

**AI FOR SDG-ALIGNED
TOURISM GOVERNANCE:
WHAT MEDITERRANEAN
CITIES CAN LEARN FROM
MULTI-CITY EXPERIENCES**

Adelina Zeqri & Adel Ben Youssef





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AUTHOR:

Adelina Zeqri, GREDEG-CNRS & University Côte d'Azur, France
EUR ELMI 24, Avenue des Diabes Bleus, 06300 Nice - France
E-mail: adelina.zeqiri@univ-cotedazur.fr

Adel Ben Youssef, GREDEG-CNRS & University Côte d'Azur, France
EUR ELMI 24, Avenue des Diabes Bleus, 06300 Nice - France
E-mail: adel.ben-youssef@univ-cotedazur.fr

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ABSTRACT

This study examines how Artificial Intelligence (AI) is being mobilised to support SDG-oriented sustainability in smart touristic cities, with a focus on lessons that EuroMed cities can draw from the French Riviera and selected SouthMed contexts. The analysis is based on 46 semi-structured interviews conducted between May 2024 and December 2025 with stakeholders operating in the following city settings: the French Riviera (Côte d'Azur), the Barcelona Metropolitan Area, Alexandria, Tunis, Sfax, Bizerte, Sousse, Msaken, Casablanca, Rabat, Zgharta, and Tripoli. Using the Gioia methodology, the study identifies five recurring dimensions. First, AI supports sustainable destination management through forecasting, dashboards, and operational optimisation that help cities anticipate demand peaks and manage crowding and resource stress. Second, smart technologies enhance visitor experiences through personalised guidance and real-time information that can redistribute flows and reduce pressure on saturated sites. Third, AI-enabled platforms can strengthen community empowerment by improving SME visibility, participation channels, and transparency in tourism-related decisions, while also revealing inclusion constraints when access is primarily digital. Fourth, environmental and cultural preservation is reinforced when monitoring, energy management, and spatial tools are connected to operational interventions and visitor redistribution strategies. Fifth, sustained capacity building and multi-stakeholder collaboration condition implementation, particularly where data governance, interoperability, and skills determine whether AI becomes routine practice. The interviews also highlight persistent challenges linked to privacy, accountability, uneven digital capabilities, and potential exclusion risks, which call for responsible governance and targeted support. The findings underscore AI's potential to advance SDG-aligned tourism governance, particularly for SDGs 8, 9, 10, 11, 12, 13, and 16.

Keywords: AI, tourism, cities, sustainable tourism, French Riviera, EuroMed, SouthMed, SDGs.

RÉSUMÉ

Cette étude examine la manière dont l'intelligence artificielle (IA) est mobilisée pour soutenir une durabilité orientée vers les ODD dans les villes touristiques intelligentes, en mettant l'accent sur les enseignements que les villes euro-méditerranéennes peuvent tirer de la Côte d'Azur et de certains contextes du Sud de la Méditerranée. L'analyse repose sur 46 entretiens semi-directifs menés entre mai 2024 et décembre 2025 auprès de parties prenantes opérant dans les contextes urbains suivants : la Côte d'Azur (Riviera française), l'aire métropolitaine de Barcelone, Alexandrie, Tunis, Sfax, Bizerte, Sousse, Msaken, Casablanca, Rabat, Zgharta et Tripoli. En mobilisant la méthodologie de Gioia, l'étude identifie cinq dimensions récurrentes. Premièrement, l'IA soutient la gestion durable des destinations grâce à la prévision, aux tableaux de bord et à l'optimisation opérationnelle, qui aident les villes à anticiper les pics de demande et à gérer la fréquentation ainsi que la pression sur les ressources. Deuxièmement, les technologies intelligentes améliorent l'expérience des visiteurs grâce à des recommandations personnalisées et à des informations en temps réel permettant de redistribuer les flux et de réduire la pression sur les sites saturés. Troisièmement, les plateformes activées par l'IA peuvent renforcer l'autonomisation des communautés en améliorant la visibilité des PME, les canaux de participation et la transparence dans les décisions liées au tourisme, tout en mettant en lumière des contraintes d'inclusion lorsque l'accès est principalement numérique. Quatrièmement, la préservation environnementale et culturelle est renforcée lorsque le suivi, la gestion de l'énergie et les outils spatiaux sont reliés à des interventions opérationnelles et à des stratégies de redistribution des visiteurs. Cinquièmement, le renforcement durable des capacités et la collaboration multi-acteurs conditionnent la mise en œuvre, notamment lorsque la gouvernance des données, l'interopérabilité et les compétences déterminent si l'IA devient une pratique courante. Les entretiens mettent également en évidence des défis persistants liés à la protection de la vie privée, à la responsabilité, aux capacités numériques inégales et aux risques potentiels d'exclusion, qui appellent une gouvernance responsable et un soutien ciblé. Les résultats soulignent le potentiel de l'IA pour faire progresser une gouvernance du tourisme alignée sur les ODD, en particulier pour les ODD 8, 9, 10, 11, 12, 13 et 16.

Mots-clés: IA, tourisme, villes, tourisme durable, Côte d'Azur, EuroMed, SouthMed, ODD.

الملخص

لدى دعم الاستدامة الموجهة نحو أهداف التنمية المستدامة (AI) تتناول هذه الدراسة كيفية توظيف الذكاء الاصطناعي في المدن السياحية الذكية، مع التركيز على الدروس التي يمكن لمدينة منطقة اليورو-متوسطة (SDGs) استخلاصها من الريفيرا الفرنسية وبعض السياقات المختارة في جنوب المتوسط. ويستند التحليل إلى 46 مقابلة شبه مُنظمة أُجريت بين مايو 2024 وديسمبر 2025 مع أصحاب المصلحة العاملين في البيئات الحضرية التالية: الريفيرا الفرنسية (كوت دازور)، منطقة برشلونة الحضرية، الإسكندرية، تونس، صفاقس، بنزرت، سوسة، مسكن، الدار البيضاء، الرباط، زغرتا وطرابلس

وباستخدام منهجية جيوية، تحدد الدراسة خمس أبعاد متكررة. أولاً، يدعم الذكاء الاصطناعي الإدارة المستدامة للوجهات من خلال التنبؤ ولوحات المعلومات والتحسين التشغيلي، بما يساعد المدن على استباق ذروة الطلب وإدارة الازدحام والضغط على الموارد. ثانياً، تعزز التقنيات الذكية تجربة الزوار عبر إرشادات مخصصة ومعلومات في الوقت الحقيقي تُمكن من إعادة توزيع التدفقات وتقليل الضغط على المواقع المزدحمة. ثالثاً، يمكن للمنصات المُمكنة بالذكاء الاصطناعي أن تعزز تمكين المجتمعات من خلال تحسين ظهور الشركات الصغيرة والمتوسطة، وقنوات المشاركة، والشفافية في القرارات المرتبطة بالسياحة، مع الكشف في الوقت ذاته عن قيود على الشمول عندما يكون الوصول رقمياً بالأساس. رابعاً، تعزز الحماية البيئية والثقافية عندما يرتبط الرصد وإدارة الطاقة والأدوات المكانية بتدخلات تشغيلية واستراتيجية لإعادة توزيع الزوار. خامساً، يشكّل بناء القدرات المستدام والتعاون متعدد أصحاب المصلحة شرطاً للتنفيذ، لا سيما عندما تحدد حوكمة البيانات وقابلية التشغيل البيئي والمهارات ما إذا كان الذكاء الاصطناعي سيصبح ممارسة روتينية وتُبرز المقابلات أيضاً تحديات مستمرة تتعلق بالخصوصية والمساءلة وتفاوت القدرات الرقمية ومخاطر الإقصاء المحتملة، ما يستدعي حوكمة مسؤولة ودعمًا موجّهًا. وتؤكد النتائج إمكانات الذكاء الاصطناعي في تعزيز حوكمة السياحة المتوافقة مع أهداف التنمية المستدامة، ولا سيما الأهداف 8 و9 و10 و11 و12 و13 و16

الكلمات المفتاحية: الذكاء الاصطناعي، السياحة، المدن، السياحة المستدامة، الريفيرا الفرنسية، أورو متوسطية، جنوب المتوسط، أهداف التنمية المستدامة

INTRODUCTION

In 2025, travel and tourism are expected to contribute 10.3% of global GDP and support 371 million jobs worldwide (World Travel & Tourism Council, 2025). At the same time, the scale and speed of tourism growth intensify environmental and social pressures, including biodiversity loss, resource depletion, carbon emissions, and risks of cultural erosion. These challenges have pushed sustainable tourism from a sectoral objective toward a public-policy priority framed by the United Nations Sustainable Development Goals (SDGs) (Fauzi, 2025; Nguyen & Hoang, 2023). SDG target 8.9 calls on countries to “by 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products,” underscoring that sustainability in tourism is inseparable from employment, local value creation, and cultural integrity.

The urgency of sustainable tourism is particularly visible in cities. Urban destinations concentrate attractions, infrastructure, and services, but they also concentrate the negative externalities of mass visitation, especially during peaks driven by seasonality, events, and transport connectivity. Broader urbanisation trends amplify these pressures: cities across the Mediterranean continue to absorb population growth and migration, increasing demand for housing, transport, water, energy, and public services while simultaneously hosting large visitor flows (Gonçalves et al., 2021; Karal & Soyer, 2024; Ben Youssef, 2024). According to the United Nations, 68% of the global population is projected to live in urban areas by 2050 (United Nations, 2019), and evidence from rapidly urbanising contexts shows how infrastructure stress and service delivery challenges can deepen when growth is not matched by capacity (Liu et al., 2021). Within the SDG framework, these dynamics connect directly to SDG 11, which emphasises inclusive, safe, resilient, and sustainable cities, and which is increasingly relevant for tourism cities where resident well-being and visitor management are tightly interdependent.

