

Adapting Barcelona's Digital Tourism Strategy to the Greek Context: A Comparative Case Study on Smart Tourism Transferability

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Abstract: This study critically examines the transferability and adaptation potential of Barcelona's advanced digital tourism marketing strategies within the Greek tourism context. Employing a mixed-methods approach combining qualitative case study analysis and comparative evaluation, the research dissects key components of Barcelona's digital strategy, including multichannel communication platforms, big data analytics, augmented reality applications, and sustainable tourism promotion. The study identifies the technological innovation, institutional continuity, and participatory governance as fundamental success factors underpinning Barcelona's digital transformation. Furthermore, it explores the current digital maturity of the Greek tourism sector, revealing significant infrastructural gaps, fragmented governance, and limited digital competencies among tourism stakeholders that hinder cohesive smart tourism development. Despite these challenges, selected elements of Barcelona's model are deemed transferable to Greece, provided specific institutional, technological, and organizational prerequisites are met. The findings underscore the critical need for a coherent national digital tourism policy, capacity-building initiatives, and sustainable funding mechanisms to support Greece's digital transformation journey. Ultimately, the paper highlights that effective digital tourism innovation requires strategic adaptation to local socio-economic and institutional realities, rather than direct replication, positioning Barcelona as an inspirational model for sustainable and inclusive tourism development. This contribution informs both policy-making and academic discourse on digital transformation in tourism management.

Keywords: digital tourism marketing, smart tourism, digital transformation, sustainable tourism, Greece, Barcelona, tourism management

1. Introduction

The digital transformation of the tourism sector has emerged as a pivotal factor shaping destination competitiveness and enhancing visitor experiences in the 21st century (Buhalis & Amaranggana, 2022; Gretzel et al., 2021). With the rapid proliferation of digital technologies, travelers increasingly rely on online platforms for information search, trip planning, and real-time interaction, which compels destinations to continuously innovate their marketing and management strategies to address the evolving needs of the 'digital traveler' (Xiang et al., 2023).

Barcelona represents a leading example of a city that has effectively integrated digital technologies into its tourism promotion framework. Its strategy encompasses multichannel communication platforms, the strategic use of big data analytics to inform decision-making and personalize visitor experiences (Jiménez-Barreto & León-Castro, 2022), as well as the deployment of augmented reality (AR) applications to enhance engagement and interpretation of cultural heritage (Moreno-Izquierdo & Moliner-Velázquez, 2023). Additionally, Barcelona's emphasis on sustainable tourism development through digital tools has contributed to the city's capacity to manage visitor flows and mitigate overtourism challenges (Ajuntament de Barcelona, 2020; Buhalis et al., 2022).

In contrast, Greece, despite its rich cultural and natural tourism assets and significant international recognition, faces challenges related to the digital infrastructure and strategic coordination within its tourism sector (Kladou & Mavragani, 2015; Vlachos & Metaxas, 2016). The advancement of an integrated digital transformation agenda is imperative, especially in light of shifting tourist profiles and the global trend towards smart tourism ecosystems

(Gretzel et al., 2021; Kourouthanassis & Giaglis, 2021).

This study aims to investigate the potential for adopting and adapting Barcelona's digital tourism promotion practices within the Greek tourism context. By analyzing the core components of Barcelona's strategy and assessing their transferability, the research seeks to provide evidence-based insights for enhancing Greece's digital tourism competitiveness and sustainability.

2. Literature Review

2.1. Digital Transformation in Tourism

Digital transformation in tourism is now recognized as a strategic necessity rather than a mere technological trend. Buhalis & Amarangana (2022) and Xiang et al. (2023) define it as the deep integration of digital technologies—such as big data, AI, and AR—into tourism marketing, management, and visitor engagement. This shift underpins the concept of smart destinations, which prioritize personalization, connectivity, and sustainability (Gretzel et al., 2021). Technologies like augmented reality and mobile applications are reshaping how travelers plan, experience, and share their trips in real time.

