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TYPES OF ARTIFICIAL INTELLIGENCE (AI) THAT AFFECT THE TOURISTS' EXPERIENCES: A SYSTEMATIC LITERATURE REVIEW

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Abstract:

This systematic literature review critically assesses the multidimensional impact of Artificial Intelligence (AI) on tourist experiences, addressing the central question: "What are the effects of artificial intelligence on tourists' experiences?" A rigorous systematic literature review, conducted using PRISMA guidelines, utilized the Scopus database and a PICo-based search string. From an initial 246 articles, 24 relevant papers were synthesized through quality assessment and thematic analysis. Findings reveal AI's pervasive role in enhancing personalization, efficiency, and digital immersion across sentiment analysis, urban mobility, and personalized travel planning. However, this potential is significantly tempered by critical challenges, including data privacy, algorithmic bias, the persistent digital divide, and a notable lack of quantitative empirical support for AI's long-term effects on tourist satisfaction and authenticity. This review offers actionable insights for tourism professionals to strategically leverage AI and guides researchers toward crucial future directions, emphasizing robust ethical frameworks, addressing user-specific barriers, and conducting empirical studies on AI's enduring psychological and emotional impacts. The study's novelty lies in its holistic synthesis of AI's multifaceted impacts on the entire tourist experience, uniquely highlighting the critical tension between its transformative potential and the ethical, social, and empirical gaps that must be addressed for its responsible and equitable deployment in tourism.

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Keywords:

Artificial Intelligence (AI), Tourist Experience, Systematic Literature Review, Digital Tourism, Personalization

Introduction

The advent of the Artificial Intelligence (AI) era has brought forth a disruptive wave of innovation in industries worldwide, with the tourism industry at the forefront of this transformation. Predictions suggest a strong growth for AI in the tourism market, a value of 13.38 billion by 2030 with a compound annual growth rate (CAGR) of 28.7 % (MarketsandMarkets, 2024), stressing its strong impact on the delivery and consumption of tourism services (Buhalis & Tussyadiah, 2021).

The acceleration of AI use, ranging from complex personalized recommendation engines to highly responsive automated customer service systems (Hollebeek et al., 2021), goes beyond technological tools. It signifies a broader call for a redesign of the tourist experience, requiring a holistic comprehension of its impacts for both travelers and the industry stakeholders (Ferhataj & Memaj, 2024).

This study offers an in-depth contribution to the emerging and multi-faceted application of AI in tourism, which significantly reshapes the tourist travel experience. Key developments include AI-based sentiment analysis extracting detailed tourist perceptions from large internet data (Babu et al., 2024), smart mobility services for efficient routing and enriched urban exploration (Prakash, 2021), individualized travel planning through personalized itineraries using both profile-specific preference and current situation (Stamboli et al., 2025), and improved digital interfaces mediated by virtual assistants, chatbots, and immersive virtual/augmented reality experiences (Partarakis & Zabulis, 2024). These innovations, collectively, portend a new age, one where AI exerts greater control over consumer behaviour, as well as the operational efficiency of all manner of companies (Davtyan, 2024), and the overall standard and availability of travel (Buhalis & Tussyadiah, 2021).

Despite the growing adoption of AI in the tourism industry, there is a substantial and intricate gap in understanding the combined direct and indirect effects of AI altogether on the holistic tourist experience (Andrianto et al, 2025). Much of the current research is centred on promoting the advantages of individual AI technologies in isolation (Mariani & Borghi, 2020), leaving behind a noticeable dearth of synthesized understanding regarding how these diverse facets of AI influence, interact, and cumulatively shape the locus of a tourist's entire travel experience, from initial latent to experience, meticulous pre-travelling information search, on-site decision making experience, and even to post-travel experience or feedback (Ma et al., 2025).

This fragmentation in current research makes it challenging for both academics to build robust theoretical frameworks and industry practitioners to strategically leverage AI for truly integrated and enhanced tourist experiences. Addressing this intricate gap is therefore crucial for both advancing academic discourse and practical industry application, as it will bridge theoretical knowledge with real-world outcomes, empowering tourism businesses to strategically deploy AI to meet and exceed evolving traveler expectations (Buhalis & Tussyadiah, 2021).