AI has emerged as a key enabling technology in this context, offering tools for prediction, optimisation, and real-time decision support in both tourism and city services. AI applications such as machine learning, predictive analytics, and intelligent automation can support visitor-flow management, resource allocation, and service responsiveness, while also enabling more personalised visitor services and more efficient operations in tourism-intensive zones (Majid et al., 2023; Ben Youssef & Zeqiri, 2022). These capabilities align with SDG 12 through resource efficiency and responsible consumption patterns, and with SDG 9 through innovation and infrastructure modernisation. They can also contribute to climate-related objectives by reducing congestion and supporting energy optimisation, which connects tourism governance to SDG 13, and in coastal destinations to pressures on marine and terrestrial ecosystems (Scott et al., 2011; Khan & Nasir, 2023). However, the diffusion of AI also raises governance and ethics concerns, particularly around privacy, accountability, and unequal access to digital benefits (Ryan et al., 2019; Wakunuma et al., 2022).

Despite growing attention to smart tourism and smart cities, research that examines how AI contributes to sustainability outcomes in tourism cities, and how these contributions map onto SDG priorities, remains limited. Existing studies often focus either on tourism and SDGs, or on AI contributions to sustainability in other sectors, with fewer empirical analyses that connect AI-enabled city tourism practices to a structured SDG lens, particularly in Mediterranean contexts where tourism intensity, heritage constraints, and climate exposure interact (Chaudhary, 2023; Gupta & Degbelo, 2022; Kashem et al., 2022). This gap is especially relevant for EuroMed and SouthMed cities, where levels of digital maturity, institutional capacity, and infrastructure readiness vary, shaping the feasibility and legitimacy of AI-enabled governance.

This study addresses this gap by examining how stakeholders in the French Riviera and selected South Mediterranean city contexts understand and deploy AI within tourism and related urban service systems, and how these practices connect to SDG-oriented sustainability objectives.

The analysis highlights pathways through which AI supports anticipatory destination management, improves visitor experiences while easing pressure on saturated sites, strengthens community participation and local value capture, supports environmental and cultural preservation, and requires sustained capacity building and multi-stakeholder collaboration to remain effective and legitimate. By focusing on city ecosystems, the study contributes evidence and lessons that can inform SDG-aligned tourism governance across the EuroMed region.

The paper is structured as follows. Section 2 presents a critical literature review on AI and tourism sustainability and identifies research gaps. Section 3 describes the methodology. Section 4 presents the results and main findings. Section 5 discusses implications. Section 6 presents conclusions, policy recommendations, limitations, and a future research agenda.

LITERATURE REVIEW

A growing body of research links tourism to the SDGs, with particular attention to employment creation, local value capture, and the management of environmental externalities. Recent reviews emphasise that tourism can support inclusive growth and local product valorisation, while also generating pressures on ecosystems, resources, and cultural assets if growth is not governed through sustainability principles (Fauzi, 2025; Nguyen & Hoang, 2023). These tensions are particularly salient in urban destinations, where tourism demand interacts with density, mobility constraints, and competing uses of public space. The literature on overtourism and destination governance shows that crowding, congestion, and resident acceptance can become binding constraints in tourism cities, requiring coordinated management across multiple actors and services (Capocchi et al., 2019; Fyall & Garrod, 2020). Climate change further strengthens the relevance of this governance perspective, as coastal and heritage destinations face increasing exposure to heat, sea-level rise, and extreme events affecting both visitor patterns and the resilience of cultural and natural assets (Scott, 2011).

In parallel, the smart tourism and smart city literatures argue that digital transformation can reshape how cities manage tourism pressures and deliver services. Early work on eTourism documented the central role of information systems and platforms in structuring tourism markets and managerial practices (Buhalis & Law, 2008). Subsequent contributions on smart tourism destinations emphasise real-time information, contextualisation, and personalisation as mechanisms that can improve visitor experiences and service coordination (Buhalis & Amaranggana, 2015). Smart hospitality research reinforces this view by highlighting interconnectivity and interoperability as conditions for value creation in tourism ecosystems, especially when multiple actors share data and service infrastructure (Buhalis & Leung, 2018). These insights align with broader smart city perspectives that treat digitalisation as an ecosystem phenomenon requiring institutional capacity, infrastructure, and governance arrangements that connect technology to operational decision-making (Albino et al., 2015).

A specific stream focuses on AI and intelligent automation in tourism and hospitality. Research on service automation and robotics shows how AI-enabled tools can transform customer interfaces and back-office processes, with implications for productivity, service quality, and workforce adaptation (Ivanov et al., 2017; Tung & Law, 2017). Work on smart service experience provides conceptual foundations for understanding how data-driven systems shape service encounters, satisfaction, and co-creation in tourism contexts (Kabadayi et al., 2019). Recommender systems and digital guidance tools are also widely discussed as drivers of personalisation and choice architecture in tourism cities (Choi et al., 2021). Immersive technologies, including virtual reality and augmented reality, extend this landscape by enabling new forms of interpretation and engagement in cultural and heritage settings (Tussyadiah et al., 2018; Go & Kang, 2022). Recent contributions suggest that the next wave of AI in tourism will increasingly be shaped by generative systems and synthetic experiences: generative AI is being conceptualised not only as a backstage tool but as an actor reshaping experience co-creation and destination governance (Christou et al., 2025), artificial empathy is presented as a determinant of trust and service relationships with AI agents in metaverse contexts (Assiouras et al., 2025), and AI-generated travel advice may affect the spatial distribution of tourists by reinforcing concentration effects (Paül i Agustí, 2025).

A further strand concerns AI contributions to sustainability objectives and SDG performance. Studies across sectors discuss AI-enabled monitoring, prediction, and optimisation as pathways to improve environmental outcomes and resource efficiency, including climate-relevant applications (Efremova et al., 2019; Chaudhary, 2023; Khan & Nasir, 2023). Within urban research, AI has been linked to smart city performance and SDG 11 through service optimisation and enhanced decision support (Gupta & Degbelo, 2022). The twin transition literature reinforces the view that sustainability value depends on governance, capability building, and institutional design rather than technology adoption alone (Ben Youssef, 2025). In tourism and hospitality, Industry 4.0 perspectives similarly argue that AI, analytics, and connected infrastructures can support sustainability through more efficient operations and improved demand management, while requiring organisational change and skills (Ben Youssef & Zeqiri, 2022).

Platform-oriented work also links digital tourism ecosystems to SDG pathways by showing how platform intermediation can shape value capture, inclusion, and governance choices (Zeqiri, 2024; Zeqiri et al., 2025). At the same time, recent research stresses that AI's contribution to the SDGs in tourism is conditioned by risk management and ethical governance: sustainability gains are not automatic and may be offset by governance failures, exclusion dynamics, or unintended externalities (Gössling & Mei, 2025), while "making tourism smart" in the AI era requires engagement with governance and societal implications (Hall & Cooper, 2025). At the micro level, ethical concerns around fairness, transparency, accountability, and responsible use of data in tourism and hospitality AI systems are foregrounded in sector-specific work (Ahmed, 2025).

Inclusion, accessibility, and governance legitimacy remain central boundary conditions in this literature. Smart city scholarship increasingly stresses social equity, arguing that digital transformation can widen inequalities if access, skills, and institutional responsiveness are uneven (Okafor et al., 2022). Tourism research similarly shows that accessibility and inclusive destination design require deliberate choices and cannot be assumed as an automatic outcome of digital tools (Lam et al., 2020; Rubio-Escuderos et al., 2024). Digital divide scholarship complements this by documenting persistent skills gaps that can translate into exclusion risks when services and participation shift online (Abascal et al., 2016). Ethical and governance debates add further constraints, particularly around privacy, accountability, and distribution of benefits and risks when AI is deployed in public-facing contexts (Ryan et al., 2019; Wakunuma et al., 2022).

Recent studies also extend the evidence base on implementation pathways and measurable impacts. Work on digital transformation in tourism highlights the role of coordinated travel planning and partnerships as complements to technology adoption (Bondarenko et al., 2025). Industry 4.0-oriented reviews argue that AI and related technologies can support sustainability transitions in tourism, but outcomes depend on organisational change and implementation capacity (Bratić et al., 2025). Empirical evidence on digitalisation and smart solutions similarly links technology-enabled transformation to sustainability objectives, while stressing variability across contexts (Myrovali et al., 2025).

Macro-level studies suggest that AI can act as a catalyst for sustainable tourism growth when combined with conducive economic conditions and policy environments (Siddik et al., 2025), while case-based evidence explores AI-sustainability linkages in specific national settings (Song & Chen, 2025). A complementary strand links AI-enabled sustainability to circular economy approaches while explicitly addressing resistance to change as an implementation barrier (Hwang et al., 2025).

Despite these advances, research remains limited on how AI-enabled practices in tourism cities translate into SDG-oriented outcomes through concrete governance routines and cross-service coordination, particularly in Mediterranean contexts where tourism intensity, institutional capacity, and digital maturity vary. This study contributes to the literature by analysing AI use at the level of city tourism ecosystems and by clarifying empirically grounded dimensions that link AI to SDG-oriented outcomes.

