

THE ROLE OF DIGITAL TECHNOLOGY IN TOURISM DEVELOPMENT IN VIETNAM TODAY

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ABSTRACT

This article examines the role of digital technology in Vietnam's tourism development, focusing on the conditions under which its application can create value across the tourism sector rather than merely produce isolated digital products. Based on a synthesis of international research and an analysis of Vietnamese legal and policy documents, statistical data, and documented implementation practices, the article assesses the influence of digital technology on market access, tourist experiences, management activities, and linkages among tourism stakeholders. The findings show that Vietnam has begun to move beyond basic online promotion towards smart tourism platforms, virtual experiences, digital payments, and data-driven destination management. However, digital transformation remains fragmented across localities and enterprises. Existing systems are not yet fully interoperable, while data quality and digital skills remain limited. In addition, personal-data protection, cybersecurity, responsible AI governance, and support for small and medium-sized enterprises have not been addressed in a sufficiently coordinated manner. The central challenge is therefore no longer to increase the number of digital applications, but to connect data, technologies, and tourism stakeholders within a coherent governance framework. The article proposes a shift from separate digital projects towards an interoperable, inclusive, and accountable digital tourism ecosystem based on common data standards, shared infrastructure, workforce development, enterprise support, and substantive outcome evaluation.

Keywords: Digital technology, smart tourism, tourism digital transformation, digital tourism ecosystem, Vietnam.

1. PROBLEM STATEMENT

Digital technology has moved from a supporting instrument to part of the infrastructure through which tourism demand is generated, services are produced, destinations are managed, and value is exchanged. The historical development of eTourism demonstrates that information and communication technologies have progressively altered distribution channels, organizational processes, consumer behaviour, and competitive structures [1]. Smart-tourism research subsequently explains how connected devices, platforms, artificial intelligence (AI), big data, and real-time data flows can transform information into context-specific services and new value propositions [2]. The ecosystem perspective adds that these effects arise through interactions among tourists, firms, destination authorities, technologies, data, and institutional rules rather than through isolated applications [3]. This perspective is especially relevant to tourism, an information-intensive and fragmented sector whose performance depends on coordination among public authorities, transport providers, accommodation establishments, attractions, intermediaries, local communities, and tourists.

In Vietnam, the institutional basis for tourism digitalization has expanded considerably. The Law on Tourism establishes the legal framework for tourism activities and sustainable tourism development [4]. The Law on Digital Technology Industry provides a broader statutory framework for digital technologies, digital data, and the digital-technology industry [5]. Decision No. 1671/QĐ-TTg initiated a national orientation for information-technology application in tourism [6], whereas Decision No. 3570/QĐ-BVHTTDL set the objective of developing a smart-tourism ecosystem connecting state agencies, enterprises, tourists, and related stakeholders [7]. The Law on Electronic Transactions supplies the legal basis for data messages, electronic signatures, trust services, and electronic transactions [8]. The Law on Personal Data Protection, effective from January 1, 2026, strengthens the protection of personal data processed in digital services [9]. Taken together, these instruments indicate that digital transformation has become a matter of tourism governance and competitiveness, not merely an optional modernization measure.

The practical context also creates strong incentives for digital transformation. Vietnam received approximately 21.2 million international visitors and 135.5 million domestic tourists in 2025, with total tourism receipts exceeding VND 1 quadrillion [10]. Such scale intensifies the need for reliable digital information, seamless booking and payment, multilingual support, visitor-flow management, and data-based policy decisions. At the same time, aggregate growth figures should not be interpreted as direct evidence that digital technology alone caused tourism recovery. They instead demonstrate the size and complexity of the sector that digital systems are expected to support. The analytical task is therefore to clarify where digital technology actually creates value, what institutional and organizational conditions enable that value, and which constraints may prevent the benefits from being distributed across destinations and enterprises.

