

Smart E-Tourism Technologies for Sustainable Tourism Development: A Systematic Literature Review of Emerging Technologies, Challenges, and Future Directions

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ABSTRACT

This study presents a Systematic Literature Review (SLR) of smart e-tourism, examining its evolution, the technologies driving its development, current implementation practices, sustainability challenges, and emerging research directions. The review is based on findings from 65 peer-reviewed studies published between 2013 and 2020, identified through a systematic search of major academic databases, including Web of Science, ScienceDirect and IEEE Xplore. Using thematic synthesis, the selected studies were analyzed to identify key technological developments, implementation trends, existing research gaps, and future opportunities. The findings indicate that technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), and Big Data analytics are reshaping the tourism industry by enabling personalized services, supporting real-time decision-making, and improving operational efficiency. Despite these advancements, several barriers continue to limit broader adoption, including concerns over data privacy and security, interoperability issues, fragmented digital infrastructures, and digital inequality. The review further highlights current research trends and introduces a conceptual framework to guide future studies and support the development of ethical, inclusive, and sustainable smart tourism ecosystems. Based on the findings, practical recommendations are offered for policymakers, tourism practitioners, and technology developers to ensure that digital transformation initiatives align with environmental sustainability and the evolving expectations of modern travelers. Overall, this review provides a comprehensive foundation for future research while offering a strategic roadmap for developing resilient, socially responsible, and technology-enabled tourism systems.

Keywords: Smart e-tourism; Digital transformation; Sustainability; Internet of Things (IoT); Artificial Intelligence (AI).

INTRODUCTION

Digitalization and the growing involvement of Information and Communication Technologies (ICTs) have become the primary driving forces behind the transformation of the tourism industry. E-tourism, defined as the application of ICT throughout the tourism value chain, supports every stage of the travel experience, from planning and booking to navigation, engagement, and post-travel feedback. Artificial intelligence (AI) powered chatbots, augmented reality/virtual reality (AR/VR), IoT-ready devices, digital twins and recommender systems are some of the technologies that have enhanced service provision and individualized tourist experience (Cranmer et al., 2020).

Whereas innovations in e-tourism bring impressive advantages in the form of efficiency, engagement, and tailoring the experiences, these innovations present rather serious challenges. The global digital divide is one

of the major challenges. Small and medium-sized tourism enterprises, particularly the ones identified in the Global South, do not have access to good infrastructure, digital literacy, and finances to support the uptake of new technologies. In rich settings, there is also inconsistency in adoption and quality across providers and rates of digital capacity, which affects the adoption and quality of services (Jeong & Shin, 2020).

Another major challenge concerns data privacy, cybersecurity, and ethical governance. The privacy and personalization paradox, i.e. providing personal information in exchange of convenience, is under-studied both in practice and literature and casts concerns regarding consent, transparency and trust. In spite of the increased interest in smart tourism security in academia after the events of 2011, little is known about it empirically and very limited regulatory guidelines exist (Um & Chung, 2021).

Another concern is that excessive digitalization may reduce the authenticity of travel experiences and weaken meaningful interactions with local cultures. The excessive use of virtual assistance, automated instructions, and AI may also reduce meaningful interactions between tourists and local communities. In some cases, these technologies can distort or commodify the heritage, making it of less value. Also, the concept of sustainability, which can be described as one of the primary objectives of smart tourism, is paradoxical. Although the digital means may help to manage crowds and monitor the environment, they are likely to create overtourism and ecological pressure when uncontrolled (Kononova, Prokudin, & Tupikina, 2020).

The development timeline of e-tourism described in systematic literature reviews in recent years goes as follows: the initial stages centered on early adoption of ICT (2004-2008), then recommendation systems and GIS (2009-2012) and, most recently, AR/VR, user-generated content, and AI (NavrioMarco et al., 2021). The implementation process requires not only a successful technical ("hard") infrastructure, but also non-technical ("soft") determinants, including the coordination of stakeholders, digital governance, and community roles. The recurring problems described in the reviews of smart ecotourism and digital sustainability communication are fragmented messages, poor levels of stakeholder embedding, and minimal influence on changing behaviors (Chandel & Kamble, 2024).

Considering such possibilities and constraints, the present paper will perform a systematic literature review to understand the development, the main technology employed in smart e-tourism, the barriers of its implementation, and sustainability considerations thereof. It is aimed at educating responsibly to a moderate, encompassing, and sustainable future agenda of innovation enhancement on the standards of equity, proper governance, and environmental sustainability in international tourism growth (García-Madurga & Grilló-Méndez, 2023).

Systematic Literature Review on E-Tourism Data Management

As demonstrated by the systematic literature review, data management forms one of the key strengths of e-tourism innovation, and an ever-growing importance is attached to the process of data collection, processing, and its implementation to improve tourism experiences. The prevalent technologies identified in the reviewed literature relate to big data analytics, cloud computing, artificial intelligence (AI), and geographic information systems (GIS), which can empower a stakeholder to make usable knowledge out of the various data sources like the Internet of Things (IoT), mobile apps, social media, and online booking services (Xiang et al., 2021).

The literature highlights four major themes:

1. **Scalability and Complexity-** The amount of data that is increasing requires systems to perform real-time operations as well as predictive modeling, and personalization.
2. **Interoperability and Integration-** Interoperability and integration are also a significant issue as heterogeneous data across systems and stakeholders needs to be integrated.
3. **Data Privacy and Security-** Encryption of confidential data remains one of the issues because of evolving regulatory requirements and limited organizational awareness.
4. **Data-Driven Decision Making-** There appears to be increased attention paid to using analytics to optimize services, but the phenomenon has not spread evenly across all organizations, particularly not in SMTEs.