METHODOLOGY

RESEARCH DESIGN

This research adopts a qualitative research design and applies the Gioia methodology (Gioia et al., 2013) to examine how AI contributes to the achievement of the SDGs in smart touristic city contexts. The Gioia approach is appropriate for investigating an evolving phenomenon where practices, governance arrangements, and perceived impacts differ across settings and stakeholder groups. It supports an inductive and iterative analysis that preserves informant meaning at the initial stage while enabling systematic conceptual development toward higher-level dimensions. In this study, the Gioia logic is used to derive first-order concepts from interview material, consolidate these into second-order themes through constant comparison, and distil them into aggregate dimensions that structure the Results section and the data structure presentation.

The conceptual framework depicted in Figure 1 summarises the interactions between AI technologies, “smart city as a service” (Zeqiri et al., 2024), “destination as a platform” (Zeqiri, 2024), and business–tourist dynamics, highlighting the pathways through which sustainability outcomes aligned with the SDGs can be realised. This design is well suited to exploring complex and emerging topics and to producing credible explanations of processes and sequences of events in real-world contexts (Carey & Asbury, 2016; Rashid et al., 2019; Miles et al., 2020; Yin, 2015).

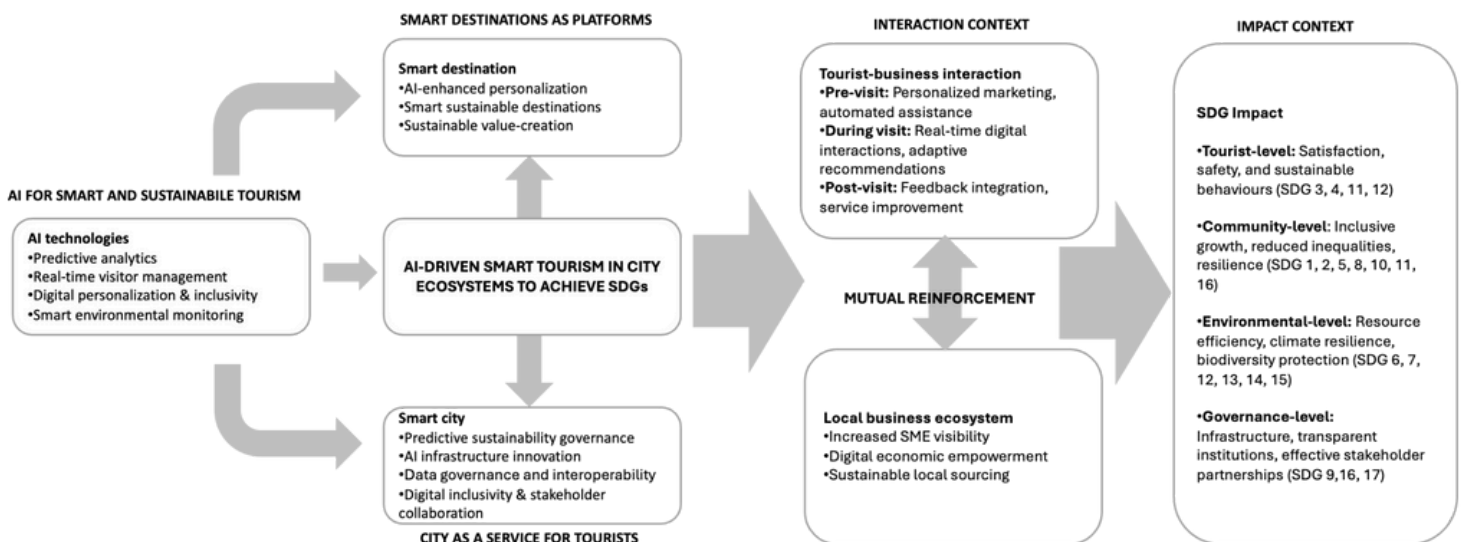


Figure 1. AI for SDGs in smart touristic cities (Source: authors)

DATA COLLECTION METHODS

Primary data were collected through semi-structured interviews conducted between May 2024 and December 2025. Semi-structured interviews were selected for their capacity to capture context-rich narratives while maintaining a common structure across respondents, allowing comparison across city contexts and stakeholder roles (Ruslin et al., 2022). Their flexibility supports the exploration of emergent issues and enables the interviewer to probe relevant examples and implementation details while preserving coherence across interviews (McIntosh & Morse, 2015; Longhurst, 2010).

In total, 46 interviews were conducted across the following city contexts: the French Riviera (Nice, Cannes, Antibes, Sophia-Antipolis, Menton, Villeneuve-Loubet, Saint-Raphael, Marseille), the Barcelona Metropolitan Area (Spain), Alexandria (Egypt), Tunis, Sfax, Bizerte, Sousse, and Msaken (Tunisia), Casablanca and Rabat (Morocco), Zgharta (Lebanon), and Tripoli (Libya). Participants of the French Riviera included hotel managers, tourism operators, city authority representatives, technology providers specialised in AI and digital infrastructure, sustainability experts, and tourism researchers. Within this period, part of the interview corpus was generated through two structured research programmes that also inform this paper. The interviews with the Barcelona Metropolitan Area, Sousse, and Msaken were conducted within the MedCities MetroMed digitalisation study (Ben Youssef, 2025), which relied on semi-structured interviews with senior officials from these three local authorities. Interviews with Alexandria, Tunis, Sfax, Bizerte, Casablanca, Rabat, Zgharta, and Tripoli were conducted within the Arab Urban Development Institute (AUDI) research project on municipal digital transformation in Arab cities (Ben Youssef and Zeqiri, 2025), which used in-depth interviews with city representatives and experts. In total, the interview corpus covers 19 city or metropolitan contexts across 7 countries (France, Spain, Egypt, Tunisia, Morocco, Lebanon, and Libya). Interviews lasted between 35 and 80 minutes, were conducted face-to-face or remotely via digital platforms, recorded with consent, and fully transcribed.

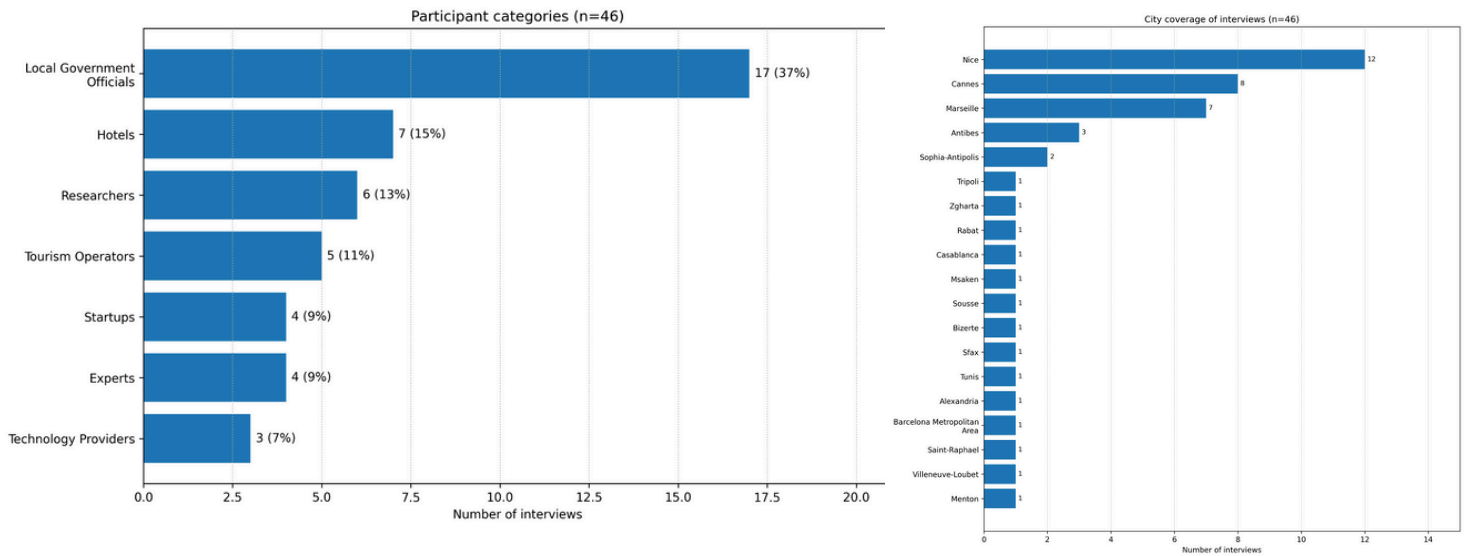


Figure 2. Participant categories and city coverage

The interview protocol was structured around four thematic areas: (i) current AI-driven initiatives and use cases in tourism and related city services; (ii) perceived environmental, economic, and social effects, including distributional issues; (iii) links to sustainability priorities and SDG-related objectives; and (iv) enabling conditions, constraints, and risks, including data governance, interoperability, skills and organisational change, ethical concerns, and implementation challenges.

SAMPLING STRATEGY CITY SELECTION RATIONALE, AND POTENTIAL SOURCES OF BIAS

A purposive sampling approach was adopted to ensure diverse representation of stakeholders with direct experience of, or informed oversight over, AI-driven initiatives in tourism and smart-city projects. The sampling logic sought diversity in stakeholder positions and incentives across the tourism ecosystem and related city services, while also ensuring cross-city variation that could reveal both transferable patterns and context-specific constraints (table 1).

The French Riviera was selected due to its international significance in tourism and its active engagement with AI-enabled approaches to destination governance and sustainability. In this case, the French Riviera is treated as a destination ecosystem spanning multiple cities in the Côte d'Azur.