International scholarship provides six closely related strands for examining this transition. Research on smart tourism explains how smart technologies, data, and networked actors co-create tourism experience and business value [2]. The smart-tourism ecosystem literature further emphasizes interdependence among actors, technological systems, data resources, and institutional arrangements [3]. Research on personalized digital experience shows that value depends on information aggregation, ubiquitous connectivity, and real-time synchronization rather than on the possession of individual devices alone [11]. Big-data studies demonstrate the analytical value of user-generated content for understanding hotel experience and satisfaction [12], while systematic reviews identify applications of business intelligence and big data in forecasting, service design, marketing, productivity, and profitability [13]. Reviews of AI research document the use of machine learning, neural networks, natural-language processing, computer vision, and recommender systems in hospitality and tourism [14]. Post-COVID-19 scholarship argues that digital transformation should also be evaluated through resilience, sustainability, inclusion, and structural change, rather than efficiency alone [15]. Recent studies extend this agenda to autonomous AI-supported travel decisions [16], tourism-specific generative AI [17], responsible-AI supervision [18], validated measures of responsible generative AI [19], AI-generated product descriptions [20], and the effects of AI credibility and utility on traveller behaviour [21].

Despite the expansion of international research, three issues warrant further examination in the Vietnamese context. First, the Vietnamese materials reviewed in this study mainly document policies, digital applications, and individual destination cases, while offering limited engagement with international theories of smart tourism, digital transformation, and ecosystem governance. Second, policy and implementation reports commonly use the launch of portals, applications, virtual tours, and e-ticketing systems as indicators of digital progress. These outputs, however, do not by themselves demonstrate organizational or ecosystem-level transformation, which also depends on organizational capability, interoperability, data quality,

user trust, and sustained adoption. Third, the reviewed Vietnamese evidence gives insufficient systematic attention to SME participation, personal-data protection, responsible AI, and outcome-based evaluation. To examine these issues, this article synthesizes international peer-reviewed research with Vietnamese legal, policy, statistical, and documented implementation sources across four analytical dimensions: digital market reach, tourist-experience enhancement, data-driven management, and ecosystem governance. The article contributes an analytical framework for examining the conditions under which digital technologies may create value for tourists, enterprises, communities, and destination governance. It also identifies outcome-oriented policy priorities for supporting Vietnam's transition from separate digital projects toward a more interoperable, inclusive, and accountable tourism ecosystem.

2. RESEARCH METHODOLOGY

This article employs an integrative literature review combined with qualitative analysis of legal and policy documents, statistical data, and documented implementation evidence. This approach is used to synthesize international research on smart tourism and digital transformation while examining the application of digital technologies within Vietnam's institutional and policy context.

The literature search was updated through August 1, 2026, with a primary focus on studies published between January 2015 and July 2026. One foundational study on eTourism published in 2008 was retained because of its significance in explaining the transition from information technology application to digital transformation in tourism [1]. The search was organized around six keyword clusters: "smart tourism," "digital tourism," "tourism digital transformation," "AI in tourism," "big data in tourism," and "tourism digital ecosystem." Depending on the focus of the search, these terms were combined with "Vietnam," "governance," "interoperability," "sustainability," "privacy," and "SME."

International sources included peer-reviewed journal articles, with priority given to studies published in journals indexed in Scopus or Web of Science, as well as OECD reports. Bibliographic information was verified through DOI and Crossref records, publishers' websites, and the reference lists of relevant studies. Vietnamese materials were collected from the National Database of Legal Documents; the official portals of the Government of Vietnam, the Ministry of Culture, Sports and Tourism, and the Vietnam National Authority of Tourism; and selected articles published by official news organizations. Information concerning laws, policies, statistics, and implementation activities was cross-checked against official sources before being included in the analysis.

Sources were selected according to three criteria: direct relevance to tourism and digital technology; clear and traceable provenance; and the capacity to provide evidence relevant to the research objectives. The selected materials were then classified and analyzed across four thematic areas: (i) expanding market access through digital channels; (ii) enhancing and personalizing tourist experiences; (iii) data-driven management and operational innovation; and (iv) digital tourism ecosystem governance. Findings from international research were compared with Vietnamese policies and documented implementation evidence to assess achievements, identify limitations, and formulate recommendations. Because the study relies on purposively selected secondary sources, its findings are interpreted as evidence of emerging trends and implementation conditions rather than as a statistical test of causal relationships.

3. RESEARCH CONTENT

3.1. Theoretical foundations and international research on digital tourism

For this article, digitization refers to converting analogue information or processes into digital form, whereas digital transformation refers to organizational and institutional change through which data and digital technologies reshape processes, relationships, business models, and decision-making. In tourism, placing destination information online is an example of digitization; integrating real-time data, platforms, electronic transactions, AI-supported services, and coordinated destination governance represents a deeper transformation. This distinction is an analytical interpretation developed from the digital-tourism literature [1] and the smart-tourism ecosystem perspective [3], rather than a statutory definition.