The review points at a paucity of unified frameworks and standard practices in e-tourism data management, as well as limited empirical research in smaller-resource settings. It shows that This highlights important

opportunities for future research on inclusive, ethical, and sustainable data ecosystems (Huang, Chao, de la Mora Velasco, Bilgihan, & Wei, 2022).

Search Strategy

A comprehensive literature search was conducted to identify English-language studies published between 2013 and 2020. The search covered three major academic databases: Web of Science, ScienceDirect, and IEEE Xplore. Search techniques that were used were based on Boolean operations and terms included “location-based,” “context-aware,” “context-based,” “recommendation system,” “e-tourism” and “data management”. The searches were furthered with advanced operators and NEAR to help make the search as relevant and as deep as possible (Gretzel et al., 2020).

Inclusion Criteria

The inclusion criteria concentrated on peer-reviewed journal papers and conference papers published in (reliable) sources and wrote (in the English language). Included were studies on smart e-tourism systems that incorporated technologies like AI, IOT, big data analytics, recommendation systems, context aware computing. Studies were further added if they referred to an implementation framework or to user centric applications as a factor of tourism data management (Sigala, 2022).

Exclusion Criteria

Excluded articles in this review were those published in languages other than English, articles which did not meet scientific standards, and articles which did not provide clear methodology. Papers that cover only hospitality management in the absence of any mention of smart tourism systems and documentary, anecdotal, non-empirical articles were also excluded. Also, books, dissertation and editorial were not included (Buhalis & Leung, 2022).

Study Selection

Selection of studies took a multistage refinement approach. A first total of 1,240 articles were obtained. Following the removal of 37 duplicates, 1,203 articles were screened by title and abstract. Of those, 1,080 articles were excluded as non-relevant and the full-text of 123 articles was evaluated for eligibility. After an intensive evaluation, 65 studies fulfilled all criteria and were considered in the final synthesis. This method was adopted to achieve transparency, replicability, and methodological soundness. The systematic review included studies published between 2013 and 2020. To provide updated context and reflect recent developments in smart e-tourism, additional publications published after 2020 were cited selectively in the discussion and future implications sections. These studies were not included in the systematic review dataset.

Distribution Results

The selection process was described in a PRISMA flow diagram. Among the 65 studies included in this review, the analysis revealed a notable increase in smart e-tourism research after 2017, reflecting growing academic interest in digital tourism technologies. The research addressed many different aspects, including machine learning travel recommendations, geospatial analysis of tourist displacement, blockchain for secure booking, and real-time smart tourism. An analysis focused on research domains revealed that the studies revolved around four more important lines of research: technological infrastructure, user personalization, data governance, and sustainable tourism (Kaplan & Haenlein, 2022).