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This systematic literature review aims to consolidate the state-of-the-art and critically assess the multidimensional impact of AI on tourist experiences. By bridging the existing knowledge gaps and synthesizing insights from different areas of AI application, this study seeks to contribute to a comprehensive understanding of the impact of AI on distinct phases in the tourist journey. The findings will provide actionable guidance for professionals in the field to improve the quality-of-service provision and will help researchers identify future research directions in this fast-growing and increasingly AI-driven field. Specifically, the purpose of this review is to address the following research question: "What are the types of artificial intelligence that affect tourists' experiences?"

Literature Review

The literature review explores the role of Artificial Intelligence (AI) in tourism, critically examining its multiple applications and discussing the challenges, implications for industry and consumers.

Artificial Intelligence in Tourism

Artificial intelligence (AI) has been transforming numerous industries lately, and its integration into tourism has led to a profound transformation in operational activities and the way consumers interact. AI, which refers to the simulation of human intelligence processes by machines, especially computer systems, includes machine learning, natural language processing, and computer vision, and is increasingly being implemented in the travel industry (Mishra et al., 2024; Frenette, 2022). For example, sentiment analysis based on AI has shown a performance in obtaining detailed tourist perceptions on the basis of unstructured big data such as online reviews, with the possibility of accurately pinpointing satisfaction drivers (e.g., cleanliness, service quality) (Aggarwal & Gour, 2020).

Likewise, AI-based recommendation systems provide deeply personalized travel plans, based on users' preferences and spatial data, to travelers and improve efficiency and relevance of planning (Li et al., 2024; Bettache & Dennouni, 2025). Generative AI tools, however, such as ChatGPT, are also seen as suitable tools to enhance easy access by tourists since these tools support personalized engagement by offering pre-trip information, virtual and augmented reality experiences, and comparative insights that help tourists explore cultural elements before making reservations (Stergiou & Nella, 2024).

While these great examples show how AI can be used to enhance and personalize experiences, the use of large datasets to inform these decisions can also be a concern when it comes to data privacy and the ethical considerations of algorithmic bias (Shemshaki, 2024), which may be impacting and accidentally influencing tourists to come to certain places or preventing certain demographics from doing so (Putera et al., 2022). Hence, while the benefits of AI are significant, ethical implementation and inclusivity must be prioritized to ensure all travelers' needs and rights are considered.

Methodology

Conducting Systematic Literature Review

A systematic literature review (SLR) is a structured methodological approach developed to answer specific research questions through the integrative findings of prior reliable research that offers transparency, clarity, comprehensiveness, and accessibility when exploring an issue

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(Thorpe et al., 2006). It is a comprehensive retrieval of studies of a particular condition on a topic that is then selected and evaluated, and subjected to an analysis according to a method that relates to a subject of interest (Klasse et al., 1998). The resulting study utilized a comprehensive methodology, described in an extensive protocol and supported by a Technical Roadmap and Data Collection and Selection Flow Diagram following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. The methodology comprised seven key steps: developing research questions, determining relevant keywords, identifying relevant databases, setting search restrictions (i.e., time ranges and languages), setting up a review strategy, and summarizing findings from selected documents, as well as reporting results within tables and narratives. The PRISMA 2020 flow chart provides a framework for reporting on the process for identifying studies and for including and excluding studies from the review in a transparent and reproducible manner (Amin et al., 2022).

Formulation of Research Questions

The research question guiding this systematic literature review was meticulously crafted using the PICo framework, a robust methodology included in the Research Questions Development Tool (RQDT). PICo is a powerful technique that assists authors in developing unique, focused, and relevant research questions, thereby streamlining the review process. As emphasized by Okoli (2015), the development of precise research questions is paramount to avoid the occurrence of unnecessary article searches and ensure the efficiency of the review.

The PICo framework comprises three essential components: Population (or Phenomenon of Interest), Interest (or Intervention/Exposure), and Context. The components of the current study, as applied to this framework, are defined as follows:

- P (Population/Phenomenon of Interest): Tourists' experiences
- I (Interest/Intervention): Artificial Intelligence (AI)
- Co (Context): The tourism sector

Based on these components, the overarching research question formulated for this systematic literature review is: "What are the types of artificial intelligence that affect tourists' experiences?"