Clause 1, Article 3 of the Law on Digital Technology Industry defines digital technology as the set of scientific methods, technological processes, and technical tools used to produce, transmit, collect, process, store, and exchange digital information and data and to digitize the physical world [5, authors' translation].

Clause 1, Article 3 of the Law on Tourism defines tourism as activities associated with travel outside a person's usual place of residence for no more than one consecutive year for sightseeing, leisure, entertainment, learning, exploration of tourism resources, or other lawful purposes [4, authors' translation]. Clause 14, Article 3 defines sustainable tourism development as development that simultaneously satisfies economic, social, and environmental requirements, harmonizes stakeholder interests, and does not impair the ability to meet future tourism needs [4, authors' translation].

The concept of smart tourism provides the first theoretical foundation. Gretzel et al. define smart tourism through the growing reliance of destinations, industries, and tourists on smart technologies that transform large volumes of data into value propositions [2]. The smart tourism ecosystem perspective extends this idea by emphasizing interconnected actors, technologies, data, and institutional rules rather than individual applications [3]. Value is therefore co-created across a network. A mobile application may offer little systemic benefit if transport data, destination information, payments, accommodation services, and public-management systems are disconnected. Conversely, interoperable systems can reduce information asymmetry, support coordinated service delivery, and enable public authorities to manage destination pressures more effectively.

The second foundation concerns tourist-experience co-creation. Smart technologies can aggregate information, maintain ubiquitous connectivity, and synchronize services in real time, allowing tourism experiences to become more personalized and responsive [11]. AI recommendation engines, chatbots, translation tools, virtual and augmented reality, digital maps, and contactless services may reduce search costs and support tourists before, during, and after a trip. However, personalization is not inherently beneficial. Its value depends on accuracy, transparency, accessibility, user control, and the protection of personal data. Poor-quality recommendations, inaccessible interfaces, intrusive data collection, or opaque automated decisions can reduce trust and exclude users with limited digital skills.

The third foundation is data-driven management. Big-data and text-analytics research shows that user-generated data can reveal patterns in hotel guest experience and satisfaction that are difficult to identify through small conventional datasets [12]. A systematic review of business intelligence and big data identifies applications in forecasting, marketing, service design, productivity, and profitability, while emphasizing the organizational capabilities required to convert analytics into managerial value [13]. A separate systematic review maps the development of AI and big-data applications in tourism and identifies implementation barriers related to data, skills, infrastructure, and organizational readiness [22]. Research on

smart tourism also warns that the field has developed unevenly across destinations and research contexts [23]. A systematic review of AI methods documents the growing use of machine learning, neural networks, natural-language processing, computer vision, and recommender systems in hospitality and tourism [14]. These studies support the inference that technological investment alone is insufficient: data quality, analytical capability, organizational redesign, and accountable decision-making mediate whether technology produces operational value.

Research published between 2023 and 2026 shifts attention from technological capability toward generative AI and responsible use. Wong, Lian, and Sun examine how ChatGPT may influence autonomous travel decision-making [16]. Hsu, Tan, and Stantic propose a tourism-specific generative AI concept intended to improve domain relevance [17]. Rather develops a framework covering benefits, challenges, and future research on ChatGPT in hospitality and tourism [24]. Gao and Wang analyze collaborative supervision strategies for generative-AI risks in the tourism industry [18]. Shen, Chen, and Xiong conceptualize responsible generative AI and validate dimensions related to authenticity, security, caring, ethicality, and fairness [19]. Guttentag, Litvin, and Teixeira compare human- and AI-produced tourism product descriptions [20], whereas Kim, Kim, and Promsivapallop examine how perceived credibility and utility influence travel-consumer behaviour [21]. Read together, these studies support the conclusion that accuracy, transparency, security, fairness, and user trust are governance conditions for tourism AI, not secondary technical concerns.