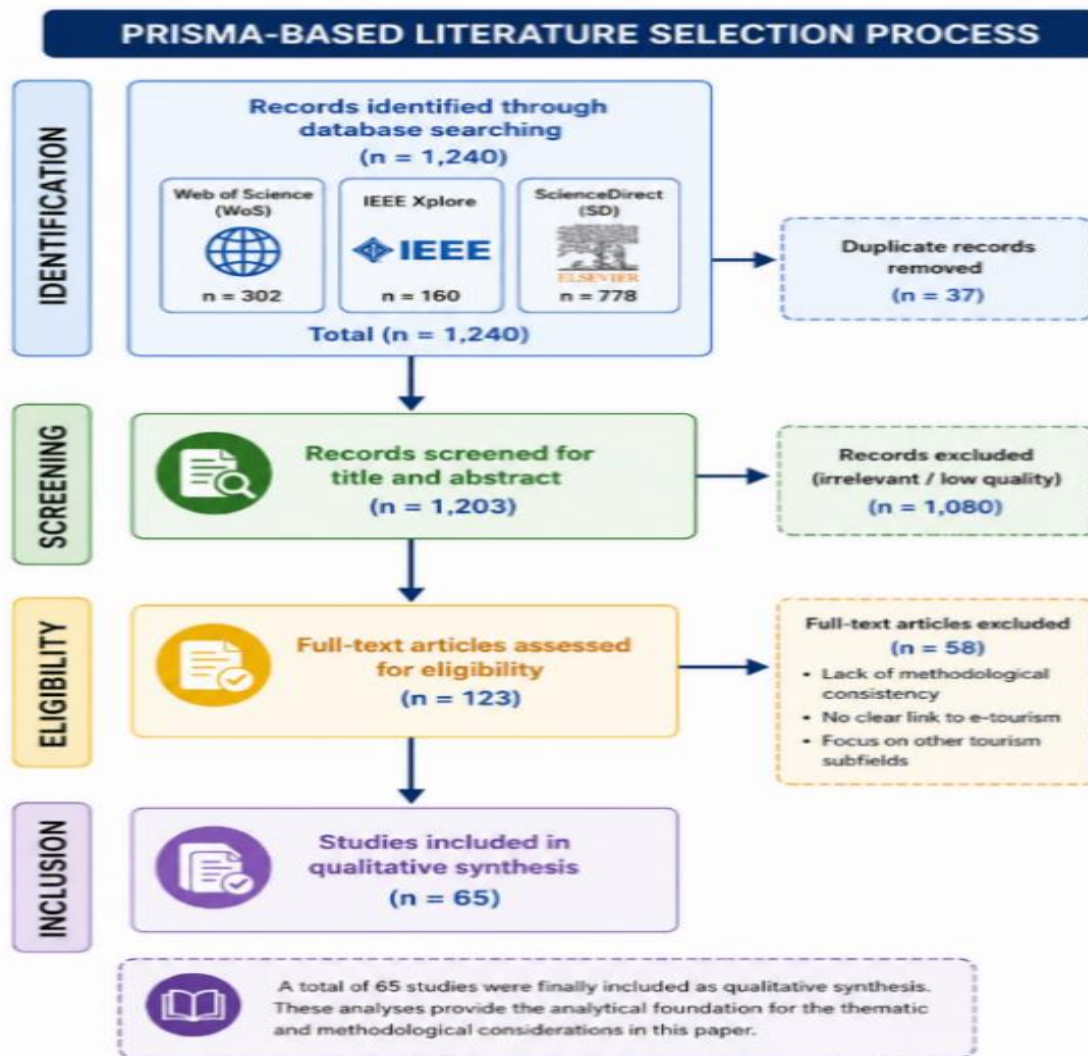


Figure 2.1: Schematic of Approach to Identify, Screen, and Include Relevant Studies.

This PRISMA-based schematic illustration details the transmission of information throughout the four stages in the systematic review process.

- **Identification:** A total of 1,240 papers were identified by the database search (WoS=302, IEEE=160, SD=778).
- **Screening:** 1,203 records were screened for titles and abstracts after excluding 37 duplicate records. After this stage, one thousand eighty articles were removed due to not passing relevance or quality thresholds.
- **Eligibility:** 123 full text articles were assessed for eligibility according to the predetermined inclusion and exclusion criteria. Of them, 58 were rejected for lack of methodological consistency, not a clear link to e-tourism, or concentration on other tourism subfields.
- **Inclusion:** A total of 65 studies were finally included as qualitative synthesis. These analyses provide the analytical foundation for the thematic and methodological considerations in this paper.

Thematic Classification and Research Gaps in Smart E-Tourism

A thematic classification of the 65 chosen studies was conducted to identify major research trends, technological issues and research gaps about smart e-tourism. Five main themes emerged as the structure and trajectory of current research based on the analysis:

- 1.Recommender and Personalization Systems
- 2.Context-aware and location-based features
- 3.Data governance and security
- 4.System integration and design
- 5.Sustainable and equitable tourism policies

Smart Based E-Tourism Taxonomy

To better classify existing smart e-tourism research, this study proposes a comprehensive taxonomy of technologies and methodological approaches. The taxonomy provides a structured framework for classifying smart e-tourism technologies and methodological approaches (e.g. AI, Io T, blockchain, big data) (Gretzel et al., 2021; Sigala, 2022).

The taxonomy is structured according to the following layers:

- **Functional Level:** On a functional level, it contains functions such as smart tourism, trip design, real-time navigation, booking, intelligent payment system, and experience marketing.
- **Technological Dimension:** Encompasses enabling technologies like AI, big data analytics, IoT, cloud computing, blockchain, and AR/VR.
- **Methods Layer:** Includes models such as collaborative filtering, fuzzy logic, neural networks, hybrid systems, AHP and machine learning algorithms.
- **User-Centric Layer:** by paying more attention on user modelling, personalization, sensitivity and affective analysis in order to improve customer experience.