This precisely defined question serves as the foundation for the subsequent stages of the review, guiding the identification, screening, and analysis of relevant literature.

Table 1: PICo table

Population or Problem	Interest	Context
Tourists' experiences	Artificial Intelligence	The tourism sector

Identification and Screening Process

The Scopus database was selected as the primary source for the systematic literature search, given its comprehensive coverage of academic literature. In alignment with the research question, "What are the effects of artificial intelligence on tourists' experiences?", the key terms "Artificial Intelligence" and "Travel experience" were employed as core search concepts (refer to Table 2 for full search string details). A diversified set of keywords, including relevant synonyms, was generated to ensure a broad yet focused search, as detailed in the synonym search strategy presented in Table 3. This approach is critical, as highlighted by Kraus et al.

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(2020), who emphasize that while numerous articles can be identified through varied keywords, irrelevant search results can compromise the quality of a systematic literature review. Consequently, the search strategy was carefully constructed to narrow the scope to highly pertinent articles while still comprehensively addressing the research topic.

Utilizing the specified search string, an initial total of 246 articles were identified from the Scopus database. These articles were then subjected to a rigorous screening process based on several predefined criteria, as presented in Table 4. This selection process is essential, as Kitchenham and Charters (2007) note that reviewing a large volume of articles is often impractical, making the application of focused screening essential. The screening criteria applied included: Subject area (Social sciences, Business, Management and Accounting, Decision science), Document types (article), Language (English), Source type (Journal), and Publication stage (Final). Limiting the review to English-language articles was crucial to avoid any misunderstandings regarding the study's findings (Linares-Espinos et al., 2018), while focusing on final published articles ensured the quality of the review (Johnson and Hennessy, 2019). After applying these comprehensive screening criteria, the number of articles was reduced to 42.

An eligibility process was further initiated for each of the remaining articles to ensure their direct relevance to the research question. The exclusion criteria, detailed in Table 5, were rigorously applied. This eligibility process was iteratively repeated three times to minimize errors and ensure that only truly pertinent data was retained. Following this meticulous process, 24 relevant papers were successfully obtained for the final analysis. The entire flow of this systematic literature review, encompassing research design, data assembly, and analysis, is visually represented in the technical roadmap shown in Figure 1.

Table 2: Keywords and Expanded Keywords

Keyword	Expended Keywords
Artificial Intelligence	Machine Learning / Computer Intelligence / Intelligence Automation / Machine Intelligence / Smart Technology / AI Technology
Travel Experience	Travel Adventure / Journey Adventure / Trip Experience / Trip Adventure

Table 3: Search String Used for Data Searching

Database	Search String
Scopus	TITLE-ABS-KEY(("artificial intelligen*" OR "machine intelligen*" OR "computer intelligen*" OR "intelligen* automation" OR "machine learning" OR "smart technolog*" OR "AI technolog*") AND ("travel experienc*" OR "travel adventur*" OR "journey adventur*" OR "journey experienc*" OR "trip experienc*" OR "trip adventur*"))

Table 4: Inclusion Criteria for Screening Stage

SCOPUS Database	Subject area: Social sciences / Business, Management and Accounting / Decision science Document types: article Language: English Source type: Journal

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	Publication stage: Final

Table 5: Exclusion Criteria

Exclusion Criteria	Topics not related to AI affect tourist experience. An article that cannot be accessed by the authors.