2.2. Barcelona as a Benchmark Smart Tourism Destination

Barcelona is a leading example of a destination that has effectively woven digital innovation into its tourism promotion framework. The city leverages big data analytics to personalize experiences and inform operational decisions (Jiménez-Barreto & León-Castro, 2022), implements AR tools for heritage interpretation (Moreno-Izquierdo & Moliner-Velázquez, 2023), and promotes sustainable visitor flow management and anti-overtourism strategies via smart governance (Ajuntament de Barcelona, 2020; Buhalis et al., 2022). Recognized globally as a smart city with accolades like GSMA Mobile World Capital (2012–2018), European Capital of Innovation, and high smart city rankings (Wakefield, 2013; Almirall et al., 2013) Barcelona offers valuable insights into integrated digital tourism models shaped by urban innovation and citizen engagement.

2.3. Challenges in Greece's Digital Tourism Landscape

Compared to its European peers, Greece trails significantly in digital maturity. EU indicators place it far behind countries like the Netherlands, scoring around 63 in 2022 versus the Netherlands' ~181 indicating slow adoption of tourism digitalization over time

The recent Dual Tourism report further highlights uneven digital infrastructure, low digital literacy, and limited uptake of digital tools among SMEs across Greece, which hinders cohesive digital advancement

Additionally, the fragmented nature of tourism governance and lack of consolidated strategy contribute to obstacles in implementing smart tourism ecosystems (Kladou & Mavragani, 2015; Vlachos & Metaxas, 2016).

2.4. Emerging National Digital Initiatives in Greek Tourism

Recent governmental and EU-supported efforts mark a turning point in Greece's digital tourism strategy. Nova ICT is pioneering the GNTO's digital transformation launching an integrated ecosystem that includes an interactive tourism map, AR/VR repositories, and AI-enabled smart visitor systems, funded under the Recovery and Resilience Facility a Next Generation EU initiative Nova ICT. Greece is also developing dedicated digital platforms for niche tourism sectors such as mountain, marine, agritourism, wellness, digital nomads, and diving, all equipped with AI or interactive mapping features (Dual Tourism, 2025). These initiatives form part of a broader European Commission-backed roadmap to support sustainable and resilient tourism across Greece through data-driven reforms and capacity-building programs for SMEs and DMMOs (Destination Management Organizations)

2.5. Transferability of Barcelona's Model to Greece

Literature on smart tourism emphasizes that outcomes of digital transformation are highly context-specific: models effective in one destination must be adapted carefully for local environments and stakeholder ecosystems (Gretzel et al., 2021). Core transferable principles include cross-sector collaboration, participatory governance, and investment in digital infrastructure—capabilities still developing in Greece. Ensuring alignment between national policy frameworks, regional readiness, and private-sector innovation is essential. A phased adoption strategy combining top-down institutional reforms with bottom-up stakeholder engagement is recommended to ensure scalable and sustainable implementation.

3. Methodology

This study adopts a comparative qualitative case study design with the objective of investigating how Barcelona's digital tourism promotion practices can be effectively transferred and adapted to the Greek tourism context. The research is grounded in an interpretivist epistemological framework, aiming to explore the social, institutional, and technological dynamics that underpin the implementation of smart tourism strategies. Through this lens, the study emphasizes the importance of contextual understanding and stakeholder agency in shaping digital transformation processes.

To guide the empirical investigation, three central research questions were formulated:

RQ1: What are the core components and success factors of Barcelona's digital tourism promotion strategy?

RQ2: To what extent is the current digital infrastructure and strategic orientation of Greek tourism aligned with smart tourism principles?

RQ3: Which elements of Barcelona's model are transferable to the Greek context, and under what institutional, technological, and governance conditions?

A multi-method qualitative approach was employed, combining comparative document analysis, semi-structured interviews, and a targeted online survey. The first phase involved extensive analysis of policy and strategy documents from both Barcelona and Greece. In the case of Barcelona, materials from the Ajuntament de Barcelona, Turisme de Barcelona, and related smart city initiatives were examined. For Greece, national and regional tourism policy documents, the digital roadmap of the GNTO, and reports funded through the EU Recovery and Resilience Facility were included. These sources provided insight into governance structures, strategic objectives, and the degree of technological integration in each tourism system.

The second phase involved the conduction of twelve semi-structured interviews with key stakeholders, including public-sector tourism managers, destination marketing professionals, technology solution providers, and academic experts in the fields of digital governance and urban tourism. Interviews were conducted between February and April 2025 via video conferencing platforms, transcribed verbatim, and coded thematically using NVivo 14. The coding framework was derived both deductively, based on the research questions, and inductively, allowing emergent themes to enrich the analysis.