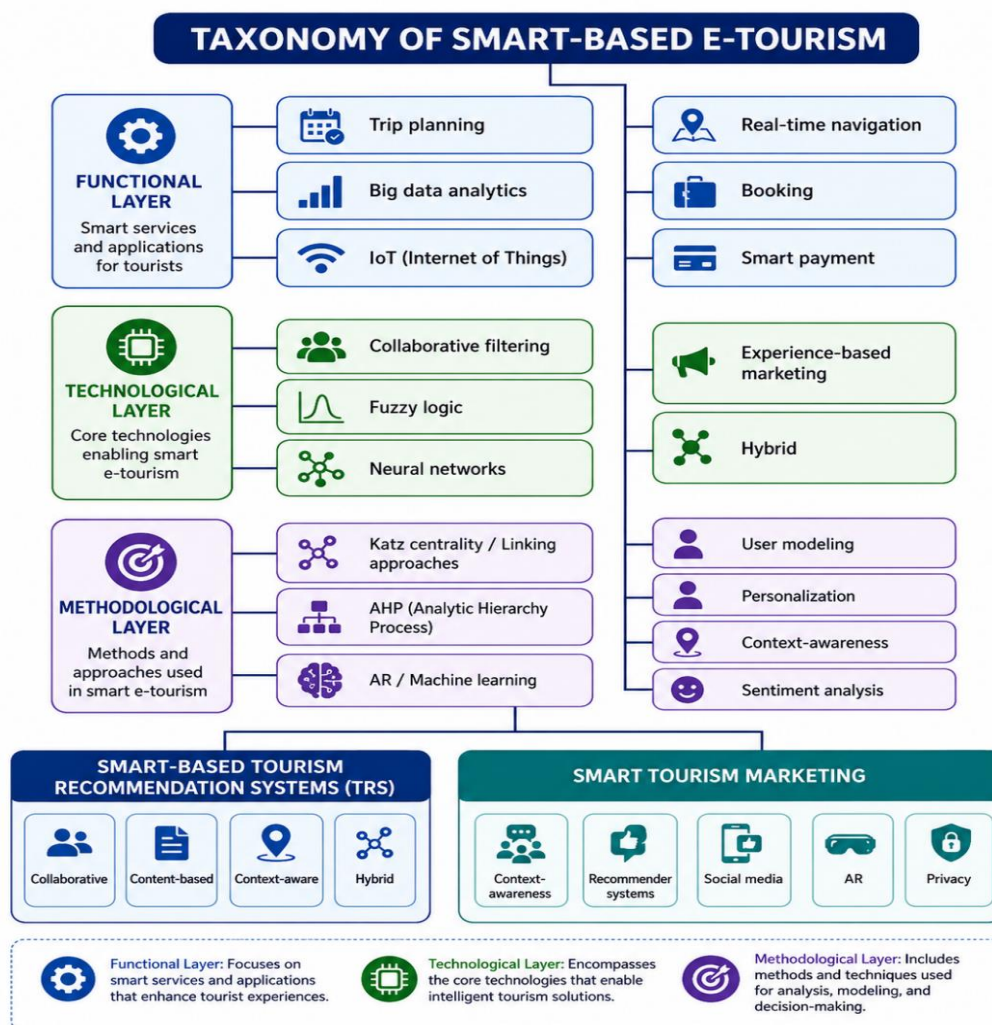


Figure 3.1 illustrates this taxonomy, which aids in mapping studies across smart key concepts.

It identifies two primary application classes:

- i. Smart-based Tourism Recommendation Systems (TRS) and
- ii. Smart Tourism Marketing.

Under the Smart-based TRS sub-category, approaches such as collaborative filtering, content-based modelling, context-aware systems, hybrid recommender systems are presented. Each sub-category is evaluated in terms of the implementation of twelve key smart concepts, such as context-awareness, recommender systems, social media, IoT, real-time, big data, augmented reality, and privacy-preserving technologies.

This extended classification can help in: providing a more comprehensive view of present practices; identifying less used smart features; and indicating which areas should be further explored empirically or integrated with other disciplines. It serves as the foundation for the research-gap analysis to come (Rahmadian, Feitosa, & Zwitter, 2022).

Emerging Research Themes

- i. **AI-Driven Personalization:** Some studies pay attention to the development of intelligent recommendation system based on collaborative filtering, deep learning and hybrid AI model. They are intended to curtail information overload and improve the precision of travel decisions made according to personal behavior and preferences.
- ii. **Context-Aware and Location-Based Systems:** When combined with sensors, mobile apps, and GIS, systems can provide real-time, location-relevant content. Yet, a substantial body of research suggests a lack of uniformity in user modelling and decision logic in such services (Samara, Magnisalis, & Peristeras, 2020).
- iii. **Data Management and Privacy:** While tourism systems are becoming increasingly data-focused these also raise questions around data ownership, user consent and cyber security. We know of few works that suggest generic frameworks that may enforce data protection legislations such as the General Data Protection Regulation (GDPR).
- iv. **Integration of Smart Systems:** The interfaces between the different tourism platforms is still a major issue. There are few studies that deal with open architectures or standardized APIs that support the sharing of data across travel agencies, accommodation providers, and transport operators (Lee, Zach, & Chung, 2021).
- v. **Sustainability and Ethics:** Despite the attributed benefits of e-tourism on sustainability, its applications are still lagging behind. In most of the reviewed studies, there are no measurable results of the reduction of carbon impact, and no results related to local empowerment and equitable access to technology for tourism (El Archi et al., 2023).

DISCUSSION

The findings indicate that smart e-tourism has evolved rapidly over the past decade. However, its development remains uneven, with considerable differences in technological maturity, digital infrastructure, and implementation across destinations. Although big data analytics and AI and predictive tools could be a powerful source of personalization, better decision-making, and way to optimize services, the application of these technologies does not always stay on a similar level in practice. In this section, the major technological, ethical, and infrastructural challenges identified in the reviewed literature are discussed, together with the factors driving continued innovation. It also draws together the recommendations of scholars on how to deal with these problems with particular focus on the construction of inclusive, sustainable and ethically regulated e-tourism ecosystems (Yang, Zhang, & Feng, 2024).

Challenges

- i. **Data Privacy and Ethics** With digital ecosystems relying more on personal data, privacy of data and ethical usage is becoming more important. Pillai, S., & Sivathanu, B. (2020) note that there are serious privacy issues when relying on tourists' personal data for predictive analytics. Tourists may not be willing to share personal and sensitive information if they consider the process to lack transparency, or fear unauthorized use. It is a careful balance of meeting users' preferences while keeping their trust. Here the requirements are strong data protection regulations as per General Data Protection Regulation (GDPR), data sovereignty, user-centric transparency and compliance with the regulations wherever applicable (Lan et al., 2021).
- ii. **Data Integration Complexity** The tourism industry produces huge amounts of heterogeneous data being collected from social media, booking engines, IoT sensors, reviews and mobile applications. Integrating these diverse data sources presents both technical and financial challenges (Zhao and Xu, 2023). The lack of universal interoperability across platforms remains a major obstacle to real-time data exchange and AI-driven decision support. The creation of common standards and architectures for data exchange is critical if the accuracy and reliability of analytics are to improve (Ordóñez et al., 2022).
- iii. **Technological Accessibility of Small and Medium Enterprises** Bigger tourism companies may have the resources needed to implement cutting edge analytics infrastructure, the same cannot be said about small and medium enterprises (SMEs). However, steep implementation expenses, low levels of digital literacy, and the absence of a customized offering are barriers to its involvement in the digital transformation process. From the digital divide a disparate rate of innovation adoption within the industry rather than the joint capability of the smart tourism ecosystem (Hu, Pantano, & Stylos, 2021).