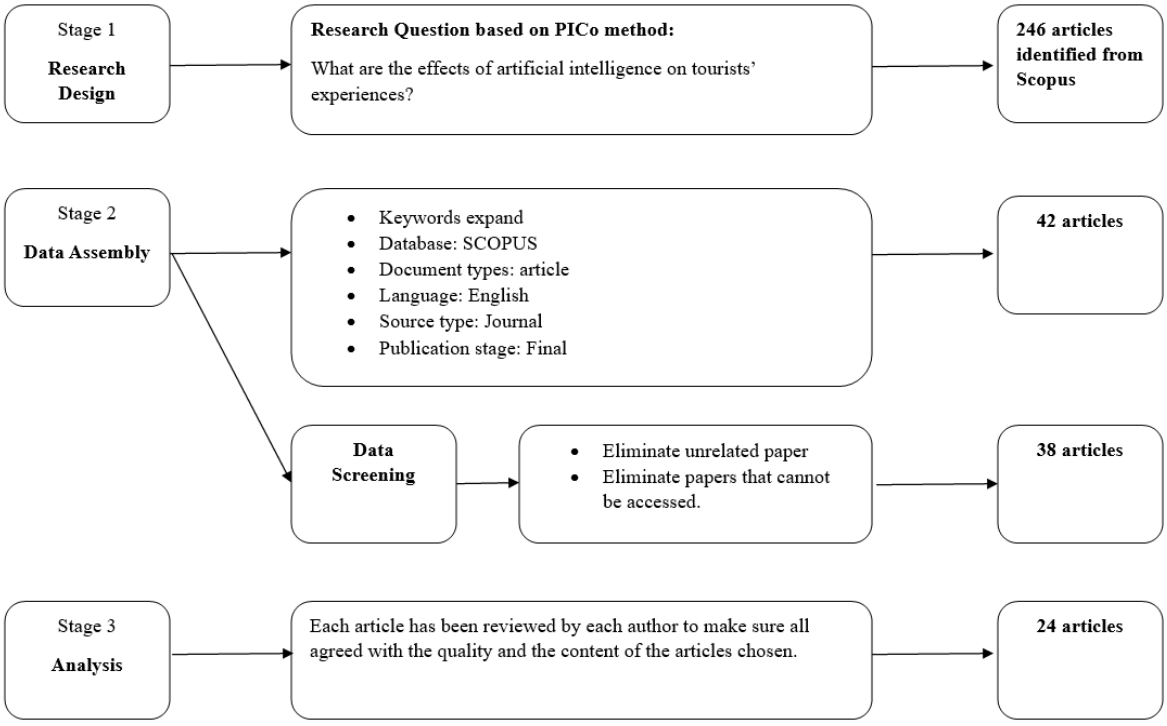

Figure 1: Technical Roadmap of The Systematic Literature Review Research
Source: (Wee et al, (2023))

Data Analysis

In this systematic literature review, a stringent analysis after the selection of articles was applied to meet a predefined research question. To ensure transparency and minimise potential bias of data extracted from the identification, screening, and eligibility stages, the researchers strictly followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines in this part of the review. This technique is particularly useful to conduct a transparent analysis of systematic literature review (Amin et al., 2022).

To ascertain the quality level of each selected article, the researchers employed a quality assessment (QA) framework comprising three main criteria:

- QA1: Have the review's inclusion and exclusion criteria for this study been clearly stated and understood by each researcher?

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- QA2: Does the literature found include all relevant studies related to the research topic?
- QA3: Do the selected articles clearly explain the effects of Artificial Intelligence on tourist experiences and provide a robust methodology for their findings?

Although no particular software was used to check for the quality of the included studies, the researchers carefully adhered to PRISMA guidelines to conduct a fair, transparent, and comprehensive analysis. A knowledge-based quality assessment (QA) was conducted using the predefined QA questions, applied to all selected studies as well as to related literature. This process was repeated over three cycles to ensure consistency, objectivity, and accuracy in evaluating both the methodological soundness and relevance of the research works included in this systematic review. This manual, yet structured approach allowed for a rigorous appraisal of the selected studies without the need to depend on additional software. As a result, the robustness and credibility of the findings of the review were maintained.