The Barcelona Metropolitan Area was included as a metropolitan-scale governance context where the organisation of data and AI use across services provides a relevant reference point for how analytics are integrated into operational routines and cross-departmental coordination. The SouthMed city set was selected to reflect diverse urban configurations in which smart-city and digital initiatives are present, but where infrastructure conditions, institutional capacity, and implementation pathways vary. Alexandria, Tunis, Casablanca, and Rabat represent large metropolitan and capital-city contexts with complex service systems and strong heritage or waterfront pressures. Sfax, Bizerte, and Sousse provide secondary coastal city contexts where tourism dynamics interact with industrial and port activities, creating distinct sustainability trade-offs. Msaken offers a smaller-city perspective where staffing, organisational capacity, and change management constraints are more binding. Zgharta and Tripoli extend the comparative scope to contexts where institutional and operational constraints can be pronounced.

City context	Tourism role and pressure	Governance scale	Digital maturity of city services	Tourism asset profile	Predominant constraints and focus raised in interviews
French Riviera (Côte d'Azur, France)	Tourism-dominant; recurrent peaks	Multi-city destination	Advanced to developing, depending on actor	Coastal leisure; events; heritage mix	Managing peaks and congestion; cross-service coordination; governance legitimacy for data use
Barcelona Metropolitan Area (Spain)	Tourism-significant within a large metropolitan system	Metropolitan authority	Advanced	Metropolitan services; event-driven flows	Coordination across services; interoperability; institutional framing through data and AI
Alexandria (Egypt)	Tourism-significant; heritage and waterfront pressures	City	Developing	Heritage and coastal; cultural tourism	Heritage and spatial management capacity; integration of datasets; operational use of spatial tools
Tunis (Tunisia)	Tourism-significant but mixed with capital-city functions	City	Developing	Administrative and cultural mix	Fragmented responsibilities; scaling constraints; skills and organizational routines
Sfax (Tunisia)	Tourism-mixed; strong industrial and port dynamics	City	Developing	Port and industrial city; mixed tourism	Service modernization under resource constraints; coordination across departments
Bizerte (Tunisia)	Tourism-significant in a smaller coastal setting	City	Early to developing	Coastal and port; local tourism	Basic digitalization and service integration; staffing and capacity constraints
Sousse (Tunisia)	Tourism-dominant; coastal destination pressures	City	Developing	Coastal leisure; heritage	Service responsiveness; spatial traceability; strengthening citizen-facing channels
Msaken (Tunisia)	Tourism-emerging; primarily local service focus	City	Early	Smaller-city profile; tourism indirect	Limited staffing; change management; preference for process-focused technical support
Casablanca (Morocco)	Tourism-significant within a major economic metropolis	City	Developing	Business and urban tourism	Interdepartmental coordination; platform fragmentation; capability gaps
Rabat (Morocco)	Tourism-significant within a capital-city context	City	Developing	Administrative and heritage	Institutional coordination; inclusion and service access; scaling digital services
Zgharta (Lebanon)	Tourism-constrained/variable; development pressures dominate	City	Early	Secondary city; heritage and local tourism	Capacity constraints; prioritizing foundational digital systems
Tripoli (Libya)	Tourism-constrained/variable; governance context shapes feasibility	City	Early	Capital and heritage potential	Institutional constraints; limited implementation capacity; reliance on basic digitalization pathways

Table 1. City selection and contextual variation (interview-based profiling)

Several potential sources of bias are acknowledged. The sampling strategy is purposive and partly access-driven, which may over-represent stakeholders who are institutionally connected, visible in local ecosystems, or already engaged with digital projects. The distribution of interviews is uneven across cities, which can generate more granular insights for some contexts than others. Interviews may also reflect social desirability or strategic reporting when respondents describe innovation performance, governance capacity, or project success. Cross-city comparison can be affected by differences in institutional transparency, political sensitivities, and willingness to disclose constraints, as well as differences between face-to-face and remote interview conditions. Finally, the perspectives captured may under-represent groups that are less organised or less digitally connected, including informal workers, small community groups, or residents facing access barriers.

To manage these risks, the study relies on diversity of stakeholder roles within city ecosystems and systematic comparison across city contexts to assess whether themes recur beyond single settings. Coding decisions and interpretive refinements were documented throughout the analysis process, and targeted follow-up exchanges were used where feasible to clarify ambiguous points and reduce misinterpretation.

DATA ANALYSIS METHODS

The analysis followed Grounded Theory procedures, involving iterative, systematic coding. Initially, open coding was used to identify first-order concepts emerging directly from interview transcripts, capturing stakeholder perspectives in their own terms. Examples of first-order concepts included “AI-enabled predictive visitor management,” “energy consumption optimization,” “digital community participation,” and “real-time heritage monitoring.” Subsequently, axial coding grouped related first-order concepts into higher-level themes, identifying categories such as “AI-driven Sustainable Destination Management,” “Enhanced Visitor Experiences,” “Community Empowerment and Digital Inclusivity,” and “Environmental and Cultural Preservation.” Finally, selective coding synthesized these categories into comprehensive theoretical dimensions, creating an integrative framework highlighting how AI-driven practices explicitly align with the SDGs. This systematic inductive approach was essential for developing credible narratives and explanatory frameworks from qualitative data, thus effectively addressing the study's research objectives (Miles et al., 2020).

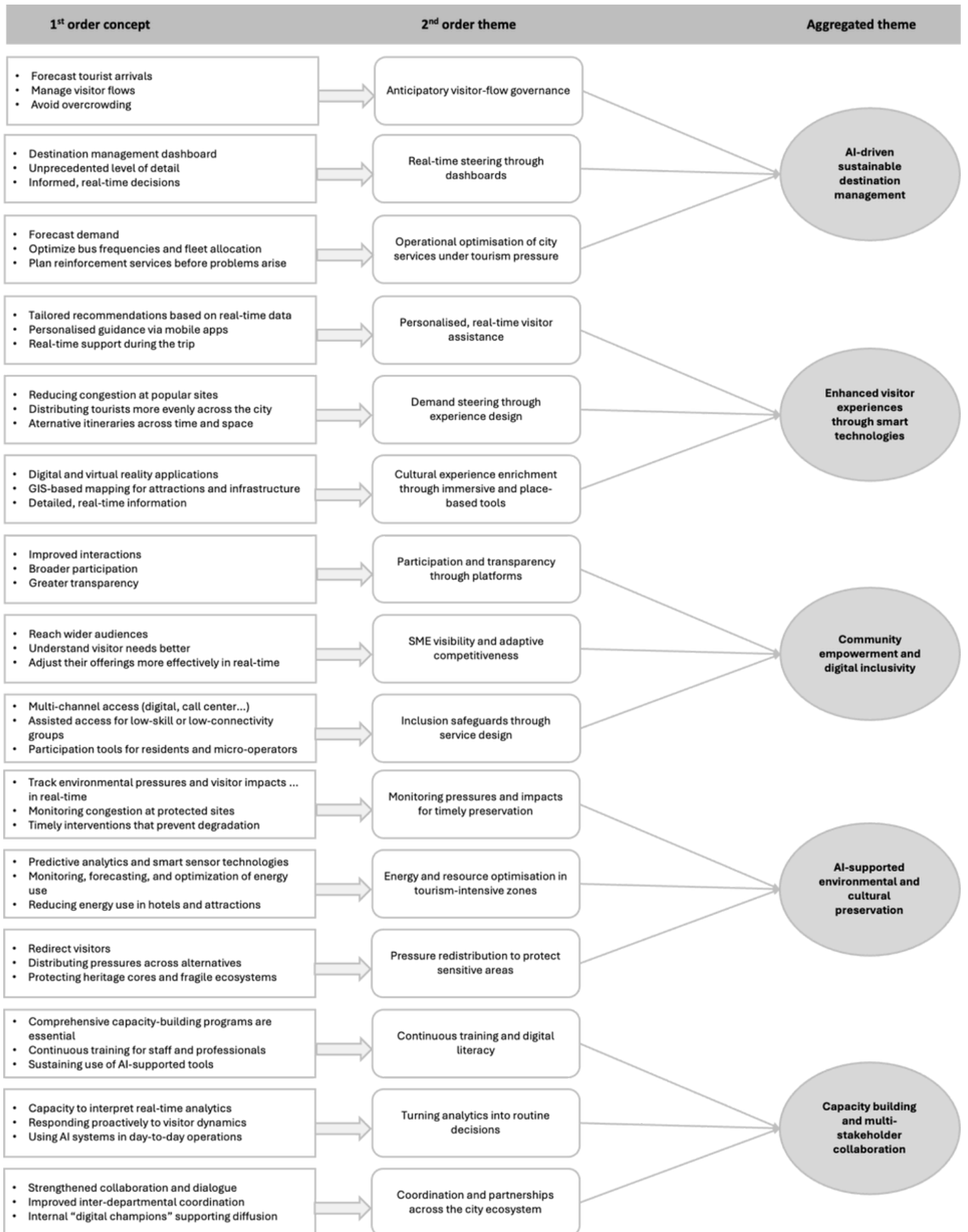


Figure 3. Data structure aggregating themes using Gioia methodology

ROBUSTNESS AND TRUSTWORTHINESS

Several procedures were used to strengthen the robustness of interpretations. A subset of transcripts was independently coded by two researchers, followed by comparison, discussion, and adjudication to refine code definitions and improve coding consistency. Codebook versioning and analytic memos were maintained to document how concepts and themes evolved across iterations. Triangulation was pursued across city contexts and across stakeholder roles to reduce reliance on single-perspective accounts. Member checking was conducted by sharing a concise synthesis of preliminary patterns with selected interviewees and integrating feedback where it clarified interpretations. Interviews continued until thematic saturation was observed, indicated by recurring concepts and limited emergence of new codes in later interviews. An audit trail was maintained within MAXQDA through coded segments, memos, and codebook updates.