The fourth foundation is ecosystem governance. Reviews of smart-tourism research note that the field has often concentrated on destinations and technology while giving less attention to qualitative institutional conditions, cross-sector coordination, and uneven geographical development [23]. OECD analysis similarly shows that digital transformation can widen the gap between globally connected firms and small traditional tourism enterprises unless policy actively supports skills, infrastructure, standards, and access to digital ecosystems [25]. The 2026 OECD assessment further stresses the need to use data and digital tools within more strategic tourism governance that balances competitiveness, resilience, community interests, and environmental outcomes [26]. Digital transformation should therefore be evaluated not by the number of applications deployed but by the quality of connectivity, use, governance, and measurable public value.

Synthesizing these perspectives, this article assesses digital technology through four linked mechanisms. Digital market reach concerns the capacity to connect destinations and enterprises with target markets. Tourist-experience enhancement concerns convenience, personalization, accessibility, and trust. Data-driven management concerns the use of integrated information for operations, forecasting, resource allocation, and destination control. Ecosystem governance concerns interoperability, institutional responsibility, SME inclusion, cybersecurity, privacy, and sustainability. The mechanisms are complementary: weak governance can undermine data use; weak data can reduce personalization; and fragmented enterprise participation can limit both market reach and destination-wide value creation.

3.2. The current status of digital technology application in Vietnam's tourism sector

3.2.1. Achievements and emerging value-creation mechanisms

First, Vietnam has established a clearer policy trajectory from information-technology application toward smart-tourism ecosystem development. Decision No. 1671/QĐ-TTg oriented the sector toward a coordinated information-technology architecture, digital databases, and online tourism services [6]. Decision No. 3570/QĐ-BVHTTDL advanced this direction by explicitly linking smart tourism with a national ecosystem connecting management agencies, enterprises, tourists, and related actors [7]. This represents an important conceptual shift: digital transformation is increasingly treated as a sector-wide governance

issue rather than merely an enterprise marketing tool. The Law on Digital Technology Industry provides a statutory framework for the development of the digital technology industry and related digital-technology activities [5]. The Law on Electronic Transactions provides the legal basis for data messages, electronic signatures, trust services, electronic contracts, and transactions conducted by electronic means [8]. The Law on Personal Data Protection defines the rights and obligations of data subjects and establishes responsibilities for data controllers, data processors, and other parties involved in personal-data processing [9]. Taken together, these laws create relevant legal conditions for the development of digital tourism services. This article nevertheless argues that sector-specific guidance is still needed to translate their general provisions into tourism data governance, electronic service delivery, and responsible technology use.

Second, digital platforms have substantially expanded destination visibility and market access. Websites, social-media channels, mobile applications, online travel agencies, short-form video, and digital content allow destinations and firms to reach domestic and international tourists at lower marginal communication cost. The practical significance lies not simply in wider exposure but in the restructuring of the tourist decision journey: inspiration, information search, comparison, booking, payment, navigation, reviewing, and post-trip sharing increasingly take place through interconnected digital touchpoints. Vietnam's campaigns and destination platforms demonstrate an increasing capacity to combine national branding with locality-specific content. However, the value of this reach depends on multilingual quality, search visibility, reliable service information, and the ability of smaller providers to participate rather than remain invisible behind dominant platforms.

Third, documented destination practices show a gradual shift from static information provision toward interactive and immersive services. In Da Nang, multilingual information portals, the Danang FantasticCity application, chatbot assistance, social-media promotion, the VR360 "One Touch to Da Nang" experience, and cooperation with Viettel on smart-tourism services were introduced at different stages [27]. In Hanoi, heritage and museum institutions implemented online exhibitions and electronic ticketing [28]. Ho Chi Minh City promoted three-dimensional tourism information, an interactive tourism map, and virtual-guide functions [28]. The same source reports the use of AI, VR360, and QR-based payment in several other destinations [28]. These documented examples demonstrate technological variety; they do not, by themselves, establish sustained user adoption, interoperability, or causal effects on tourism performance. The analytical implication is that implementation outputs must be assessed against use, service quality, inclusion, and management outcomes.