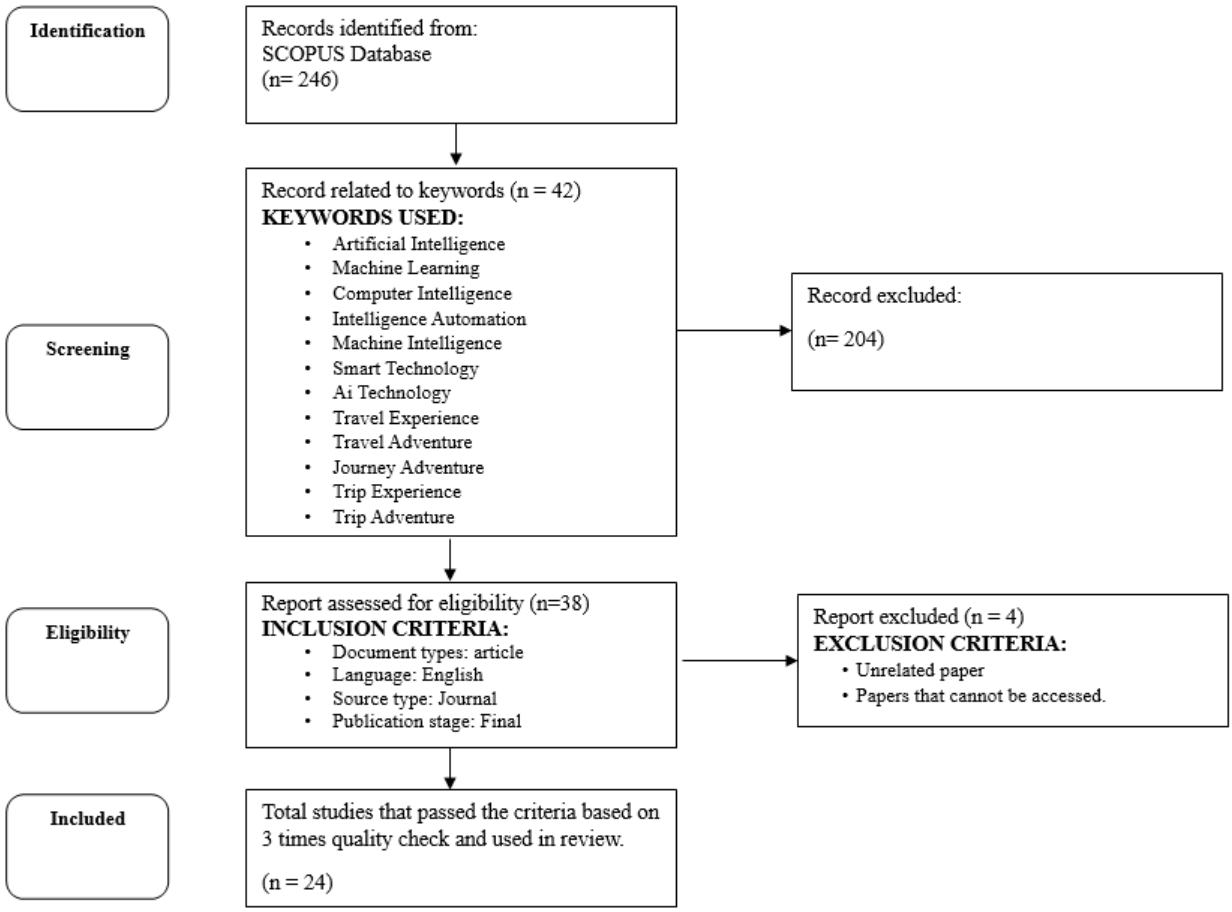

Figure 2. Data Collection and Selection Flow Diagram

Source: (Adopted from PRISMA (2020))

Table 6: List of Journal Rankings

Journal	Rank	SJR 2024	H-Index	Number of Articles
Journal of Hospitality and Tourism Management	Q1	2.158	85	1
Transportation Research Interdisciplinary Perspectives	Q1	1.010	56	1
Urban Science	Q1	0.618	29	1
Journal of Destination Marketing & Management	Q1	2.260	90	1

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DETUROPE	Q3	0.254	12	1
European Transport Research Review	Q1	1.105	50	1
International Journal of Computing and Digital Systems	Q3	0.231	19	1
Environment and Planning B: Urban Analytics and City Science	Q1	1.073	117	1
Decision Support Systems	Q1	2.366	192	1
Journal of Hospitality and Tourism Insights	Q1	1.134	33	1
International Journal of Sustainable Development and Planning	Q3	0.284	28	1
Information Technology and Tourism	Q1	1.604	46	1
International Journal of Hospitality Management	Q1	2.731	186	1
Geo-Spatial Information Science	Q1	1.326	49	1
Tourism Review	Q1	1.887	71	1
Sustainability (Switzerland)	Q1	0.688	207	3
International Journal of Tourism Research	Q1	1.355	90	1
Journal of Environmental Management and Tourism	(Discontinued in Scopus as of 2023)		25	1
ISPRS International Journal of Geo-Information	Q1	0.735	84	1
Data Technologies and Applications	Q2	0.540	37	1
Journal of Cases on Information Technology	Q3	0.294	22	1
International Journal of Human-Computer Interaction	Q1	1.175	100	1