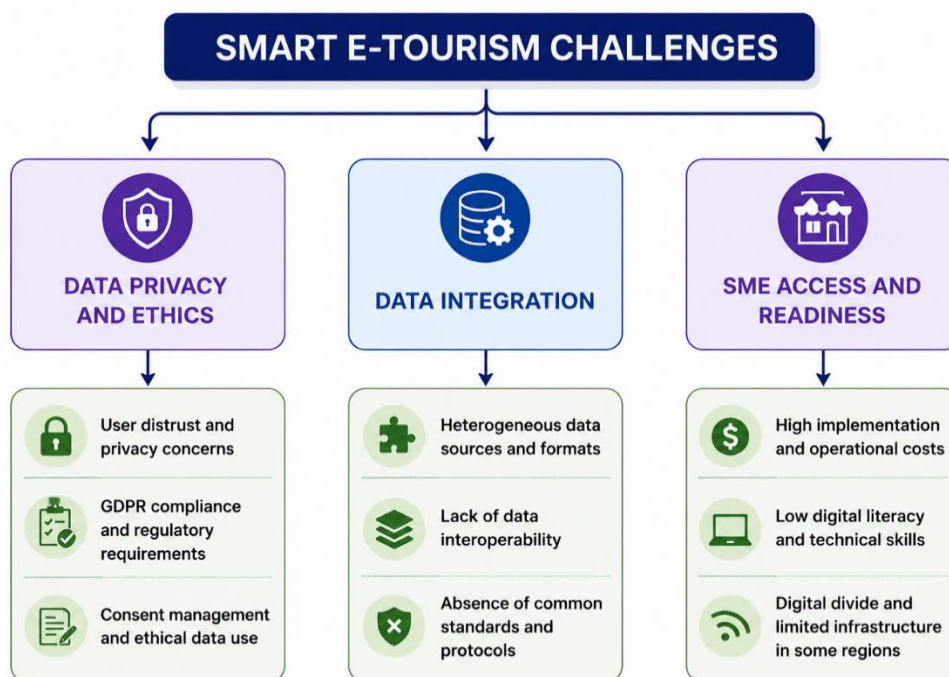


Figure 4.1: A summary of major barriers facing smart e-tourism implementation, highlighting data privacy concerns, technical integration complexity, and limited digital readiness among small and medium enterprises (SMEs).

Motivation for Continued Innovation

However, in spite of these obstacles, the impetus to tackle them stems from the recognition of the enormous potential of big data and AI for tourism. The benefits include improved marketing strategies, enhanced customer

experiences, and more sustainable resource management. This calls for a collective effort by policy makers, researchers and industry to overcome the challenges and ensure an inclusive and ethical digital ecosystem.

Recommendations and Future work

Based on the literature review, the following recommendations are proposed to address the major challenges facing smart e-tourism systems.

Scalable and Economical Solutions for Big Data

One of the most common challenges faced by small and medium-sized tourism enterprises (SMEs) is the limited availability of financial resources, digital expertise, and technological infrastructure. Consequently, there is a growing need for affordable and user-friendly data analytics solutions that can support the digital transformation of SMEs. Open-source solutions such as KNIME, RapidMiner or modular dashboards with cloud-based option may enable SMEs to derive data-driven information without significant financial and technical investment. In addition, training, online kits, and grants administered by the government have the potential to make digital tourism transformation open and inclusive (Nam, Dutt, Chathoth, & Khan, 2021).

Longitudinal impact studies of tourist behavior

The vast majority of the modern analytics is aimed at short-term consumer trends. Yet, longitudinal studies are required to document how tourist behaviors change with time in order to direct long-term policy and destination direction. Such researches need to understand the role of such aspects as AI-powered recommendation engines in destination loyalty, intention to travel again, travel planning practices, and travel authenticity perceptions. This kind of information can be used to achieve wiser segmentation and sustainable targeting principles (Akdu, 2020).

Interoperable Data Governance Models

In order to facilitate efficient integration of diversity data sources (e.g., social media, IoT sensors, booking platforms), the standardizing data governance frameworks is a necessity. These must be able to provide cross-platform interoperability, data integrity, and privacy regulation (e.g. GDPR).

To achieve such integration, and build trust across the ecosystem, there needs to be a collaboration effort between government and private sector, such as through tourism boards, technology providers and local stakeholders in order to co-create open APIs, common taxonomies, and shared data protocols (Manggopa, Komansilan, Kumajas, & Batmetan, 2022).

Ethical AI, and User Consent Frameworks

Since personalization tools and recommender systems strongly depend on AI and data about users, there is an emergent need to consider ethics in making AI. Future studies are due to be conducted to develop models which foster user control, cultural awareness, algorithm fairness, and open mechanisms of consent. The Privacy and Consent interfaces have to be readable, local and adjustable to various user scenarios. Architecture implemented through digital ethics will enhance trust, diversity, and platform retention of users.