ETHICAL CONSIDERATIONS

Ethical standards were rigorously maintained throughout the research. Participants received detailed information about the study's aims, procedures, risks, and benefits before giving written informed consent. Confidentiality and anonymity were assured by removing personal identifiers from all data transcripts and reports. Data was stored securely, accessible only to authorized researchers, ensuring strict privacy. Member checking was employed as an additional ethical safeguard, allowing stakeholders to validate findings and interpretations, thereby strengthening both the ethical integrity and research credibility.

RESULTS AND MAIN FINDINGS

The interviews provide a comprehensive view of how AI is transforming the tourism sector towards sustainability in the French Riviera and can be a lesson for EuroMed cities. The link of the findings with SDGs is shown in figure 4.

AI-DRIVEN SUSTAINABLE DESTINATION MANAGEMENT

On the basis of the interviews, we observe a consistent shift in how cities approach destination management: AI is framed less as a standalone innovation and more as a capability for anticipating pressure points and acting earlier. In the French Riviera, stakeholders repeatedly connected AI adoption to the need to cope with sharp seasonal peaks and event-driven surges. One participant described this clearly, noting that “AI tools and predictive analytics enable cities and tourism authorities to forecast tourist arrivals and effectively manage visitor flows, avoiding overcrowding and mitigating associated pressures on local resources.” This emphasis reflects a move away from governance that relies mainly on retrospective reporting toward routines built around forecasting, early warnings, and rapid operational adjustments, which aligns closely with SDG 11 and SDG 12 and supports climate-related co-benefits under SDG 13.

A second set of accounts highlights how this shift is institutionalised through decision-support tools. Several interviewees referred to AI-enabled dashboards as a practical mechanism for turning fragmented information into actionable signals. A regional stakeholder explained that “our destination management dashboard, powered by AI analytics, now provides an unprecedented level of detail on visitor preferences, consumption patterns, and site-specific pressures, allowing us to make informed, real-time decisions.” The interviews suggest that these dashboards also reduce coordination frictions between destination managers and city services by making pressures visible in a shared format, facilitating faster prioritisation of interventions when congestion, crowding, and service loads escalate.

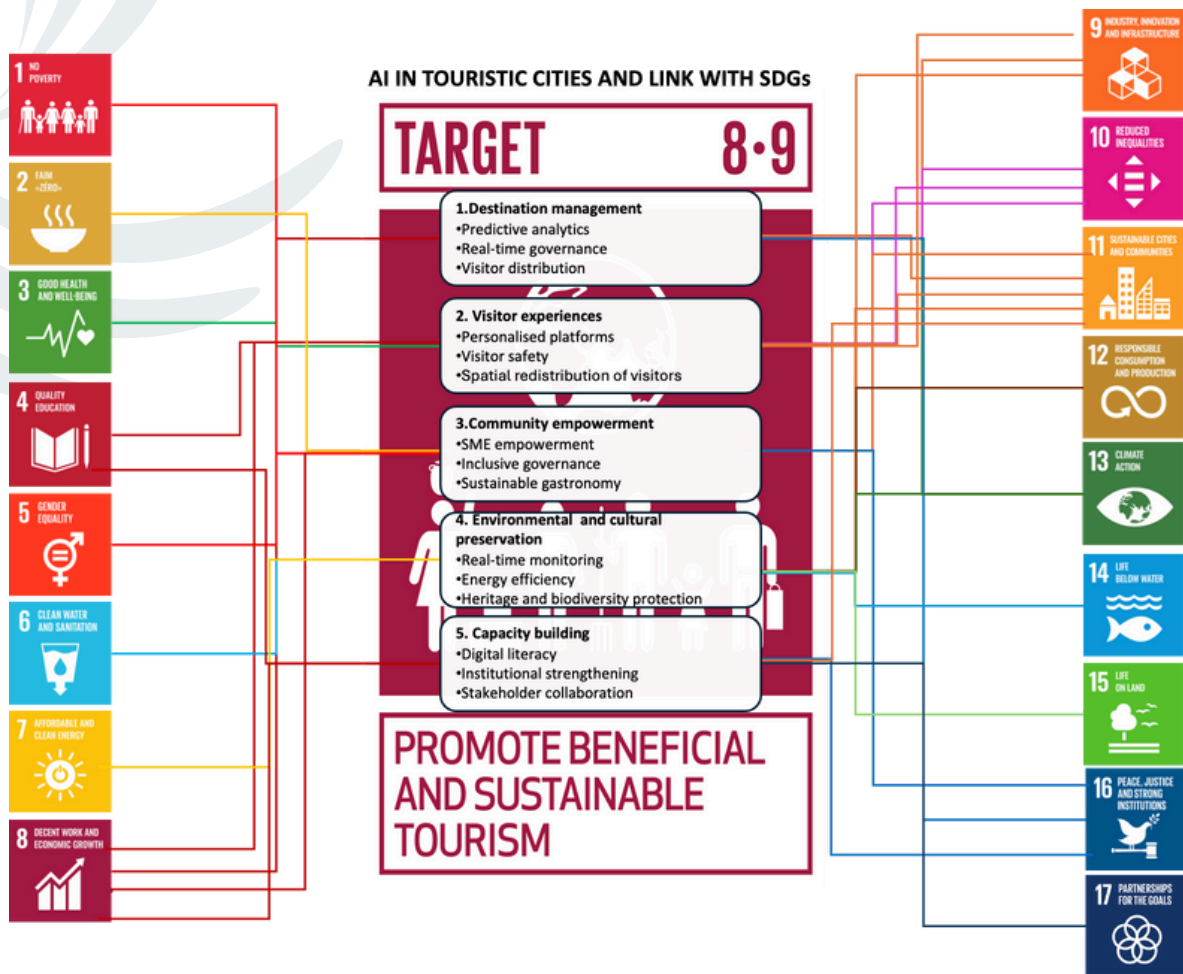


Figure 4. Main findings and their link with SDGs (Source: Authors)

The interviews also show that anticipation becomes operational when predictive analytics is integrated into routine service planning. In the Barcelona Metropolitan Area, respondents described how AI is used to translate demand signals into adjustments in public transport supply, noting that “AI is already used to forecast demand and to optimize bus frequencies and fleet allocation, improving service quality without increasing costs.” The same experience highlights the value of anticipating demand spikes, as the system helps teams “anticipate peaks linked to specific flights or events and plan reinforcement services before problems arise.” These examples are directly relevant for tourism cities, where the sustainability impacts of mass visitation are often mediated through mobility stress, cascading service disruptions, and congestion externalities.

Visitor-facing applications form another visible part of destination management in the French Riviera. Stakeholders presented AI-driven mobile interfaces not only as tools for improving satisfaction but also as instruments for redistributing flows. One interviewee stated that “tourists now benefit from mobile apps powered by AI algorithms providing tailored recommendations based on real-time data, reducing congestion at popular sites and distributing tourists more evenly across the city.” Several respondents linked this type of steering to a broader distribution of visitor spending across districts, which creates a direct bridge between SDG 11 and inclusion-related objectives, including SDG 8 and SDG 10.

Evidence from SouthMed cities points to similar ambitions, while underlining the importance of basic digital capacity. Interviewees referred to investments such as “fiber-optic internet services and interactive digital platforms capable of delivering advanced cultural experiences,” and they also highlighted the “automation of municipal processes, streamlining services for visitors and local communities alike.” City-service examples complement these accounts. In Sousse, one interviewee described the development of “a simple digital complaints channel linked directly to its geographic information system (GIS),” which strengthens traceability and spatial prioritisation of interventions. In Msaken, an operational example was provided through “GPS tracking on garbage trucks” that helped “optimize collection routes” and “reduce fuel consumption.” These service-level cases are not tourism tools in a narrow sense, but they describe the operational backbone that allows destination management to respond faster during peak demand periods.

Several interviews also stressed that AI-supported destination management performs best when it is embedded in a coherent governance framework rather than implemented through scattered pilots. In the Barcelona Metropolitan Area, respondents noted that earlier digital decisions were often taken “project by project,” and that the institutional response has been to establish “a data strategy” and “an AI strategy” to improve coherence. This matters for tourism cities because visitor management, dashboards, mobility, public space, and waste services typically sit in different administrative silos. When data sharing and coordination improve, AI becomes a sustained governance capability rather than a set of isolated experiments, reinforcing links to SDG 16 alongside SDG 9, SDG 11, SDG 12, and SDG 13.

ENHANCED VISITOR EXPERIENCES

The interviews indicate that smart technologies enhance visitor experiences through personalisation, adaptive recommendations, and real-time support, while also contributing to sustainability objectives when they reduce pressure on saturated sites. In the French Riviera, stakeholders highlighted the expanding role of AI-driven mobile applications and interfaces that provide immediate guidance to visitors. One respondent summarised the effect as follows: “tourists now benefit from mobile apps powered by AI algorithms providing tailored recommendations based on real-time data, reducing congestion at popular sites and distributing tourists more evenly across the city.” Interviewees associated this type of digital support with smoother visitor experiences and a more balanced use of urban space, linking to SDG 11, while also pointing to economic spillovers for local businesses that connect to SDG 8 and SDG 10.

