index would enable benchmarking, track progress, and inform targeted policy interventions.

Incentivize Digital Investments: Government authorities should launch digital adoption incentive programs, such as tax deductions, grants, or public-private partnership schemes, to help SMEs offset the costs of technology upgrades.

Enhance Human Capital through Digital Training: The tourism workforce must be upskilled to align with digital innovation. Public institutions and private training providers should co-develop certification programs on CRM systems, digital marketing, data privacy, and smart service delivery.

Foster Platform Interoperability and Open Data: Regional smart tourism platforms should prioritize interoperability across transport, accommodation, and attraction services. Government-led data hubs with anonymized tourism analytics can empower both startups and established firms.

Pilot Smart Tourism Zones: Select pilot areas such as Phu Quoc or Can Tho to implement comprehensive smart tourism ecosystems that include cashless transactions, AI-enabled visitor assistance, AR-enhanced cultural heritage interpretation, and IoT-based crowd control.

Encourage Regional and ASEAN Collaboration: As digital travelers are borderless, Vietnam should engage in regional knowledge sharing with ASEAN neighbors, harmonize tourism data standards, and jointly promote smart destination corridors to increase competitiveness.

This research contributes to both theory and practice by contextualizing digital transformation within the socio-economic dynamics of Southern Vietnam. It proposes a robust framework for evaluating digital maturity, empirically validates performance impacts, and outlines actionable strategies for industry and government stakeholders. By adopting a long-term, inclusive, and innovation-driven approach to digital transformation, Vietnam's tourism sector can not only recover from the disruptions of the pandemic but also build resilience and achieve sustainable growth in the digital age.

REFERENCES

Amaro, S., Abrantes, J. L., & Mendes, L. (2023). Assessing digital maturity in tourism SMEs: A multidimensional approach. *Tourism Management,* 97, 104457. https://doi.org/10.1016/j.tourman.2023.104457

Bondarenko, S., Kalaman, O., & Danilova, O. (2025). Digital transformation of the tourism business in an open economy: A comprehensive approach to travel planning and partnerships. *Social Development: Economic and Legal Issues*, (4). https://doi.org/10.70651/3083-6018/2025.4.17eu-scientists.com

Gajic, J., & Tomic, S. (2021). Digital transformation and customer satisfaction in the tourism industry. *Technological Forecasting and Social Change*, 173, 121059. https://doi.org/10.1016/j.techfore.2021.121059

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (3rd ed.*). Sage Publications.

Mariani, M. M. (2021). Big data and analytics in tourism and hospitality: A perspective article. *Tourism Review,* 76(1), 173–177. https://doi.org/10.1108/TR-06-2020-0241

Nguyen, T. H., & Tran, L. M. (2024). Digital transformation in Vietnam's tourism industry: Challenges and opportunities. *Journal of Tourism and Development,* 42(2), 89–102.

Pham, H. T., & Le, D. T. (2023). Smart tourism development in Vietnam: A policy perspective. *Asian Journal of Tourism Research,* 28(3), 45–60.

Tavitiyaman, P., Zhang, H. Q., & Tsang, N. K. (2022). Digital transformation strategies and competitive performance in hotels: Evidence from Southeast Asia. *International Journal of Hospitality Management,* 105, 103242. https://doi.org/10.1016/j.ijhm.2022.103242

Tran, Q. H., & Bui, M. T. (2025). Evaluating the impact of digital technologies on customer experience in Vietnam's tourism sector. *International Journal of Tourism Management,* 50(1), 112–125.

Vietnam National Administration of Tourism (VNAT). (2023). *Annual report on Vietnam's tourism digital development. Hanoi: VNAT.*

World Tourism Organization (UNWTO). (2024). *Digital transformation in tourism: A global perspective*. Madrid: UNWTO.

Yen, N. T., & Hoang, V. C. (2023). The role of digital platforms in promoting sustainable tourism in Vietnam. *Sustainable Tourism Journal,* 15(4), 200–215.

Zhang, Y., & Li, X. (2022). The influence of digital transformation on tourist behavior: A case study of Southeast Asia. *Journal of Travel Research,* 61(5), 987–1002.

Zhou, L., & Wang, J. (2024). Integrating AI and IoT in smart tourism: Implications for emerging markets. *Journal of Hospitality and Tourism Technology*, 15(1), 34–49.

Nguyen, P. Q., & Do, T. N. (2025). Enhancing tourist experiences through digital innovation in Vietnam. *Asia Pacific Journal of Tourism Research*, 30(2), 150–165.