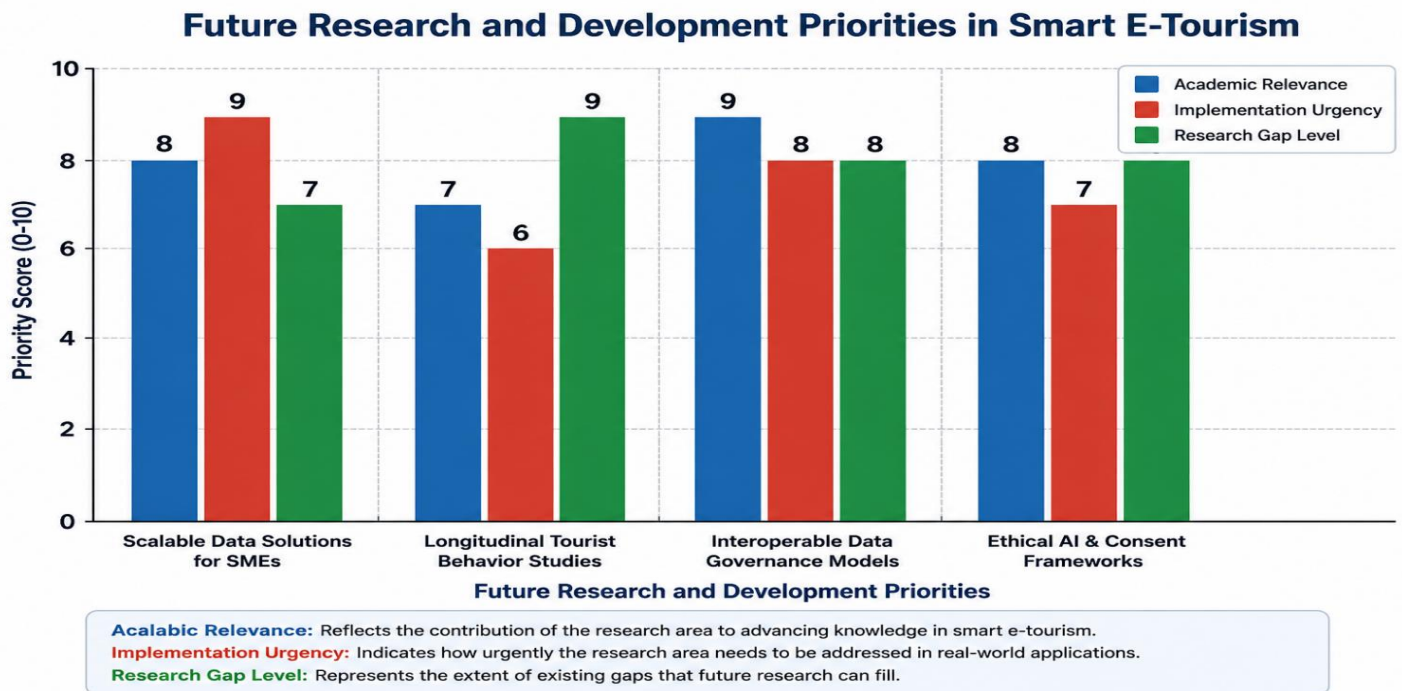


Figure 4.2: Research and implementation priorities identified from the literature for future development in smart e-tourism. Categories are evaluated across academic relevance, urgency of implementation, and level of research gap.

Critical Analysis: Unpacking Smart E-Tourism Research

As the smart e-tourism landscape grows, there is a need to examine and reflect on the development of smart e-tourism in order to keep its development balanced, inclusive and empirically intensive. This section criticizes selected aspects of the extant literature and discusses some previously overlooked socio-cultural dimensions and weaknesses of research. Instead of (or in addition to) hard-earned technological advances, this paper emphasizes the requirement of a more comprehensive theoretical foundation, inter-disciplinary research, and the importance of more human-centered work (Basheer, Hassan, Farooq, Ashraf, & Reshi, 2023).

Theoretical and Conceptual Limitations

Most of the cited work is more technology driven and algorithmically focused and less on the theoretical basis necessary for a complete understanding. Few include strong theoretical models from behavioral science, tourism studies or human-computer interaction. The concept of smart e-tourism is fragmented and lacks conceptual progress, and little attention has been given to the broader socio-cultural impact of technology usage.

Gaps in Real-World Implementation

Although numerous studies have proposed advanced models and frameworks, relatively few have validated these approaches through real-world implementations or longitudinal case studies. The absence of longitudinal field studies limits the scalability and generalizability of results. Furthermore, most of the models are built under high-tech environments, and the restrictions for developing areas and smaller tourism suppliers are neglected.

Overemphasis on Technology-Centric Metrics

A common thread in the research is this focus on performance, validity, and personalization at the expense of human-centered values such as equity, and access, and inclusion. The emphasis on efficiency and targeting users can marginalize non-digital or less technology literate communities and further the digital divide in tourism.

Neglect of Cultural and Ethical Dimensions

Using data-based personalization for building smart e-tourism Many smart e-tourism solutions are relying on data driven personalization, but they rarely consider in which way cultural contexts, identity or ethical positions shape how we experience travelling. “Many of the culture-specific recommender systems proliferating today, those things are all operating in a kind of cultural vacuum, and in such a vacuum, they’re going to be driven to replicate the stereotypes and biases we know are already present,” says FFtP board member Max Van Kleek, senior research fellow at the University of Oxford. As AI ethics regimes are not yet integrated into the public discourse, which is still predominantly technology-first, a nuanced picture is disclosed (Pan et al., 2021).

Evaluation Inconsistencies and Fragmented Standards

Smart tourism appraisals do not have standardized benchmarks and/or protocols. Different size thresholds and criteria have been used and thus it is difficult to compare or replicate the study results due to the wide range of size thresholds and the lack of standardized metrics. It also adds complexity to policy or regulatory frameworks to guide smart e-tourism technologies.

The Need for Interdisciplinary Approaches

The integration of computer science, tourism management, sociology and environmental science is important for holistic research on smart tourism. But the existing source, though deep, is siloed with very little interdisciplinary work. Filling this gap will have the double effect of deepening theoretical insight and enhancing new technological developments (Jamal & Lee, 2020).

While the reviewed literature provides a robust body of knowledge for the development of smart e-tourism, it is seen to be both more effective and relevant when it moves beyond shallow theoretical engagement, towards more participatory design practices and stronger empirical bases, including cross-sectoral perspectives. These findings provide useful guidance for refining future research and supporting the responsible development of smart e-tourism systems.

Future Implications

As intelligent e-tourism systems develop and mature, the future is likely to encompass more than technological innovation as the very nature of tourism design, experience and management is set to be transformed. This section discusses the long-term implications and strategic directions of smart e-tourism.