Fourth, Vietnam's tourism sector has begun to establish several foundational components for data-supported management. Decision No. 3570/QĐ-BVHTTDL sets the policy objective of applying Fourth Industrial Revolution technologies to develop a smart tourism ecosystem connecting tourism authorities, enterprises, tourists, and other relevant stakeholders [7]. At the implementation level, the Vietnam National Administration of Tourism reported the operation and promotion of the Vietnam Tourism Database system, a tourism-management information dashboard, a statistical reporting system, and digital platforms supporting tourism management and business activities [29]. These developments suggest the initial formation of a more integrated digital infrastructure for tourism management. Nevertheless, the available evidence demonstrates the establishment and promotion of these systems rather than their nationwide interoperability, sustained adoption, data-sharing performance, or measurable management effects. If supported by reliable data, appropriate analytical capability, and effective institutional coordination, such systems could improve demand analysis, management information, service-quality monitoring, and operational decision-making. This is an analytical implication rather than an outcome directly demonstrated by the reviewed Vietnamese evidence. From an ecosystem perspective, the significance of these developments

therefore lies not only in individual digital applications but also in the growing policy emphasis on data connectivity and coordinated tourism management. This interpretation is consistent with the smart-tourism ecosystem model, which explains how interactions among data, technologies, institutions, and tourism actors can generate new forms of value [3].

Fifth, digitalization has supported business-model diversification and sectoral resilience through online distribution, digital payments, virtual promotion, cloud-based management, and platform-mediated services. Official reporting records approximately 21.2 million international visitors, 135.5 million domestic tourists, and total tourism receipts exceeding VND 1 quadrillion in 2025 [10]. These figures establish the scale of the tourism market but do not isolate the causal effect of digital technology. The authors therefore infer only that digital capacity has become an important enabling condition for information dissemination, transaction convenience, market reconnection, and the management of a large and rapidly changing tourism sector.

3.2.2. Limitations, structural gaps, and governance risks

Despite visible progress, digital transformation remains uneven and fragmented. Major urban destinations and technologically capable enterprises have developed sophisticated platforms, while many localities, community-based destinations, and small firms continue to rely on basic websites, social media, or third-party intermediaries. This creates a two-speed tourism economy. The OECD identifies a similar international pattern in which small tourism enterprises face barriers related to cost, awareness, skills, connectivity, and access to data-driven ecosystems [25]. In Vietnam, the fragmentation reduces the possibility of providing a seamless visitor journey and limits the national aggregation of reliable tourism data.

Interoperability is a second constraint. Local applications, enterprise systems, payment channels, destination databases, and public-management platforms may be developed under different technical standards and institutional arrangements. When systems cannot exchange data, information must be repeatedly entered, tourist profiles remain incomplete, and authorities cannot obtain a consistent view of demand or destination pressure. Fragmentation also raises maintenance costs and can produce multiple applications with overlapping functions but low sustained use. The policy objective should therefore move from maximizing the number of digital products to ensuring shared standards, application-programming interfaces, data dictionaries, identity and consent mechanisms, and clear responsibilities for data quality.

Human and organizational capability remains a third bottleneck. Digital transformation requires more than information-technology personnel. Tourism managers need the capacity to redesign processes, interpret data, manage platform relationships, evaluate AI outputs, protect privacy, and integrate digital tools with service quality. Frontline workers need practical digital skills, while public officials need competence in data governance, procurement, cybersecurity, and outcome evaluation. International reviews show that technology creates value only when organizational routines and decision-making capabilities change [13], [22], [14]. Without such capability, expensive systems risk becoming underused information repositories or promotional showcases rather than operational tools.

Fourth, data governance, cybersecurity, and trust have become central concerns. Tourism systems may process identity information, travel behaviour, location, payment details, preferences, images, and biometric data. Article 4 of the Law on Personal Data Protection recognizes the data subject's rights to be informed, to consent or refuse consent, to withdraw consent, and to request access, correction, deletion, or restriction of processing [9]. Article 23 requires notification of qualifying personal-data violations within 72 hours, while Article 37 assigns responsibilities to data controllers and processors, including appropriate managerial and technical safeguards and protection of data-subject rights [9]. These provisions establish

legal obligations; they do not prescribe a complete tourism-AI governance model. International research separately identifies requirements relating to data provenance and sustainable data governance [30], tourism-specific generative-AI design [17], collaborative risk supervision [18], and responsible-AI attributes such as authenticity, security, ethicality, and fairness [19]. On that basis, the authors infer that tourism organizations should operationalize the law through data minimization, consent management, access control, retention rules, breach-response procedures, vendor accountability, human oversight, and periodic assessment of AI outputs.

