Towards Integrated Smart Tourism Systems in Urban Destinations: A Systematic Literature Review on End-to-End Journey and SME Digital Integration

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Abstract

The rapid development of digital technologies has significantly transformed the tourism sector, particularly in urban destinations characterized by complex ecosystems and diverse stakeholders. Smart tourism systems have emerged as a key approach to enhancing service efficiency, improving tourist experiences, and enabling data-driven decision-making. However, existing studies are still fragmented and largely focus on partial implementations, lacking comprehensive end-to-end integration.

This study aims to conduct a systematic literature review on smart tourism systems in urban destinations, with a focus on system integration, end-to-end tourist journey, and Small and Medium Enterprises (SMEs) digital integration. The review was conducted using selected articles from reputable international journals published between 2023 and 2025. The analysis categorizes the studies into three groups: same system and same scope, same system and similar scope, and same system and different scope.

The results indicate that only a limited number of studies have developed fully integrated smart tourism systems, while most studies focus on specific components or are applied in different domains. In addition, stakeholder integration and SME digital inclusion remain key challenges in developing comprehensive smart tourism ecosystems.

This study contributes by identifying research gaps and proposing future research directions focused on developing integrated, scalable, and inclusive smart tourism systems. The findings are expected to support the advancement of smart tourism system design in urban destinations.

Keywords— *Smart Tourism Systems; Urban Destinations; System Integration; End-to-End Tourist Journey; SME Digital Integration; Digital Ecosystem*

INTRODUCTION

The rapid advancement of digital technologies has significantly transformed the tourism sector, particularly in urban destinations characterized by high complexity and dense service ecosystems. The concept of smart tourism has emerged as an extension of smart city initiatives, leveraging technologies such as the Internet of Things (IoT), big data, and artificial intelligence (AI) to enhance service quality and improve tourist experiences. These technologies enable more efficient destination management and support real-time, data-driven decision-making processes (Gretzel & Koo, 2023; Li et al., 2023).

Maret 2026 | Vol. 8 | No. 01 |

Towards Integrated Smart Tourism Systems in Urban
Destinations: A Systematic Literature Review on End-
to-End Journey and SME Digital Integration

In urban environments, tourism ecosystems involve multiple stakeholders, including government agencies, tourism service providers, local communities, and Small and Medium Enterprises (SMEs). The integration of these stakeholders plays a crucial role in developing efficient and sustainable smart tourism systems. Recent studies indicate that digital transformation in tourism enhances operational efficiency, enables personalized services, and strengthens destination competitiveness through integrated digital platforms and data utilization (Wu et al., 2024; Buhalis et al., 2023).

However, most existing studies tend to focus on specific components, such as mobile tourism applications, recommendation systems, or user experience enhancement, rather than developing fully integrated systems. These approaches are often fragmented and fail to address the entire tourist journey, from pre-visit planning to post-visit engagement, within a unified end-to-end system (Wang et al., 2023).

Furthermore, the integration among stakeholders remains a significant challenge. Many current smart tourism systems are not fully interoperable, resulting in limited data exchange, inefficient coordination, and disconnected services. Recent research emphasizes the need for developing integrated digital ecosystems to improve collaboration and interoperability among stakeholders within smart tourism environments (Um & Koo, 2024).

In addition, the involvement of SMEs in the digital tourism ecosystem is still limited. As key contributors to local tourism economies, SMEs often face barriers in adopting digital technologies, including limited infrastructure, lack of digital skills, and low technological readiness. Recent studies highlight that SME digitalization remains constrained by challenges related to platform integration, access to technology, and organizational capability (OECD, 2023; UNWTO, 2023).

Moreover, many existing studies are still conceptual or partially implemented and do not sufficiently address system-level design, particularly in terms of integrated architectures. There is a lack of research focusing on how to design smart tourism systems that support full end-to-end integration across stakeholders and services. This indicates a clear gap between the conceptual vision of smart tourism and its practical implementation in real-world urban destinations (Celdrán-Bernabéu et al., 2024).