Source: (Scimago (2025))

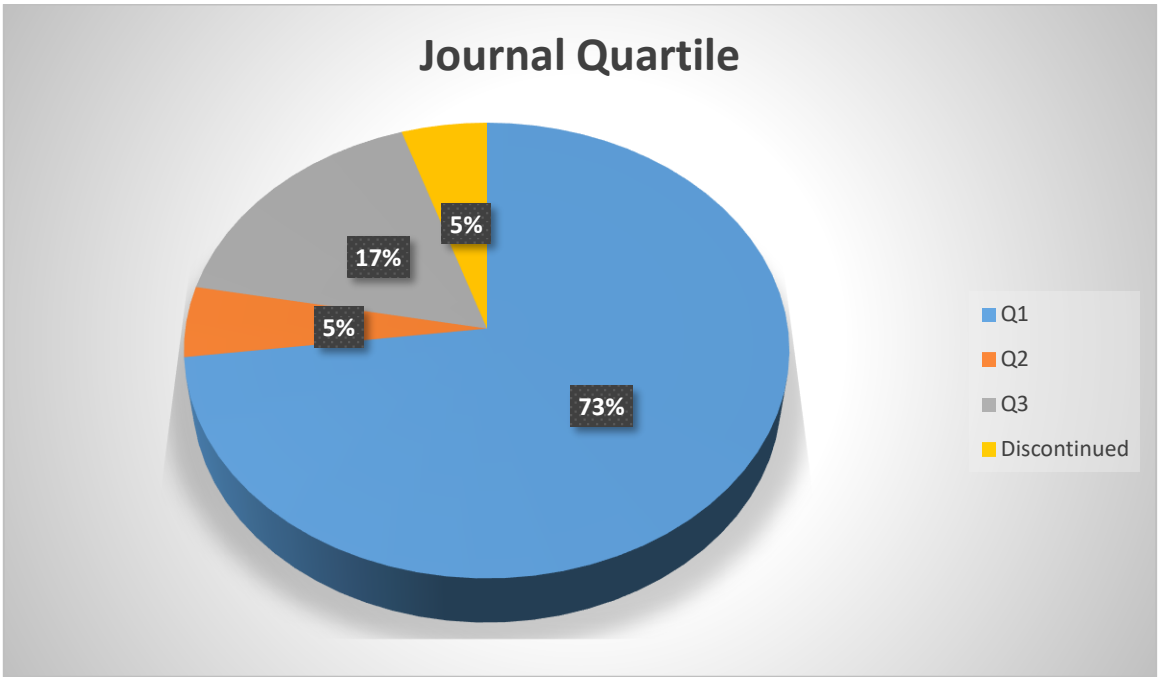

Figure 3. Data Collection and Selection Flow Diagram

Results and Discussions

The pervasive integration of Artificial Intelligence (AI) into the tourism sector marks a significant paradigm shift, offering both immense opportunities and complex challenges. This critical review synthesizes findings from 24 selected articles, categorized by key thematic areas, to provide a nuanced understanding of AI's multifaceted impact on tourist experiences and destination management.