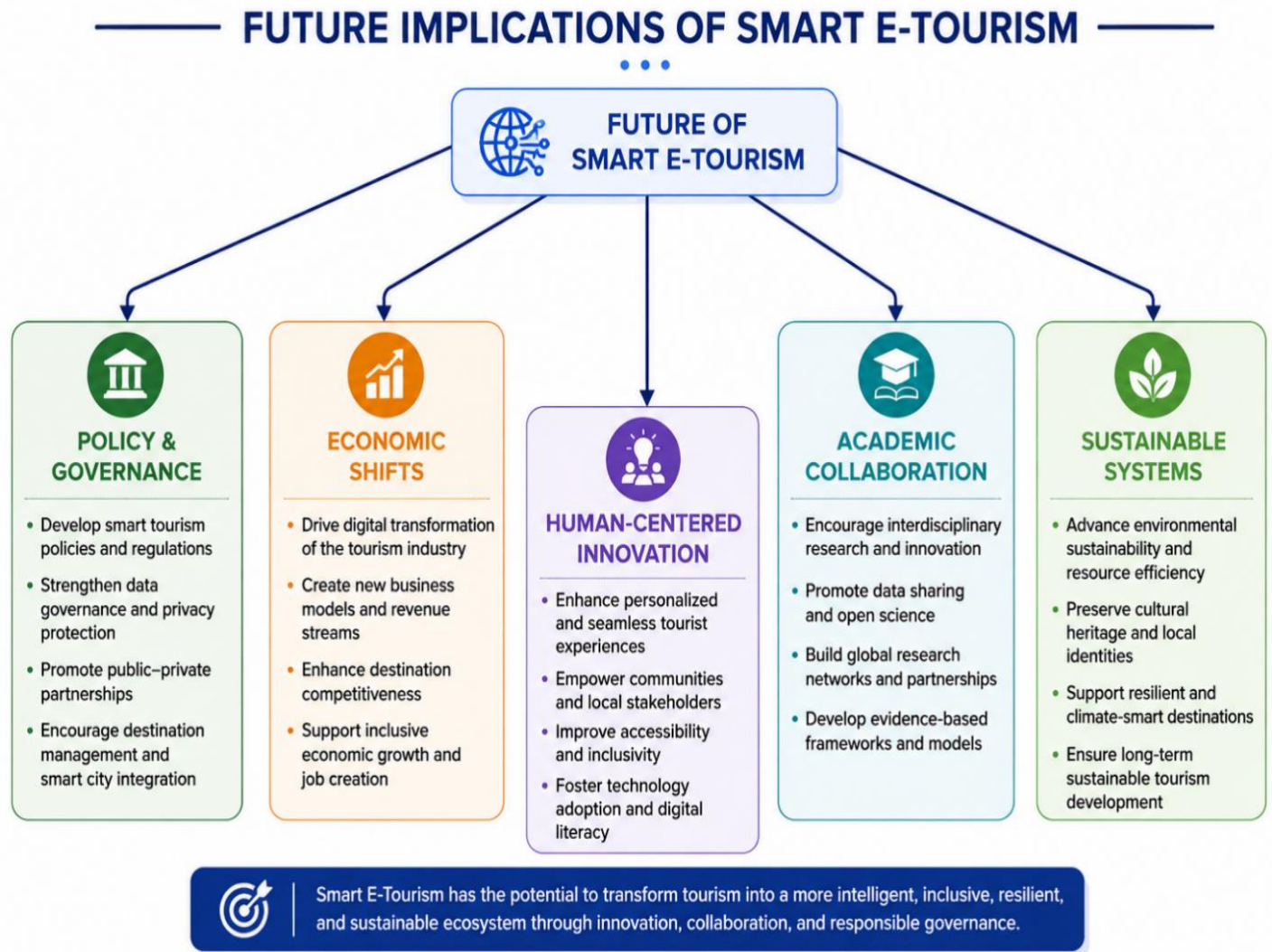


Figure 6.1: Future Implications of Smart E-Tourism

Policy and Governance Transformation

Policy and Governance Changes As smart technologies are closely knitted with tourism infrastructures, governments would need to develop visionary policies in controlling digital tourism ecosystems. That includes laws around AI accountability, data ethics, and digital tourist rights. Future governance frameworks should promote equitable access to digital technologies while reducing disparities between urban and rural tourism destinations.

Economic Shifts and New Business Models

Changes of the Economic Space: New Business Models Collaborative tourism will also form the basis of novel economic models (such as based on hyper-personalization, dynamic pricing, real-time access to services). Platform based, micro-entrepreneurship (i.e. experience curation and guide if case may be for the local setting) will help local communities and foster alternative source of income. But the application of digital platforms also requires transparent pricing algorithms and equitable access to digital markets.

Resilient and Sustainable Tourism Systems

Tourism Systems in Resilience and Sustainability Smart tourism will play a more active role in supporting sustainability objectives. Now real-time analytics can be used to control the flow of visitors, monitor the

environmental impact and support the work of conservation. In addition, the digital twin and virtual tourism could relieve the physical pressure of heritage site and have educational significance. Inclusion of sustainability-by-design in future e-tourism platforms is essential to climate-conscious travel ecosystems.

Human-Centered Innovation and Cultural Preservation

Efficiency and empathy of smart tourism systems. New platforms should incorporate cultural intelligence, respect indigenous traditions, and amplify the voices of the underrepresented. It's about designing for digital inclusion so that technology can support, not replace, real cultural experiences. User feedback loops, co-creation practices, and ethical AI will push this human-oriented innovation path forward.