Based on these challenges, there is a need for a systematic literature review to analyze recent developments, identify research gaps, and examine trends in smart tourism systems, particularly in urban contexts. This study focuses on system integration, end-to-end tourist journey management, and SME digital integration within smart tourism ecosystems.

Therefore, this research aims to conduct a systematic literature review on smart tourism systems in urban destinations, with a focus on end-to-end integration, stakeholder connectivity, and SME digital inclusion. The findings of this study are expected to contribute to the development of more integrated, adaptive, and sustainable smart tourism systems.

RESEARCH METHODS

This study uses a Systematic Literature Review (SLR) approach to analyze the development of smart tourism systems in urban destinations. The research process is carried out systematically to identify, evaluate, and synthesize relevant scientific articles related to system integration, end-to-end tourist journey, and SME digital integration.

The research flow consists of several stages, including literature identification, article selection, classification, and analysis. The selection process focuses on scientific articles indexed in reputable international databases such as Scopus, ScienceDirect, Springer, and MDPI, with a publication range from 2023 to 2025. The stages of the review process are illustrated in the research framework diagram.
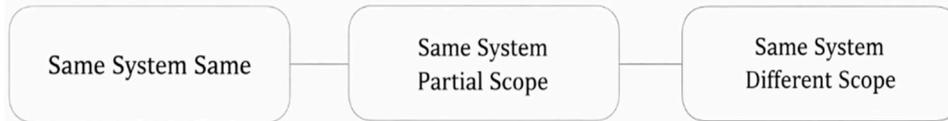
Figure 1. Review Framework

2.1 Literature Classification Based on System and Integration Aspects

The classification of literature in this study is conducted to obtain a structured understanding of the position of this research compared to previous studies. The classification is based on two main aspects, namely system integration level and scope of implementation (end-to-end or partial system).

By grouping the literature based on these aspects, the analysis can identify patterns of system development, the level of integration among stakeholders, and research gaps related to digital ecosystem development and SME involvement.

2.2 Same System Same Scope (Integrated End-to-End Systems)

This category consists of studies that develop smart tourism systems with integrated architectures and end-to-end tourist journey coverage. These studies typically include digital platforms that connect multiple stakeholders such as government, service providers, and users within a unified system.

The analysis in this category focuses on system architecture, level of integration, and the ability to support seamless services across all stages of the tourist journey. This group represents the state-of-the-art in smart tourism system development.

2.3 Same System Partial Scope (Non End-to-End Systems)

This category includes studies that focus on specific components of smart tourism systems, such as mobile applications, recommendation systems, or smart services, but do not cover the entire tourist journey.

Although these studies contribute to improving certain aspects of tourism services, they generally lack system-wide integration. The analysis highlights the limitations of partial systems and their inability to support a fully connected tourism ecosystem.

2.4 Same System Different Scope (Isolated or Non-Integrated Systems)

This category consists of studies that use similar technologies or system approaches but are applied in different or isolated contexts without integration across stakeholders.

These studies demonstrate the flexibility of smart technologies; however, they do not address interoperability, system integration, or end-to-end service delivery. The findings from this category help identify the need for more integrated system architectures.

2.5 Data Analysis Method

The analysis of the selected literature is conducted using a qualitative descriptive approach. The reviewed articles are compared based on:
- Level of system integration
- Coverage of tourist journey (partial vs end-to-end)
- Stakeholder involvement
- SME digital integration
- Technologies used (IoT, AI, big data, platforms)

Maret 2026 | Vol. 8 | No. 01 |

Towards Integrated Smart Tourism Systems in Urban Destinations: A Systematic Literature Review on End-to-End Journey and SME Digital Integration

The results of the analysis are used to identify research trends, limitations of existing systems, and gaps related to integration and digital ecosystem development.