Several accounts suggest that personalisation changes how visitors discover the city, particularly when digital tools guide tourists toward less congested sites and alternative itineraries. Cities facing over tourism pressures have started to combine visitor information with flow management. The “Respect the City” initiative in Dubrovnik provides a relevant illustration, combining crowd monitoring and communication tools to support visitor self-management around the most congested gateways and time windows. Such initiatives show how visitor experience tools can function simultaneously as information services and as demand-steering instruments, reinforcing SDG 11 and SDG 12.

SouthMed interviews provide additional examples of how immersive and place-based digital technologies are used to enrich cultural engagement. In Ramallah, local actors emphasised immersive tools for cultural institutions, stating that “digital and virtual reality applications implemented within our cultural institutions and municipal facilities provide tourists and citizens with enriched, immersive experiences, significantly enhancing cultural engagement and visitor satisfaction.” In Madaba, authorities highlighted GIS-based mapping that supports both visitors and residents, noting the aim of “providing visitors and residents with detailed, real-time information on tourist attractions, local heritage, and urban infrastructure, significantly improving overall visitor experiences and local economic opportunities.” These experiences connect to SDG 4 through cultural learning and awareness, to SDG 9 through digital innovation, and to SDG 11 through improved navigation and better distribution of urban pressures.

Comparable dynamics appear in contexts where heritage is treated as a living operational layer in digital systems. In Alexandria, the consolidation of citywide GIS resources alongside heritage geodatabases and the production of 3D documentation for sites such as the Qaitbay precinct have supported interactive mapping, storytelling formats, and cultural-route design. These tools enhance interpretation and orientation for visitors while supporting preservation-oriented planning, reinforcing SDG 11 and SDG 12.

The interviews also indicate that visitor-experience technologies contribute to safety and well-being when they provide real-time information on congestion, disruptions, and risks. This becomes particularly important in dense historic centres and during peak heat or peak visitation periods. Initiatives that communicate occupancy levels and offer alternative routing options illustrate how cities can integrate comfort and safety into visitor guidance, linking SDG 3 and SDG 11.

COMMUNITY EMPOWERMENT & DIGITAL INCLUSIVITY

The interviews show that AI-enabled platforms are increasingly used to strengthen community involvement and digital inclusivity within sustainable tourism strategies. In the French Riviera, stakeholders described platforms as mechanisms that widen participation and improve transparency in tourism-related decisions. One interviewee noted that “the integration of AI-enabled platforms has significantly improved interactions between municipal authorities, local businesses, and community members, facilitating broader participation and greater transparency in tourism-related decisions.” These interactions are directly relevant to SDG 11 and SDG 16 and also connect to SDG 8 and SDG 10 when the platforms support wider access to economic opportunities.

A recurrent theme concerns SMEs and local value capture. Respondents emphasised that AI-enabled platforms improve visibility and responsiveness for smaller businesses: “digital platforms powered by AI now enable local tourism businesses to reach wider audiences, understand visitor needs better, and adjust their offerings more effectively in real-time.” Several participants framed this as a way to reduce structural disadvantages faced by SMEs that have limited marketing capacity or limited ability to interpret demand signals. This contributes to SDG 8 and SDG 10 and can support SDG 1 where broader market access translates into income opportunities for small operators.

Platforms were also linked to participation in tourism planning. Interviewees described digital channels that make it easier for residents and local stakeholders to provide input, stating that “AI-driven tools have encouraged citizens and local stakeholders to engage actively with cities, providing feedback and suggestions that directly influence tourism planning and policies.” A closely related example appears in Sousse, where a complaints portal connected to the GIS allows requests to be geolocated, tracked, and visualised on the same spatial layers used for asset management. This improves traceability for residents and provides city teams with a consolidated view of recurring issues, which is particularly relevant when visitor peaks amplify service tensions.

Digital inclusion is not treated as automatic in the interview corpus. In the Barcelona Metropolitan Area, inclusivity is explicitly addressed through “multi-channel access (digital, call center, face-to-face)” and coordination with cities, reflecting the need to maintain access for residents who face skill, trust, or connectivity barriers. In Msaken, respondents described limited human resources and uneven uptake of national platforms, coupled with interest in more structured tools such as surveys to ensure that digital projects reflect real expectations. These accounts show that inclusion depends on service design, organisational routines, and support mechanisms, not only on technology availability.

SouthMed interviews reinforce the same direction, with stakeholders referring to investments in “interactive digital platforms designed explicitly to support local entrepreneurship and community engagement,” and improvements in “community access to municipal services through streamlined digital interactions, benefiting local businesses and residents alike.” Some respondents also linked inclusion to local food systems and place-based economies, noting that “AI-powered mobile applications provide tourists and residents with real-time information on local culinary experiences, agricultural markets, and sustainable gastronomy offerings.” This creates a direct bridge between tourism and local supply chains, supporting SDG 2 alongside SDG 8, SDG 10, and SDG 11. Although gender is not treated as a separate thematic strand in the interviews, the inclusion constraints reported for digital participation and SME visibility also apply to women entrepreneurs and women-led microbusinesses, for whom unequal access to digital skills, networks, and platform visibility can translate into weaker participation in tourism value creation, thereby connecting these findings to SDG 5.

AI-SUPPORTED ENVIRONMENTAL AND CULTURAL PRESERVATION

The interviews indicate that AI-enabled tools contribute to environmental and cultural preservation by strengthening monitoring, enabling targeted interventions, and supporting pressure redistribution across space and time. In the French Riviera, respondents described a move toward continuous monitoring of environmental pressures and visitor impacts at sensitive sites. One stakeholder stated that “AI-based monitoring tools now enable cities to precisely track environmental pressures and visitor impacts at heritage sites in real-time, informing targeted actions for their preservation and sustainable management.” These uses link directly to SDG 11 and SDG 12 and reinforce SDG 13, SDG 14, and SDG 15 in contexts where ecosystems and heritage sites are exposed to tourism intensity.

Several interviewees highlighted the value of monitoring environmental indicators as a basis for timely interventions. A local tourism manager explained that “AI-driven systems have significantly improved our ability to monitor critical environmental indicators, such as air and water quality, biodiversity impacts, and visitor congestion at protected cultural sites, allowing for timely interventions that prevent degradation.” Respondents described how such monitoring supports preventive measures, including adaptive access management, targeted maintenance, and visitor communications during peaks.

Energy optimisation was also repeatedly mentioned as a pathway through which AI can reduce the footprint of tourism-related infrastructures. Stakeholders emphasised that “predictive analytics and smart sensor technologies allow precise monitoring, forecasting, and optimization of energy use in hotels, heritage sites, and urban tourist attractions, effectively reducing energy consumption and promoting renewable energy utilization.” A related city-service example appears in Sousse, where a GIS-based inventory of lighting infrastructure is connected to an energy dashboard that integrates consumption signals and performance indicators for municipal buildings and lighting cabinets, illustrating how digital monitoring can support measurable efficiency gains at city level.

Waste and cleanliness management emerged as another operational area affected by sensor-based systems, especially in coastal and high-visibility tourist zones. In the Nice Côte d'Azur Metropolis, connected bins and sensor networks have been used to shift collection patterns from fixed schedules toward needs-based rounds, supporting resource efficiency and emissions reductions in service delivery. These applications are not always framed as tourism tools, but they directly influence the environmental conditions experienced by residents and visitors during high season.

Several interviews also emphasised visitor redistribution as a preservation mechanism. Stakeholders noted that “AI-enabled mobile applications now actively redirect visitors from environmentally vulnerable or culturally sensitive locations to alternative areas, effectively distributing tourist pressures more sustainably.” Similar logics are visible in Dubrovnik, where crowd monitoring and communication tools are used to manage inflows into a constrained historic core. These approaches support SDG 11 and SDG 12 and reinforce SDG 14 and SDG 15 where pressure redistribution protects marine and terrestrial ecosystems exposed to overtourism.

SouthMed examples also illustrate the role of spatial infrastructures in preservation. In Alexandria, heritage geodatabases and interactive mapping are used to visualise cultural clusters, plan itineraries, and communicate heritage narratives through digital platforms, while 3D documentation of sites such as the Qaitbay precinct supports conservation and resilience planning in a context exposed to climate risks. These tools strengthen the link between cultural preservation and sustainable destination management, aligning with SDG 11, SDG 12, and SDG 13.

CAPACITY BUILDING AND MULTI-STAKEHOLDER COLLABORATION

The interviews show that capacity building and collaboration are consistently viewed as conditions for sustained AI adoption in smart touristic cities. In the French Riviera, stakeholders described training as necessary for moving beyond pilot experimentation toward stable routines in decision-making and service delivery. One respondent stated that “comprehensive capacity-building programs are essential for cities, tourism authorities, and local businesses to effectively adopt and sustainably manage AI-driven tools, facilitating long-term success and improved governance outcomes.” This reflects the practical requirement that staff must be able to interpret real-time indicators, translate analytics into operational choices, and maintain systems over time.

Interviewees also described how continuous training improves the ability of city staff and tourism professionals to work with analytics. As one respondent noted, “ongoing training and digital literacy initiatives have significantly improved municipal staff and tourism professionals' capacity to interpret real-time analytics, respond proactively to visitor dynamics, and effectively utilize AI-supported decision-making systems.” In the Barcelona Metropolitan Area, respondents described similar priorities, including internal training on AI and the role of internal digital champions who support diffusion across departments, especially when public-sector recruitment constraints make it difficult to secure high-tech profiles.