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Table 7: Table of Findings

Title and Author	Journal	Key Findings	Limitations	Future Study
Peeking inside the minds of tourists using a novel web analytics approach Aggarwal & Gour (2020)	Journal of Hospitality and Tourism Management	AI-enabled analytics successfully identified nuanced tourists' sentiments and experience drivers from unstructured data. Identified key issues influencing tourist satisfaction, like cleanliness, safety, pricing, and services. Clustering of destinations by common dissatisfaction enables targeted interventions. AI facilitates real-time sentiment classification, allowing dynamic monitoring and faster response by stakeholders. Demonstrates AI's potential to transform unstructured user-generated content into actionable insights, enhancing tourist experience management	The sentiment lexicon is not exhaustive, potentially missing nuanced emotional expressions. Analysis focuses on a single destination; generalizability needs exploration. Reliant on online UGC, which could include bias or fake reviews. AI classification performance depends on the quality and representativeness of data.	Expand sentiment lexicons and AI models for better accuracy and context sensitivity. Apply the AI framework to diverse tourist destinations and experiential contexts (shopping, dining, entertainment). Utilize AI for real-time feedback monitoring to proactively improve tourist services. Explore deeper AI methods (e.g., deep learning, multimodal sentiment analysis) to capture richer emotional data. Investigate AI's impact on shaping tourists' expectations and behavioural patterns via personalized recommendations and virtual assistants.
Application of crowdsourced data to infer user satisfaction with mobility as a Service (MaaS) Aman & Smith-Colin (2022)	Transportation Research Interdisciplinary Perspectives	Public transit remains the backbone of MaaS; micromobility and ridesharing are less discussed. App-related features (maps, updates, technical issues) significantly affect user satisfaction. Fare issues contribute to dissatisfaction despite integrated payment systems. Gender differences in topics discussed: women focus more on Pass and Map features; men focus	Gender classification based on usernames is prone to errors; non-binary users are not captured. Lack of spatial data limits understanding of geographic differences in perceptions. Online reviews may not fully represent all user demographics or experience facets. Focused on MaaS apps; direct tourist experience not studied.	Use additional data sources (surveys, interviews) to validate and extend findings. Incorporate profile pictures or text-based gender classification methods to improve accuracy. Conduct spatio-temporal analysis to capture location-related perception variations. Analyse sentiment-topic associations using social media data like Tweets that

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		more on Map and Train. AI-driven text mining provides cost-effective and less biased insight compared to surveys/interviews.		lack direct satisfaction ratings. Include non-binary and broader gender identities in future studies. Apply these AI-driven text mining methods to study tourist experiences with mobility and other services to discern AI's impact on satisfaction and user attitudes.
Exploring cross-cultural disparities in tourists' perceived images: a text mining and sentiment analysis study using LDA and BERT-BILSTM models Chen, Liu, Jiang, & Xu (2024)	Data Technologies and Applications	AI models effectively identified nuanced cultural differences in perceived destination image. Chinese-speaking tourists emphasized family-oriented and cultural experiences. English-speaking tourists focused more on natural scenery and leisure. Sentiment analysis showed differing emotional responses to similar attractions.	Focused on a single destination (Xiamen), limiting generalizability. Language used as a proxy for culture may oversimplify cultural identity. AI models, while powerful, may miss subtle contextual meanings in text.	Apply the hybrid AI model to other destinations for broader insights. Explore deeper integration of AI in real-time tourist experience personalization. Investigate how AI-driven insights can inform culturally adaptive tourism marketing.
Measuring Destination Image through Travel Reviews in Search Engines Marine-Roig (2017)	Sustainability (Switzerland)	AI-enabled search engines organize and present vast tourism content, shaping the projected destination image that travellers perceive. UGC provides real-time, reliable, and unsolicited evaluations influencing tourists' affective and cognitive dimensions about destinations. Identification of critical managerial insights (e.g., tourist crowding problems detected via common complaints in OTRs). AI's role in filtering and summarizing tourist reviews	Not all OTRs are indexed by search engines, possibly biasing accessible content. The study focuses on English language reviews, limiting representation. Prescriptive (what should be done) or conative (behavioural intention) image components are beyond the study's scope.	Use regular expressions and advanced text mining (AI techniques) to extract deeper insights on attributes like identity, authenticity, sustainability, and smartness of destinations from reviews. Explore hierarchical geographic and service classifications to refine AI-based destination image analysis. Expand beyond frequency analysis to semantic and emotional analysis of UGC to capture richer tourist experiences.