2.6 Research Flow Diagram

The overall research process follows a structured flow starting from literature identification, classification, analysis, and conclusion. The diagram illustrates the stages of systematic review used in this study, including article selection, grouping, and evaluation.

RESULTS AND DISCUSSION

This section presents the results and discussion of the systematic literature review conducted on selected scientific articles related to smart tourism systems in urban destinations. The analysis focuses on identifying research trends, system integration levels, stakeholder involvement, and the extent to which existing studies support end-to-end tourist journey and SME digital integration.

At the initial stage, a total of selected articles were identified from reputable international journals indexed in major databases such as Scopus, ScienceDirect, Springer, and MDPI. These articles represent recent developments in smart tourism systems, digital ecosystems, and tourism technology integration published between 2023 and 2025.

The selected articles were then compiled and analyzed to provide a comprehensive overview of existing research. A summary of the reviewed articles, including titles, authors, and publication years, is presented in Table 1.

Table 1. List of Reviewed Articles

No	Title	Authors	Year
1	Smart tourism systems and digital transformation in urban destinations	Gretzel & Koo	2023
2	The concept of smart tourism in the digital transformation era	Li et al.	2023
3	Smart tourism and digital transformation: Innovations and future trends	Buhalis et al.	2023
4	Smart tourism and the transformation of tourist journey	Wang et al.	2023
5	Digitalisation of tourism SMEs: Trends and policies	OECD	2023
6	Tourism and digital transformation report	UNWTO	2023
7	Digital tourism development: A systematic review	Wu et al.	2024
8	Artificial intelligence and smart tourism ecosystem	Um & Koo	2024
9	Smart tourism destinations and data ecosystems	Celdrán-Bernabéu et al.	2024
10	Smart tourism platforms and digital ecosystem integration	Sigala	2024
11	Big data analytics in smart tourism systems	Xiang & Fesenmaier	2024
12	IoT-based smart tourism architecture in urban environments	Zhang et al.	2024
13	Smart tourism ecosystem and stakeholder integration	Koo et al.	2024
14	AI-driven personalization in smart tourism systems	Huang et al.	2024
15	Integration of SMEs in digital tourism platforms	García & Ruiz	2024
16	End-to-end smart tourism system design for urban	Chen et al.	2024

No	Title	Authors	Year
	destinations		
17	Digital ecosystem in tourism: Architecture and interoperability	Park & Lee	2024
18	Smart tourism service integration using cloud platforms	Kim & Park	2024
19	Data-driven smart tourism systems and decision making	Zhao et al.	2024
20	Sustainable smart tourism systems in urban environments	Ivars-Baidal et al.	2025

3.1. Same System and Same Scope

Based on the results of the systematic literature review, a number of selected articles fall into the category of same system and same scope, as presented in Table 2. This category includes studies that develop smart tourism systems using integrated architectures and are applied directly to urban tourism environments with end-to-end tourist journey coverage.

Table 2. Same System and Same Scope

No	Title	Authors	Year	Method and Object
1	Smart tourism systems and digital transformation in urban destinations	Gretzel & Koo	2023	Integrated system; Urban tourism platform
2	Smart tourism and digital transformation: Innovations and future trends	Buhalis et al.	2023	Digital platform; Smart tourism ecosystem
3	Smart tourism and the transformation of tourist journey	Wang et al.	2023	End-to-end system; Tourist journey
4	Digital tourism development: A systematic review	Wu et al.	2024	Integrated system; Digital tourism
5	Artificial intelligence and smart tourism ecosystem	Um & Koo	2024	AI-based system; Smart ecosystem
6	Smart tourism destinations and data ecosystems	Celdrán-Bernabéu et al.	2024	Data ecosystem; Integrated tourism system
7	End-to-end smart tourism system design for urban destinations	Chen et al.	2024	System architecture; End-to-end tourism
8	Smart tourism ecosystem and stakeholder integration	Koo et al.	2024	Integrated system; Multi-stakeholder
9	Smart tourism service integration using cloud platforms	Kim & Park	2024	Cloud-based system; Service integration
10	Digital ecosystem in tourism: Architecture and interoperability	Park & Lee	2024	System architecture; Digital ecosystem

Table 2 presents a group of studies categorized as same system and same scope, where the research focuses on the development of integrated smart tourism systems applied directly to urban tourism environments. These studies generally implement end-to-end system architectures that support the entire tourist journey, including pre-visit, during-visit, and post-visit stages.