Academic and Interdisciplinary Collaboration

Convergence is the future for research on smart e-tourism. Inter-sectoral collaboration between academia, industry, government and civil society will be essential to ensure that innovation is ethically-informed and socially responsive. Interdisciplinary research involving ICT, tourism, environmental science and behavioral psychology will lead to the design, application, and evaluation of the impact of the system.

The future of smart e-tourism presents significant opportunities, but it also requires careful attention to ethical, social, and environmental responsibilities. Achieving this vision requires a shared commitment to sustainable innovation, coherent policies, and responsible digital transformation.

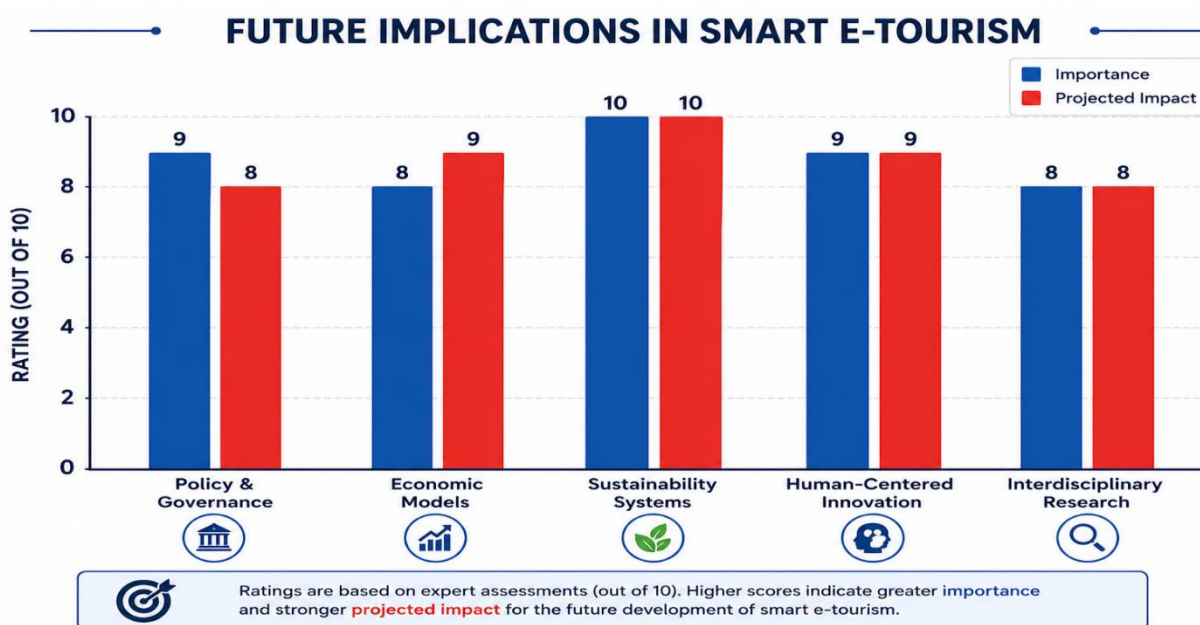


Figure 6.2: Importance and projected impact of the five major future implications in smart e-tourism

Figure 6.2 summarizes the relative importance and projected impact of the five major future implications identified in this review. Sustainability and resilient tourism systems received the highest ratings, followed by policy and governance, and human-centered innovation. Although economic transformation and interdisciplinary collaboration received comparatively lower scores, they remain essential for supporting inclusive innovation and the long-term development of smart e-tourism ecosystem.

CONCLUSION

The emergence of e-tourism as an intelligent, data-focused landscape also indicates the massive interdependence between the changes in technological standards and changes in client requirements. This study provides a systematic review of the present-day situation in the field of smart e-tourism through systematic literature review (SLR), thematic analysis, and the assessment of the emerging frameworks. The review

demonstrates how AI, IoT, big data, and context-aware systems are transforming tourism experiences with the help of personalization, operational efficiency, and sustainability, which can serve as the lessons to tourism managers and policymakers.

Despite these advances, several significant challenges remain. Ethical dilemmas, data consolidation, limited technological accessibility especially in emerging markets and small and medium enterprises have contributed to uneven growth across the smart tourism ecosystem. Moreover, in common with the existing research, we have encountered a lack of theoretical diversity, cultural insensitivity, and lack of empirical research, debilitating the universal validity of existing smart tourism models.

When speaking about the limitations to this SLR, the study was based on the English-language, peer-reviewed, articles in the selected databases, which might have omitted some studies in other languages, as well as a grey literature. Moreover, the currently growing pace at which smart tourism technologies develop might have neglected some of the more recent developments or the regional innovations. There is also a possibility of bias even after strict methodological processes are employed during subjective interpretation of the thematic coding. Future research should focus on extending the inclusion criteria to cover grey literature and non-English materials, use meta-synthesis or mixed-method review, and stakeholder interviews with triangulation. More priority ought to be given also to longitudinal case studies, cross-cultural studies, and frameworks that are developed cooperatively with communities specifically those areas that are not representing well.

The proposed smart e-tourism framework and taxonomy present a systematic perspective through which innovation can be put in line with the needs of various stakeholders - government decision-makers, scholars, local residents, as well as tourists. Looking ahead, key issues of privacy, interoperability and digital inequality will need multi-sectoral collaboration, ethical perspective, and robust policy direction.

Ultimately, the full potential of smart e-tourism can only be realized through an integrated approach that balances technological innovation with human values, environmental sustainability, and inclusive development. Inclusivity, transparency, and sustainability in the center of e-tourism is not an optional part of design; it is a mandate. To realize this vision we require ambitious, interdisciplinary and socially engaged research aiming to ensure a just and future-ready digital tourism world.

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