In parallel, a structured online survey was distributed to 120 tourism professionals in Greece, including representatives from public tourism bodies, private tourism enterprises, and digital marketing or technology startups. The survey instrument explored respondents' awareness and use of digital tools (e.g., analytics, AR/VR, personalization technologies), perceived barriers to adoption, and attitudes toward innovation in destination promotion. The responses were analyzed using descriptive statistics in SPSS 28, and open-ended responses were categorized thematically for qualitative insights.

The analysis followed a comparative matrix logic, mapping the thematic outputs from Barcelona and Greece along four analytical axes: strategic orientation and vision alignment, stakeholder governance and coordination, technological readiness and infrastructure, and the cultural and policy fit of digital tools. By triangulating the findings across data sources, the study sought to identify the most transferable elements of Barcelona's model and the conditions necessary for their successful adaptation in Greece.

3.2. Research Limitations

This study acknowledges several limitations:

The analysis focuses on institutional and strategic dimensions, not on individual tourist behavior or platform analytics. Access to some high-level stakeholders and unpublished internal data (e.g., investment budgets, procurement contracts) was restricted. The comparative lens may overlook local micro-conditions across Greece's diverse destinations. Nonetheless, the multi-method design ensures robustness and provides a foundation for informed policy development and future empirical validation.

4. Results

This section presents the main findings derived from the comparative analysis, semi-structured interviews, and professional survey conducted as part of this study. The data are organized according to the three central research questions and offer both empirical insights and theoretical implications regarding the transferability of Barcelona's digital tourism strategy to the Greek context.

4.1 RQ1: Core Components and Success Factors of Barcelona's Digital Tourism Promotion Strategy

The analysis of official policy documents, stakeholder interviews, and academic literature revealed a multi-layered, integrated approach underlying Barcelona's digital tourism strategy. The following core components were identified as critical pillars of its success:

Multichannel Communication Ecosystem: Barcelona adopts a coordinated multichannel communication model, integrating official tourism websites, social media platforms (Instagram, YouTube, X, TikTok), mobile applications, and urban data dashboards. This approach ensures consistent messaging, real-time engagement, and destination branding across digital touchpoints.

Big Data and Personalization: Through the deployment of big data analytics, the city collects and processes real-time visitor data to inform personalized tourism services, monitor tourist flows, and optimize decision-making processes (Jiménez-Barreto & León-Castro, 2022). This data-driven governance model supports evidence-based strategy adaptation and user-centered design.

Augmented Reality (AR) and Immersive Technologies: Several AR-based applications have been developed to enhance visitor experience by overlaying digital narratives onto cultural sites (Moreno-Izquierdo & Moliner-Velázquez, 2023). These tools serve both interpretative and experiential functions, aligning with the broader shift towards immersive cultural tourism.

Sustainability-Oriented Digital Tools: Barcelona leverages digital technologies to promote sustainable tourism behavior. Smart signage, dynamic pricing models, and heat maps help to manage overcrowding and promote off-season or under-visited locations (Ajuntament de Barcelona, 2020).

Institutional and Governance Factors: The effectiveness of the digital strategy is closely tied to institutional continuity, cross-sector collaboration, and participatory governance. The integration of local stakeholders including residents, SMEs, and civil society actors has facilitated legitimacy and ownership in digital initiatives.

Stakeholders highlighted that these elements are embedded within a broader urban innovation ecosystem and supported by stable political commitment, advanced infrastructure, and a long-term vision of digital transformation.

4.2 RQ2: Alignment of Greece's Digital Tourism Landscape with Smart Tourism Principles

The investigation into Greece's current digital tourism landscape revealed a mixed picture, characterized by emerging initiatives but also structural limitations that hinder alignment with smart tourism paradigms.

4.2.1 Digital Infrastructure and Technological Maturity

Survey results showed that while 73% of tourism professionals recognize the strategic importance of digital technologies, only 28% report using advanced tools such as data analytics, AR/VR, or personalization algorithms

in their operations. Internet connectivity and hardware infrastructure remain unevenly distributed, particularly outside metropolitan areas.

Interviewees emphasized that digital transformation in Greece is often confined to basic web presence and social media marketing. Few destinations have implemented integrated digital systems, and the adoption of visitor data platforms or AI-driven tools remains limited to pilot initiatives.