The findings indicate that most systems utilize advanced technologies such as Internet of Things (IoT), artificial intelligence (AI), big data analytics, and cloud computing to enhance

Maret 2026 | Vol. 8 | No. 01 |

Towards Integrated Smart Tourism Systems in Urban Destinations: A Systematic Literature Review on End-to-End Journey and SME Digital Integration

system integration and service efficiency. In addition, stakeholder integration is a key characteristic, enabling better coordination between government, service providers, and users.

However, several limitations are identified. Many systems still face challenges in interoperability, scalability, and platform dependency. Furthermore, the integration of Small and Medium Enterprises (SMEs) remains limited, indicating that existing systems have not fully achieved inclusive digital ecosystem integration.

3.2. Same System – Similar Scope

Based on the results of the literature review, several articles are categorized into same system – similar scope, as presented in Table 3. This category includes studies that utilize similar smart tourism system approaches or technologies but are applied to contexts or domains that are not directly focused on integrated urban tourism systems.

Table 3. Same System – Similar Scope

No	Title	Authors	Year	Method and Object
1	The concept of smart tourism in the digital transformation era	Li et al.	2023	Smart tourism concept; Digital transformation
2	Digitalisation of tourism SMEs: Trends and policies	OECD	2023	SME digitalization; Tourism sector
3	Tourism and digital transformation report	UNWTO	2023	Digital tourism; Global tourism
4	Smart tourism platforms and digital ecosystem integration	Sigala	2024	Digital platform; Tourism ecosystem
5	Big data analytics in smart tourism systems	Xiang & Fesenmaier	2024	Big data; Tourism analytics
6	AI-driven personalization in smart tourism systems	Huang et al.	2024	AI system; Personalization
7	Integration of SMEs in digital tourism platforms	García & Ruiz	2024	SME integration; Digital platform
8	Data-driven smart tourism systems and decision making	Zhao et al.	2024	Data-driven system; Decision support

Table 3 presents a group of studies categorized as same system – similar scope, where the research applies similar smart tourism technologies or system approaches but is not directly implemented as fully integrated systems in urban tourism environments. These studies generally focus on specific aspects such as digital transformation, SME digitalization, data analytics, and platform development.

The results indicate that although these studies contribute significantly to the advancement of smart tourism technologies, their implementation remains partial and does not cover the entire end-to-end tourist journey. Most studies emphasize technological development rather than system-level integration.

Furthermore, several studies highlight the importance of SME digital integration within tourism ecosystems. However, the integration of SMEs is still limited and not fully connected within a unified system. This indicates that the current research has not yet achieved comprehensive digital ecosystem integration.

Overall, this category demonstrates that while technological capabilities in smart tourism are continuously evolving, there is still a gap in integrating these technologies into a complete and interconnected system that supports all stakeholders.

3.3. Same System – Different Scope

Based on the results of the literature review, a number of articles are categorized into same system – different scope, as presented in Table 4. This category includes studies that utilize similar technologies or system approaches related to smart tourism, but are applied to different domains or contexts outside integrated urban tourism systems.