Fifth, the measurement of digital-transformation outcomes remains limited. Success is frequently reported through the launch of platforms, applications, virtual tours, or databases. These are outputs, not final outcomes. A rigorous evaluation should examine user adoption, transaction completion, service accessibility, tourist satisfaction, enterprise productivity, data reuse, congestion reduction, energy and resource efficiency, local value retention, and the participation of vulnerable or remote groups. Post-pandemic e-tourism research calls for precisely this broader assessment of transformation, resilience, and sustainability [15]. Without outcome indicators, ineffective projects may continue while successful models are not systematically scaled.

3.3. Discussion: from isolated digital applications to an integrated tourism ecosystem

The evidence suggests that Vietnam is in a transitional stage between project-based digitization and ecosystem-level digital transformation. The first stage is characterized by websites, social-media promotion, e-ticketing, QR codes, and individual smart-tourism applications. These tools can produce immediate benefits, but their value remains bounded by the organization or locality that operates them. The ecosystem stage requires interoperable data, coordinated services, common governance rules, and shared accountability across the visitor journey. The decisive question is therefore no longer whether tourism actors use technology, but whether their technologies and data can work together to create public and private value.

The four analytical dimensions reveal strong interdependence. Digital market reach without enterprise capability can increase dependence on global intermediaries and reduce local control over customer relationships. Personalization without data governance can undermine privacy and trust. Data-driven management without interoperability can produce incomplete or misleading analysis. Ecosystem platforms without SME inclusion can widen territorial and organizational inequality. Consequently, policy should avoid a technology-first approach in which new tools are procured before problems, users, data responsibilities, and performance indicators are clearly defined.

A further implication concerns sustainability. Digital technology can help distribute visitor flows, provide real-time information, support capacity management, reduce paper-based processes, and improve access to lesser-known destinations. Digital twins and big-data governance may also support scenario analysis and more informed destination management [30]. Yet digitalization can intensify promotion, accelerate visitation, increase dependence on energy-intensive infrastructure, and concentrate value in dominant platforms. The reviewed evidence therefore suggests that the net effect is contingent on governance rather than technology alone. Following OECD guidance, digitalization should be embedded in wider destination strategies that balance competitiveness with community benefits, resilience, and environmental limits [26]. Digital transformation is a means of governing tourism development, not an end in itself.

The article's main theoretical contribution is to connect the smart-tourism ecosystem perspective with implementation conditions in an emerging tourism economy. The reviewed evidence suggests that the role of digital technology cannot be adequately explained by a linear

sequence from investment to competitiveness. A more realistic sequence is capability and governance -> trusted data and interoperability -> coordinated services and innovation -> tourist, enterprise, community, and public-management outcomes. Breakdowns at any stage can reduce the value of the entire system. This framework helps explain why visible applications may coexist with persistent fragmentation and why institutional reform, responsible AI governance, and organizational capability are as important as technological investment.

3.4. Solutions to promote the role of digital technology in tourism development in Vietnam

First, Vietnam should establish an integrated governance architecture for the digital tourism ecosystem. The central tourism authority should define a national reference architecture covering core datasets, data dictionaries, interoperability standards, application-programming interfaces, security requirements, and responsibilities across central agencies, localities, and enterprises. This architecture should not require every actor to use one application; it should enable different systems to exchange verified data under common rules. New public digital projects should demonstrate compatibility with the architecture before approval, and duplicated or low-use systems should be consolidated.

Second, policy should prioritize data governance and trusted data sharing. As a legal baseline, tourism organizations must protect the rights set out in Article 4 of the Law on Personal Data Protection, conduct relevant impact assessments under Articles 21 and 22, comply with the violation-notification requirements in Article 23, and meet controller and processor responsibilities under Article 37 [9]. The following measures are the authors' policy recommendations derived from that legal baseline and the international literature, rather than provisions quoted directly from the Law: sector-specific guidance, model consent notices, data-classification and retention rules, cybersecurity protocols, vendor-accountability clauses, and practical compliance support for SMEs. For AI systems used in recommendation, pricing, customer service, content generation, or surveillance, the authors further recommend human oversight, traceable data provenance, periodic accuracy and bias assessment, and accessible mechanisms through which users can question harmful automated outcomes. These additional safeguards are supported conceptually by work on tourism data governance [30], collaborative generative-AI supervision [18], and responsible generative AI in tourism [19].