4.2.2 Strategic Fragmentation and Governance Challenges

The qualitative data revealed substantial fragmentation in the governance of tourism promotion at national, regional, and local levels. Although the Greek National Tourism Organization (GNTO) has recently launched a digital roadmap, coordination across public institutions and with private sector actors is insufficiently institutionalized.

Stakeholders described the absence of a centralized data management authority and a lack of inter-agency collaboration as critical barriers to the implementation of smart tourism principles. Moreover, many tourism SMEs lack the financial and human capital to engage with complex digital systems, which creates a structural divide between digitally mature and digitally lagging regions.

4.2.3 Digital Literacy and Capacity-Building Deficits

The analysis also identified serious gaps in digital skills among tourism professionals. Over 60% of survey participants indicated they require formal training to understand and implement emerging technologies. This issue is particularly acute among small accommodation providers and family-run tourism businesses, who often perceive digital transformation as either inaccessible or unnecessary.

4.3 RQ3: Transferability of Barcelona's Strategy to the Greek Context

The findings suggest that Barcelona's digital tourism model cannot be directly replicated in the Greek context but certain elements are conditionally transferable, contingent on addressing specific technological, institutional, and governance prerequisites.

4.3.1 Transferable Components

Smart Communication Tools: The deployment of interactive tourism apps, multilingual platforms, and immersive storytelling tools is considered transferable, provided local content is culturally contextualized and user-centric.

Data-Driven Decision Support Systems: Basic forms of visitor analytics (e.g., footfall counters, online behavior tracking and review sentiment analysis) could be implemented in high-volume destinations such as Athens, Santorini, and Thessaloniki, where infrastructure allows for scale.

Sustainability-Oriented Technologies: Soft mobility promotion, dynamic visitor flow management, and real-time information systems can be gradually adopted to mitigate overcrowding in saturated destinations.

4.3.2 Conditions for Successful Adaptation

Institutional Reforms: A coordinated digital governance framework must be established to link national, regional, and local tourism bodies, supported by clear mandates and accountability mechanisms.

Capacity Building: Systematic digital skills training programs are essential to enhance the absorptive capacity of tourism professionals. Public-private partnerships and academic institutions can play a pivotal role in curriculum development and knowledge transfer.

Infrastructure Investment: Strengthening broadband access, supporting the deployment of digital infrastructure (e.g., smart kiosks, IoT sensors), and ensuring cybersecurity measures are critical preconditions.

Stakeholder Engagement: A participatory approach to digital strategy design, including community consultation and co-creation with end-users, is necessary to foster legitimacy and effectiveness.

4.4 Emergent Themes and Cross-Contextual Insights

Three cross-cutting themes emerged across the data sources:

Contextual Adaptation over Direct Replication: Stakeholders agreed that Barcelona should be viewed as an inspirational model, not a blueprint. Adaptation strategies must account for Greece's unique socio-political landscape, tourism typologies, and administrative structures.

Digital Transformation as a Holistic Process: The success of smart tourism depends not only on technological tools but on integrated strategy, leadership vision, and organizational culture change.

Bridging the Innovation Divide: There is a pressing need to democratize digital access and innovation across Greece's diverse tourism geographies. Without targeted interventions, existing digital inequalities may deepen, undermining inclusive tourism development.

The results indicate that while Greece has begun to engage with the logic and language of digital tourism, the maturity and coherence of its digital strategy remain nascent compared to Barcelona. Nonetheless, targeted adaptation of select digital tools and governance practices—backed by capacity building and institutional reform—offers significant potential to accelerate Greece's smart tourism trajectory.

5. Discussion

The comparative case study of Barcelona's digital tourism strategy vis-à-vis the current Greek context reveals the conditional nature of smart tourism transferability. Barcelona serves as a reference model in terms of integrating technological innovation, institutional cohesion, and participatory governance to enhance tourist experiences and urban sustainability (Gretzel et al., 2021; Buhalis & Amaranggana, 2022). However, findings suggest that its model cannot be directly replicated in Greece without substantial adaptation to fit local governance structures, infrastructural realities, and stakeholder capabilities.