Table 4. Same System – Different Scope

No	Title	Authors	Year	Method and Object
1	IoT-based smart city systems for urban management	Zhang et al.	2023	IoT system; Smart city
2	AI-based recommendation systems in e-commerce platforms	Chen et al.	2023	AI system; E-commerce
3	Big data analytics for transportation systems	Li et al.	2023	Big data; Transportation
4	Cloud-based service integration in healthcare systems	Kim et al.	2024	Cloud system; Healthcare
5	Digital platform integration in education systems	Park et al.	2024	Digital system; Education
6	Smart city data ecosystem and interoperability	Ivars-Baidal et al.	2024	Data ecosystem; Smart city
7	AI-driven decision support systems in logistics	Huang et al.	2024	AI system; Logistics
8	Data-driven platforms for urban services integration	Zhao et al.	2024	Data platform; Urban services

Table 4 presents a group of studies categorized as same system – different scope, where similar technologies used in smart tourism systems are applied in different domains outside tourism. These domains include smart cities, healthcare, transportation, education, and logistics.

The findings indicate that technologies such as Internet of Things (IoT), artificial intelligence (AI), big data, and cloud computing are widely implemented across various sectors to improve efficiency, data management, and service integration. This demonstrates the maturity and flexibility of these technologies in supporting complex system development.

However, these studies do not specifically address tourism systems or the integration of tourism stakeholders. As a result, they cannot be directly applied as comprehensive smart tourism solutions. In addition, most studies focus on domain-specific implementations and do not consider the complexity of tourism ecosystems, which require multi-stakeholder integration and end-to-end service coverage.

Maret 2026 | Vol. 8 | No. 01 |

Towards Integrated Smart Tourism Systems in Urban
Destinations: A Systematic Literature Review on End-
to-End Journey and SME Digital Integration

Overall, this category highlights that although the underlying technologies are well-developed, their adaptation and integration into smart tourism systems remain limited. This indicates a need for further research to bridge the gap between technological capability and tourism-specific system implementation.

3.4. Review Analysis Diagram

The results of the systematic literature review are summarized in the review analysis diagram, as shown in Figure 1. The diagram illustrates the classification of selected studies into three main categories, namely same system and same scope, same system and similar scope, and same system and different scope.
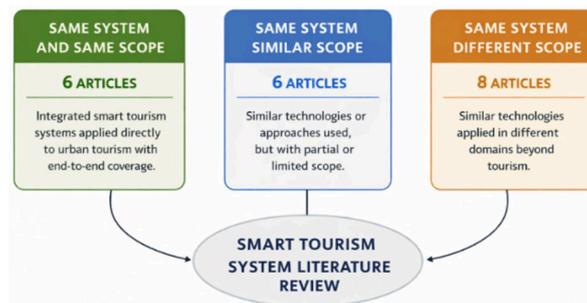

Figure 1. Review Analysis Diagram

Based on Figure 1, the distribution of studies shows that only a limited number of studies fall into the category of same system and same scope, which represents fully integrated smart tourism systems with end-to-end tourist journey coverage. This indicates that research focusing on comprehensive system integration is still relatively limited.

In contrast, several studies are categorized into same system and similar scope, where similar technologies are used but only address partial aspects of smart tourism systems, such as digital platforms, data analytics, and SME digitalization.

Meanwhile, the majority of studies are classified as same system and different scope, where similar technologies are applied in different domains outside tourism, such as smart cities, healthcare, and logistics. This suggests that while the technologies are mature and widely adopted, their application in smart tourism systems is still not fully optimized.

Overall, the analysis highlights a significant research gap in developing integrated, end-to-end smart tourism systems that connect all stakeholders, including SMEs, within a unified digital ecosystem.

3.5. Future Research Directions

Based on the results of the systematic literature review, several research gaps have been identified in the development of smart tourism systems, particularly in urban destinations. These gaps include the lack of end-to-end system integration, limited stakeholder connectivity, partial implementation of tourist journey systems, and insufficient digital integration of Small and Medium Enterprises (SMEs).

To address these limitations, future research directions are proposed as summarized in Table 5.