Multi-stakeholder collaboration appears as a second pillar supporting implementation. In the French Riviera, respondents emphasised that “AI-based platforms and digital governance tools have notably strengthened collaboration and dialogue among cities, local businesses, research institutions, and community stakeholders, facilitating coordinated actions and effective management of urban tourism.” Collaboration was often described in practical terms, such as data sharing, joint troubleshooting, and coordination between tourism operators and city services responsible for mobility, public space, and environmental management.

The interviews also show that collaboration can function as a form of capacity building, especially where capabilities are uneven across cities. In Sousse, respondents described continued reliance on external expertise for specialised areas and expressed interest in partnerships with more advanced cities to learn from established practices in data, AI, and smart mobility. In Msaken, respondents highlighted limited human resources and a preference for technical assistance focused on diagnosis, strategy, and process re-engineering rather than hardware procurement.

SouthMed city interviews reinforce the same pattern. One actor noted that “intensive training programs and continuous digital capacity-building initiatives have greatly improved local stakeholders’ ability to implement and sustain innovative digital platforms.” Another highlighted organisational coordination effects, stating that “digital platforms have significantly improved inter-departmental coordination within municipal governance structures, resulting in more effective tourism management.” These accounts reinforce links to SDG 4 and SDG 8 and connect collaboration to SDG 16 and SDG 17 through institutional coordination and partnership-based implementation.

DISCUSSION

FINDINGS

This study shows that AI contributes to SDG-oriented sustainability in tourism cities primarily through governance and operations rather than stand-alone tourism applications. The interviews indicate that forecasting tools, dashboards, and optimisation routines help cities anticipate peaks, coordinate responses across services, and reduce the likelihood that congestion and service stress translate into deterioration of public space and resident acceptance. This interpretation aligns with recent calls to treat AI as a structural driver of smart tourism that requires attention to SDG trade-offs and governance design rather than technology adoption alone (Hall & Cooper, 2025; Gössling & Mei, 2025). It also complements work linking intelligent automation and smart tourism approaches to resource efficiency, responsiveness, and service quality (Majid et al., 2023; Ivars-Baidal et al., 2023), while remaining consistent with the overtourism and destination governance literature that stresses coordinated management of crowding and urban pressures (Capocchi et al., 2019; Fyall & Garrod, 2020).

The findings connect smart tourism and smart city perspectives by showing that tourism-related AI uses often depend on city systems beyond the tourism sector, particularly mobility, waste, public lighting, and environmental monitoring. Smart tourism research has long emphasised real-time information and personalisation (Buhalis & Amaranggana, 2015; Buhalis & Law, 2008), while smart city research highlights ecosystem coordination and social equity as conditions for effective digital transformation (Albino et al., 2015; Okafor et al., 2022). The interview evidence helps explain uneven outcomes across contexts: when data and responsibilities remain fragmented, prediction and dashboards do not translate consistently into timely interventions, and AI remains confined to pilots (Escobar & Hall, 2025; Shafiee et al., 2021). The twin transition framing reinforces this point by emphasising that sustainability value emerges when digital transformation is organised through governance, capabilities, and cross-system coordination rather than through isolated technological upgrades (Ben Youssef, 2025).

For visitor experiences, the evidence supports the established role of personalisation and smart service design (Choi et al., 2021; Kabadayi et al., 2019), while indicating that cities increasingly use these tools as instruments of demand management. Real-time guidance and personalised information can reduce concentration at saturated sites and encourage more balanced itineraries, linking experience design to SDG 11 and SDG 12. Immersive applications reported in SouthMed cities are consistent with research showing that AR and VR can enhance engagement and interpretation (Jung et al., 2016; Tussyadiah et al., 2018; Go & Kang, 2022), with greater relevance when embedded in cultural access and visitor dispersion strategies. Platform-oriented work linking digital tourism ecosystems to SDG pathways is also consistent with the interview evidence, particularly on value capture, participation, and distributional effects (Zeqiri et al., 2025). This shift is reinforced by recent contributions on generative systems and synthetic experiences, where generative AI is framed as a tourism actor shaping co-creation and governance (Christou et al., 2025), artificial empathy becomes a determinant of experience quality in metaverse contexts (Assiouras et al., 2025), and AI-generated travel advice may influence spatial concentration patterns in cities (Paül i Agustí, 2025).

Inclusion and legitimacy remain binding conditions. Research on inclusive destination design emphasises that accessibility is not an automatic outcome of digitalisation (Lam et al., 2020; Rubio-Escuderos et al., 2024). The interviews reinforce this point: platforms can widen participation and strengthen SME visibility, but digital-by-default designs can exclude residents and micro-operators when skills and access constraints are not addressed. These findings align with broader debates on responsible AI, particularly privacy, accountability, and the distribution of benefits and risks (Ryan et al., 2019; Wakunuma et al., 2022). In tourism cities, legitimacy is especially sensitive because data-driven decisions can influence routing, access to constrained heritage areas, and service prioritisation, shaping perceptions of fairness; tourism-specific ethics work therefore reinforces the need to address fairness, accountability, and transparency in AI-enabled tourism governance (Ahmed, 2025; Gössling & Mei, 2025).

Preservation-related findings similarly depend on operational integration. Monitoring and spatial tools matter when connected to interventions such as adaptive access management, targeted maintenance, waste collection patterns, and energy optimisation in tourism-intensive zones, supporting climate and biodiversity pathways in coastal and heritage contexts exposed to climate risk and visitor pressure (Scott, 2011; Khan & Nasir, 2023).

This logic is consistent with recent research linking Industry 4.0 and smart solutions to tourism sustainability transitions, including circular economy pathways and the barrier of resistance to change (Bratić et al., 2025; Myrovali et al., 2025; Hwang et al., 2025), and with evidence that heritage GIS strengthens preservation when embedded in planning and operational routines (Othman et al., 2025). Finally, the interviews confirm that capability building and collaboration condition whether AI becomes routine practice, extending evidence that skills and facilitating conditions shape effective use of digital services (Ben Youssef et al., 2021). Recent studies similarly emphasise partnerships and change management as implementation conditions (Bondarenko et al., 2025; Hwang et al., 2025), while macro-level analyses associate AI adoption with sustainable tourism growth dynamics and economic cycles (Siddik et al., 2025; Song & Chen, 2025), and cross-sector “AI for good” work points to comparable capability and governance requirements beyond tourism (Ben Youssef et al., 2026).

LESSONS FOR EUROMED CITIES

Several lessons emerge for EuroMed cities seeking to align AI in tourism with SDG objectives (table 2). First, AI initiatives deliver sustainability value when they are anchored in concrete urban pressure problems and linked to clear intervention levers. Forecasting and dashboards become meaningful when they trigger actions that services can execute rapidly, such as adjusting mobility supply, managing access in constrained zones, reinforcing cleaning and maintenance, and providing real-time guidance to visitors. Second, interoperability and data governance should be treated as enabling foundations. Many sustainability pathways depend on data moving across administrative and sectoral boundaries, including tourism, transport, public space, environment, and heritage management. Fragmented data and project-by-project digitalisation limit scaling and reduce the capacity to act on signals quickly.

Lesson area	What cities should do in practice	What to avoid	Enabling conditions to put in place	SDG linkages
1) Anticipatory destination management	Use forecasting and dashboards to trigger pre-defined operational actions during peaks (mobility reinforcement, crowd management, cleaning, targeted communication). Integrate tourism signals with city service dispatch.	Treating dashboards as reporting tools only; pilots without operational ownership.	Interoperable data feeds across tourism, mobility, public space, waste; clear decision rights and thresholds; rapid response routines.	SDG 11, SDG 12, SDG 13, SDG 9
2) Smart visitor experiences as demand steering	Deploy real-time guidance and personalized recommendations to redistribute flows across time and space; design digital itineraries that protect saturated sites and highlight alternative districts and cultural assets.	Using personalization only to increase volumes at already saturated attractions; separating "experience" from capacity management.	Real-time occupancy and disruption data; coordination with attractions and transport operators; clear communication strategy.	SDG 11, SDG 12, SDG 8, SDG 10, SDG 3
3) Community empowerment and inclusion	Use platforms to widen SME visibility and participation in tourism decisions; build feedback loops that residents can use easily; support local ecosystems (including gastronomy and local products) through discoverability tools.	Digital-by-default participation that excludes residents and micro-operators; assuming platforms automatically reduce inequalities.	Multi-channel access (digital, assisted, face-to-face); targeted SME support and training; accessibility-by-design requirements.	SDG 8, SDG 10, SDG 11, SDG 16, SDG 2
4) Environmental and cultural preservation connected to operations	Link monitoring (heritage pressures, water/air indicators, waste loads, energy use) to operational interventions (maintenance, access management, collection patterns, energy optimization) and to visitor redistribution.	Monitoring without intervention capacity; preservation tools disconnected from service operations.	Clear responsibilities across services; integration of sensing and GIS with workflows; maintenance funding and rapid-response capacity.	SDG 11, SDG 12, SDG 13, SDG 14, SDG 15, SDG 7
5) Capability building and partnership architecture	Institutionalise continuous training and internal champions; formalize partnerships with universities, providers, and peer cities; create stable cross-department coordination mechanisms for AI use.	One-off training; dependency on external consultants without internal capability; fragmented "project-by-project" digitalization.	Training plans and career pathways; governance structures for data and AI; collaboration agreements and shared indicators.	SDG 4, SDG 16, SDG 17, SDG 9

Table 2. Lessons for EuroMed cities from the French Riviera and SouthMed experiences

Third, visitor experience technologies are most useful when treated as both service tools and demand-steering instruments. Personalised guidance and real-time information can support dispersion and reduce pressure on saturated sites. Immersive applications can strengthen cultural engagement when they complement preservation objectives and spatial redistribution strategies, rather than being used only to increase visitation. Fourth, inclusion must be designed into digital tourism governance. Platforms can broaden participation and SME opportunities, but digital-by-default designs can deepen inequalities in voice, access, and opportunity if they are not accompanied by multi-channel access, targeted support for SMEs with limited digital capacity, and clear accountability for accessibility in digital platforms. These measures also protect legitimacy in contexts where data-driven decisions are visible and contested.