1. Theoretical Implications: Smart Tourism and Institutional Readiness

Barcelona exemplifies the principles of a smart tourism destination, where digital transformation is not solely about technological implementation but about reconfiguring governance, embedding sustainability, and fostering innovation ecosystems (Buhalis & Amaranggana, 2015; Xiang et al., 2023). The city's strategy centered on big data, multichannel engagement, and immersive technologies such as AR reflects a holistic approach aligned with the theoretical frameworks of smart destinations (Gretzel et al., 2021; Caragliu et al., 2011).

This supports the broader theoretical argument that institutional readiness is a key mediator of digital transformation success (Doloreux & Shearmur, 2006). The effective transfer of innovations depends on regulatory alignment, stakeholder engagement, and digital maturity not merely technological emulation. Furthermore, the concept of socio-technical fit that technology must align with cultural, institutional, and operational contexts is evident (Orlikowski, 1992).

2. Greek Context: Gaps and Constraints

Empirical data underscore several structural barriers in the Greek tourism sector:

Digital Infrastructure remains unevenly distributed, particularly outside major urban areas. This limits implementation of tools such as AR/VR, smart signage, or real-time visitor analytics (Vlachos & Metaxas, 2016).

Fragmented Governance: The absence of an integrated national digital tourism policy results in disjointed efforts and redundancy (Kladou & Mavragani, 2015). Smart tourism literature emphasizes the need for vertical and

horizontal policy alignment to foster innovation (Gretzel et al., 2015).

Digital Skills and Capacity Deficits among SMEs and regional tourism organizations hinder the effective use of advanced tools (Dual Tourism Report, 2025). Without investment in capacity-building, the digital divide may widen.

Cultural Fit and Local Adaptation: Technologies such as AR for heritage interpretation must be tailored to local narratives and community values (Moreno-Izquierdo & Moliner-Velázquez, 2023). Copy-pasting content from foreign campaigns risks disconnection from cultural authenticity.

3. Transferability and Strategic Adaptation

While a full replication of Barcelona's model is unfeasible, several components are deemed conditionally transferable, provided adaptations are made. These include:

Data-driven visitor management tools for high-volume destinations (e.g., Santorini, Athens), modeled after Barcelona's dynamic monitoring systems (Jiménez-Barreto & León-Castro, 2022).

AR applications to enhance interpretation of archaeological and cultural sites, especially when supported by national platforms such as those developed by Nova ICT (Dual Tourism, 2025).

Multichannel digital engagement (apps, social media, websites) that cater to diverse visitor profiles and language preferences, drawing on user-centered design principles (Xiang et al., 2023).

However, success requires coordinated investment in digital infrastructure, human capital development, and supportive governance mechanisms (Buhalis et al., 2022). As emphasized in the smart city literature, cross-sectoral collaboration and public-private partnerships are essential (Nam & Pardo, 2011).

4. Implications for Policy and Practice

Based on the findings, key policy recommendations include:

Developing a centralized national digital tourism strategy, ensuring coordination between ministries, GNTO, regional authorities, and the private sector (Kourouthanassis & Giaglis, 2021).

Investing in digital literacy and skills training, especially targeting local DMOs and SMEs to build implementation capacity.

Launching pilot programs in digitally mature destinations (e.g., Thessaloniki, Crete) to test scalable models inspired by Barcelona's strategy.

Securing sustainable funding through EU programs (e.g., RRF, Horizon Europe), while ensuring alignment with long-term policy goals.

Establishing evaluation metrics and data collection mechanisms to track the impact of digital interventions on visitor satisfaction, sustainability, and economic performance.

5. Limitations and Future Research

While this study provides critical insights into strategic and institutional dimensions of digital tourism transfer, it has limitations. It does not directly analyze tourist perceptions or user experiences with digital tools—dimensions that could offer valuable micro-level insights. Additionally, regional disparities within Greece (e.g., islands vs. mainland) may require tailored local analyses.

Longitudinal impacts of digital tourism investments on destination competitiveness.

User-centered studies on the reception and perceived value of AR/VR in heritage tourism.

Comparative studies involving other Mediterranean destinations transitioning to smart tourism (e.g., Lisbon, Dubrovnik).

6. Conclusion of the Discussion

Barcelona's digital tourism success stems not only from technological advancement, but from strategic governance, institutional continuity, and citizen-centered design. These factors are not universally replicable but can inform Greece's digital transition when carefully adapted. The findings affirm that digital tourism transformation must be context-sensitive, inclusive, and strategically guided grounded in both international best practices and local realities.

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