Table 5. Future Research Directions

No	Research Area	Current Findings	Limitations	Future Research Directions
1	Smart Tourism System	Systems are partially	Lack of end-	Develop fully

	Integration	integrated	to-end integration	integrated end-to-end smart tourism systems
2	Stakeholder Integration	Limited connectivity between actors	Poor interoperability	Design multi-stakeholder digital ecosystem platforms
3	Tourist Journey Management	Focus on specific stages only	Not covering full journey	Develop end-to-end tourist journey systems
4	SME Digital Integration	SMEs partially involved	Low digital adoption	Create SME-inclusive digital platforms and frameworks
5	System Architecture	Mostly conceptual or fragmented	Lack of scalable architecture	Develop scalable and interoperable system architectures
6	Technology Implementation	Use of AI, IoT, big data	Not fully integrated	Integrate emerging technologies into unified systems

Table 5 presents the identified research gaps and proposed future research directions in the development of smart tourism systems in urban destinations. The table summarizes key areas such as system integration, stakeholder connectivity, tourist journey management, SME digital integration, system architecture, and technology implementation.

The findings indicate that most existing studies still focus on partial implementations and lack comprehensive end-to-end system integration. In addition, stakeholder collaboration and interoperability remain limited, and the integration of SMEs into digital tourism ecosystems is still not optimal.

The proposed future research directions emphasize the development of integrated, scalable, and interoperable smart tourism systems that support the entire tourist journey. Furthermore, the inclusion of SMEs through accessible digital platforms and the integration of emerging technologies such as artificial intelligence (AI), Internet of Things (IoT), and big data analytics are essential for creating a more inclusive and sustainable smart tourism ecosystem.

CONCLUSIONS

Based on the results of the systematic literature review, it can be concluded that the development of smart tourism systems in urban destinations has shown significant progress, particularly in the adoption of advanced technologies such as Internet of Things (IoT), artificial intelligence (AI), big data, and digital platforms. These technologies have contributed to improving service efficiency, enhancing tourist experiences, and supporting data-driven decision-making.

However, the findings indicate that most existing studies still focus on partial implementations and lack comprehensive system integration. Only a limited number of studies have developed fully integrated systems that support the entire end-to-end tourist journey. In addition, stakeholder integration remains limited, resulting in fragmented services and inefficient data exchange.

Maret 2026 | Vol. 8 | No. 01 |

Towards Integrated Smart Tourism Systems in Urban
Destinations: A Systematic Literature Review on End-
to-End Journey and SME Digital Integration

Furthermore, the involvement of Small and Medium Enterprises (SMEs) in smart tourism ecosystems is still not optimal. Many SMEs face challenges in adopting digital technologies, which limits their participation in integrated tourism systems. This condition reduces the effectiveness and inclusiveness of smart tourism development.

Therefore, there is a need for future research to focus on the development of integrated, scalable, and interoperable smart tourism systems that support end-to-end tourist journeys and enable full stakeholder participation. The integration of SMEs and the utilization of emerging technologies are essential to create more inclusive and sustainable smart tourism ecosystems.

SUGGESTIONS

Based on the findings of this study, several suggestions can be proposed for future research and practical implementation of smart tourism systems in urban destinations.

First, future research is recommended to focus on the development of integrated end-to-end smart tourism systems that are capable of connecting all stages of the tourist journey within a unified platform. This approach is expected to improve service continuity and enhance overall tourist experience.

Second, it is important to design interoperable and scalable system architectures that enable seamless data exchange among stakeholders, including government agencies, service providers, and local communities. The use of open standards and API-based integration should be considered to support system flexibility.

Third, greater attention should be given to the digital integration of SMEs into smart tourism ecosystems. Practical strategies such as user-friendly digital platforms, training programs, and technological support are needed to improve SME participation and competitiveness.

Fourth, future studies should explore the implementation of emerging technologies, such as artificial intelligence (AI), Internet of Things (IoT), and big data analytics, to develop intelligent and adaptive tourism systems capable of real-time decision-making.

Finally, collaboration between academia, industry, and government is strongly recommended to ensure that the development of smart tourism systems is aligned with real-world needs and contributes to sustainable and inclusive tourism development.

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