Fifth, preservation gains require connecting monitoring to operations. Environmental sensing, energy optimisation, and pressure redistribution protect assets when responsibilities are clear and interventions are integrated into routine service delivery, particularly in coastal and heritage destinations where climate and ecosystem pressures are increasing. Finally, cities should embed capability building and partnership design into AI investment itself. Training, internal champions, and collaboration across public and private actors reduce implementation risk and improve continuity over time, especially when cities face constraints in recruiting specialised profiles or maintaining advanced systems.

CONCLUSIONS, POLICY IMPLICATIONS, LIMITATIONS AND FUTURE AGENDA

CONCLUSIONS

This study shows that AI can support SDG-oriented sustainability in smart touristic cities when it is embedded in city governance routines rather than treated as a set of isolated tourism applications. Interview evidence indicates that AI contributes to more anticipatory destination management through forecasting, dashboards, and operational optimisation that help cities respond earlier to congestion and service stress (SDG 11, SDG 12, SDG 13). It also enhances visitor experiences through real-time guidance and personalised interfaces that can redistribute demand across time and space, easing pressure on saturated sites while widening local value capture (SDG 8, SDG 10, SDG 11). AI-enabled platforms further support community empowerment by improving SME visibility, strengthening participation channels, and increasing transparency in tourism-related decisions (SDG 16), while environmental and cultural preservation benefits when monitoring, energy optimisation, and pressure-redistribution tools are connected to routine city operations (SDG 7, SDG 14, SDG 15). Across cases, the sustainability contribution of AI depends strongly on enabling conditions, particularly skills development, multi-stakeholder collaboration, and coherent data governance that maintains legitimacy through inclusion and responsible use of data (SDG 4, SDG 17).

POLICY RECOMMENDATIONS

Policy recommendations should focus on building the governance and operational foundations that make AI useful for sustainability rather than encouraging stand-alone applications. City authorities should prioritise interoperable digital infrastructures and clear data governance arrangements that enable secure, purpose-limited data sharing across tourism, mobility, public space, waste, energy, and heritage services, since the strongest sustainability gains depend on coordination across these domains. Responsible AI requirements should be embedded in procurement and deployment through enforceable standards on privacy protection, data minimisation, transparency, and accountability, particularly where AI influences routing, access, or service prioritisation and therefore affects public legitimacy. Inclusion should be treated as a design obligation: cities should require accessibility-by-design and multi-channel access for residents and SMEs, coupled with targeted support for smaller firms and digitally constrained groups so that digitalisation does not widen inequalities. Capacity building should be institutionalised through continuous training for public and private actors, the creation of internal “champions” able to translate analytics into operational decisions, and clear procedures that connect dashboards and forecasts to concrete interventions. Finally, EuroMed cooperation should be strengthened through structured peer learning and partnerships that facilitate transfer of templates, metrics, and governance practices, accelerating diffusion while keeping AI initiatives aligned with SDG 8, SDG 9, SDG 10, SDG 11, SDG 12, SDG 13, and SDG 16.

MANAGERIAL IMPLICATIONS

Managerial implications for destination organisations and tourism businesses follow directly from the way AI creates value in city tourism ecosystems. First, AI initiatives should be selected and sequenced around operational ownership and measurable use cases, starting with applications where data inputs, decision rights, and intervention levers are clear (for example, peak-demand forecasting linked to staffing, crowd management, and mobility coordination; energy and waste optimisation in tourism-intensive zones; and real-time visitor communication), rather than investing in advanced tools that cannot be embedded in daily routines. Second, implementation should be managed as organisational change: managers should invest in staff training and “translation” roles that turn analytics into decisions, set explicit thresholds and playbooks for action when indicators shift, and communicate clearly to employees how AI supports service quality rather than replacing discretion, which helps reduce resistance and improves data quality.

Third, ecosystem coordination should be treated as a core managerial task, not an external constraint: destination managers and major operators should formalise data-sharing and collaboration arrangements with city services, attractions, transport providers, and platforms, align on a small set of shared performance and sustainability indicators, and maintain feedback channels with residents and local SMEs to protect trust and reputation. Finally, managers should treat responsible data practices as a competitive and legitimacy asset by adopting privacy-by-design, limiting data collection to defined purposes, documenting how recommendations and routing tools operate, and ensuring that digital services remain inclusive through assisted and multi-channel access.

LIMITATIONS AND FUTURE RESEARCH

This study has explored how AI can advance SDGs within smart tourism contexts in the French Riviera and selected SouthMed cities, yet it presents several limitations that warrant further research. The geographic scope was limited, primarily emphasizing specific Mediterranean urban contexts, which could affect the broader generalizability of findings; therefore, future research should expand the geographic coverage to include diverse international cases, varying in socio-economic conditions, digital maturity, and cultural dynamics. Moreover, the study employed a qualitative approach focusing on stakeholders' insights through interviews, which, although rich in contextual depth, lacks quantitative evaluation of AI-driven impacts. Future studies should adopt mixed-method approaches integrating quantitative assessments, such as econometric or statistical analyses, to systematically measure AI's effectiveness, efficiency, and tangible impacts on environmental sustainability, economic outcomes, and social equity. The research predominantly highlighted AI's positive contributions, with limited exploration of potential drawbacks such as digital exclusion, energy consumption of AI technologies, ethical concerns, or unintended socio-economic disparities; thus, subsequent studies should critically assess these negative implications to provide balanced policy insights. Furthermore, the cross-sectional nature of the research did not allow examination of long-term trends or evolutionary dynamics; longitudinal studies tracking AI implementation and sustainability outcomes over time would be valuable. Lastly, future research could examine emerging AI applications like blockchain, augmented and virtual reality, and AI-driven sustainability certifications, evaluating their potential roles in enhancing sustainability practices and achieving comprehensive urban sustainability aligned with global SDGs.

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ANNEX 1: PARTICIPANT ROSTER

ID	City	Category	Function
P01	Nice	Researchers	Researcher
P02	Nice	Researchers	Researcher
P03	Nice	Experts	Finance professional
P04	Nice	Researchers	Researcher
P05	Cannes	Hotels	Hotel operations / controls
P06	Sophia-Antipolis	Technology Providers	AI R&D lead
P07	Cannes	Local Government Officials	City projects lead
P08	Marseille	Local Government Officials	Regional program manager
P09	Menton	Tourism Operators	DMO communications lead
P10	Villeneuve-Loubet	Tourism Operators	DMO director
P11	Cannes	Hotels	Hospitality executive
P12	Nice	Technology Providers	Regional AI program manager
P13	Nice	Local Government Officials	Regional AI plan officer
P14	Cannes	Experts	International expert
P15	Marseille	Experts	Communications / cluster expert
P16	Sophia-Antipolis	Researchers	Research institute director

P17	Marseille	Local Government Officials	Regional development officer
P18	Cannes	Hotels	Hotel operations director
P19	Nice	Startups	Startup founder
P20	Nice	Startups	Incubator manager
P21	Marseille	Startups	Incubator program lead
P22	Antibes	Tourism Operators	Events planner (MICE)
P23	Marseille	Experts	International expert
P24	Marseille	Local Government Officials	Regional development officer
P25	Antibes	Tourism Operators	Trade press editor
P26	Saint-Raphael	Technology Providers	Tech CEO
P27	Marseille	Hotels	Marketing director (hospitality)
P28	Nice	Tourism Operators	Digital lead (DMO)
P29	Nice	Researchers	Generative AI lab director
P30	Cannes	Hotels	Leisure tourism director
P31	Nice	Startups	Startup founder
P32	Nice	Researchers	Research editor

P33	Antibes	Hotels	Hotel management
P34	Cannes	Hotels	MICE facility executive
P35	Cannes	Local Government Officials	Deputy mayor
P36	Barcelona Metropolitan Area	Local Government Officials	Metropolitan data and AI strategy lead
P37	Sousse	Local Government Officials	City digital transformation lead
P38	Msaken	Local Government Officials	City IT and digital services coordinator
P39	Alexandria	Local Government Officials	Urban planning and GIS lead
P40	Tunis	Local Government Officials	Smart city program officer
P41	Sfax	Local Government Officials	City services digitalization officer
P42	Bizerte	Local Government Officials	City digital services coordinator
P43	Casablanca	Local Government Officials	City digital transformation lead
P44	Rabat	Local Government Officials	City e-services coordinator
P45	Zgharta	Local Government Officials	City digital services focal point
P46	Tripoli	Local Government Officials	City ICT and service modernization focal point



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CMCI · 2 rue Henri Barbusse · F-13 241 Marseille cedex 01 · France
+ 33 (0) 4 91 31 51 95 · www.femise.org



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European Institute of the Mediterranean

Carrer Girona, 20 · 08010 Barcelona · Spain
+34 93 244 98 50 · <https://www.iemed.org/>



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