Third, support for tourism SMEs and less-developed destinations should become a central inclusion policy. Rather than subsidizing isolated applications, public programs should provide shared cloud services, standardized booking and payment modules, cybersecurity tools, digital-content support, and access to destination data platforms. Technical assistance should help enterprises improve online visibility, customer-data management, revenue management, and platform negotiation. Financing instruments can be linked to a staged digital-maturity assessment so that firms adopt appropriate technologies instead of purchasing systems beyond their capacity. This approach addresses the uneven playing field identified in OECD research [25].

Fourth, digital workforce development should be organized by role and competency level. Senior managers require capabilities in digital strategy, process redesign, investment evaluation, and data ethics. Destination managers and public officials need training in data governance, analytics, smart procurement, and performance measurement. Marketing and service staff require skills in content production, digital customer engagement, multilingual communication, and platform operations. Technical personnel need expertise in integration, cybersecurity, AI, and data engineering. Universities, vocational institutions, technology firms, and tourism enterprises should jointly develop modular programs based on real destination datasets and operational problems.

Fifth, advanced technologies should be adopted through problem-driven pilots with explicit evaluation. Digital twins and big-data governance can support scenario analysis and

sustainability-oriented destination management [30]. Generative AI can support travel decision-making and assistance [16], while tourism-specific model design may improve domain relevance [17]. ChatGPT-related applications offer potential benefits in customer service and content generation but also create accuracy and governance challenges [24]. Evidence on AI-generated tourism descriptions shows that output quality should be tested rather than assumed [20], and research on credibility and utility indicates that traveller response depends on trust-related perceptions [21]. Accordingly, each pilot should begin with a defined user problem, baseline indicators, a data-protection and responsible-AI assessment, and a plan for integration, maintenance, human oversight, and independent evaluation. The recommendation to scale only after demonstrated improvements in service quality, productivity, accessibility, trust, sustainability, or management effectiveness is the authors' inference from this evidence.

Sixth, national and destination marketing should move toward data-informed content governance. High-quality multilingual content, accurate service information, accessible design, search optimization, and coordinated destination narratives are more valuable than high posting volume. Public campaigns should use market and behavioral data to identify target segments while avoiding opaque or discriminatory profiling. Destination platforms should also direct demand toward emerging products, off-peak periods, and less-congested areas when local capacity permits. In this way, digital promotion can support spatial and seasonal distribution rather than merely maximize visitor numbers.

Seventh, digital transformation should be monitored through an outcome-based indicator system. Suggested indicators include platform adoption and active use; interoperability and data-quality scores; digital transaction completion; response time and service accessibility; SME participation; tourist trust and satisfaction; cyber incidents; productivity effects; visitor-flow distribution; local value retention; and environmental or capacity-management outcomes. Independent evaluation and public reporting would improve accountability and allow effective models to be replicated. This is consistent with the broader transition from counting digital outputs to assessing whether technology contributes to resilient, inclusive, and sustainable tourism governance [15], [26].

4. CONCLUSION

Digital technology is becoming a constitutive element of tourism development in Vietnam. The synthesis finds meaningful progress in the legal and policy framework, digital promotion, smart-destination services, immersive experience, electronic transactions, and the emerging use of tourism data. However, the evidence also shows that visible applications should not be equated with ecosystem-level transformation. Uneven enterprise capability, fragmented systems, limited interoperability, skill shortages, weak outcome measurement, and growing privacy, cybersecurity, and responsible-AI risks constrain sector-wide value creation. Academically, the article contributes a four-dimensional framework linking digital market reach, tourist experience, data-driven management, and ecosystem governance, and proposes a conditional value sequence from governance and capability to trusted data, coordinated innovation, and stakeholder outcomes. Practically, it identifies common standards, trusted data sharing, SME inclusion, workforce capability, responsible AI, and outcome-based evaluation as mutually reinforcing priorities. The study is limited by its purposive narrative corpus and reliance on secondary evidence; it does not establish causal effects or provide exhaustive bibliometric coverage. Future research should test the framework through surveys, interviews, destination-level datasets, experiments, and comparative studies among localities and enterprise groups. Such work should measure not only adoption but also productivity, satisfaction, trust, resilience, sustainability, local value retention, and the distribution of tourism benefits.

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