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		enables more efficient travel planning and image measurement.		
Monitoring the well-being of vulnerable transit riders using machine learning based sentiment analysis and social media: Lessons from COVID-19 Tran, Draeger, Wang, Nikbakht (2022)	Environment and Planning B: Urban Analytics and City Science	Despite decreased ridership, about 20% continued using transit during the pandemic. Significant increase in negative sentiments (fear, sadness, anger) during COVID-19 waves, especially among vulnerable groups. Women reported higher fear and disgust levels; non-English speakers showed heightened behavioural responses. AI-enabled sentiment analysis revealed disparities in transit experiences linked to psychological stress and safety concerns. The methodology can detect reactions to non-pandemic transit events (e.g., strikes). Provides granular data beyond traditional ridership counts, revealing emotions and perceptions tied to transit use.	Social media data is biased towards users with mobile devices and Twitter accounts, excluding some demographics. Data may reflect subjective, memory-biased perceptions rather than real-time experiences. Validation limited by availability of ridership data; tweets not always geolocated or time-stamped relative to trips. Focused on one metropolitan area (Vancouver), limiting generalizability.	Integrate data from multiple social media platforms to reduce bias and improve coverage. Combine sentiment data with geolocation and real-time transit ridership data for more precise behavioural insights. Extend methodology to other cities and contexts, including tourist environments. Use AI sentiment analytics to inform targeted social-distancing and health communication strategies. Explore the impacts of AI tools on psychological well-being and travel experiences for various user groups, including tourists. Develop privacy-conscious data collection strategies to analyse real-time transit experiences.

The AI-based sentiment analysis has become a powerful method to recognize the subtle perception of tourists from large unstructured data sources, such as online reviews (Aggarwal & Gour, 2020). This approach enables the accurate identification of critical satisfaction drivers, including cleanliness, safety, pricing, and service quality, thus supporting data-informed destination management strategies (Aggarwal & Gour, 2020). Secondly, AI helps in the clustering of destinations according to common satisfactions, allowing stakeholders to design more targeted and efficient interventions (Aggarwal & Gour, 2020). AI-enabled text mining also presents a cost-effective and less biased alternative to conventional surveys or interviews (Aman & Smith-Colin, 2022). Although real-time sentiment classification capabilities are an important feature for tracking dynamics and engaging in immediate responses, limitations remain. One significant concern is the risk of potential bias and representativeness of online resources, which may not reflect all of every tourism demographic profile or experience fully (Aggarwal & Gour, 2020).

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In addition to a general sentiment, AI-based text mining and sentiment analysis using models such as Latent Dirichlet Allocation (LDA) and Bidirectional Encoder Representations from Transformers-Bidirectional Long Short-Term Memory (BERT-BILSTM) have uncovered cross-cultural variations in destination image perception. For example, family-oriented and cultural experiences are the focuses of the Chinese-speaking tourists, and natural scenery and relaxation are the focuses of the English-speaking tourists (Chen et al., 2024). Sentiment analysis also indicated different emotional reactions to the same attractions within different cultures (Chen et al., 2024). This emphasizes the need for culturally informed AI models even though it may be an oversimplification to use language as the single proxy for culture (Chen et al., 2024). Most importantly, User-Generated Content (UGC) is an important, real-time, credible, and voluntary feedback that shapes both the affective and cognitive aspects of the Destination Image (DI) (Marine-Roig, 2017). AI can effectively filter and summarize hundreds of thousands of these tourist reviews, which helps speed up travel planning and destination image measurement, thus directly influencing the perception of tourists and their choice of destinations (Marine-Roig, 2017).

In the urban transit context, AI-based sentiment analysis towards social media data has revealed inequalities in experienced transit based on mental stress and safety perception, especially regarding vulnerable groups' travel behaviour during events such as the COVID-19 pandemic (Tran et al., 2022). These findings highlight AI's potential for granular data on emotions and perceptions, beyond classic ridership numbers (Tran et al., 2022). However, social media data may have a strong demographic bias and may represent subjective or recall-biased impressions rather than contemporaneous experience, which may constrain the generalisability of the findings (Tran et al., 2022).

Finally, it can be concluded that AI-facilitated sentiment analysis has a significant influence on tourists as it gives a new dimension of understanding of their perceptions and satisfaction factors. The technology helps in pinpointing the factors that impact satisfaction, including quality of services and safety, and assists in this way the targeted destination management strategies (Aggarwal & Gour, 2020). In addition, the ability to explore intercultural variations in destination image (Chen et al., 2024) and emotional discrepancies with respect to urban transit experience (Tran et al., 2022) provides a perceptive insight into the cross-cutting tourist needs and vulnerabilities. AI text mining is more cost-efficient and less biased than traditional data collection methods (Aman & Smith-Colin, 2022), but the inherent limitations of online data sources, which include issues of biases, issues of representativeness, and the potential for oversimplifying complex cultural cues and behaviour, mean that AI benefits are transformative, yet not without caveats. As such, AI certainly has the potential to better enable understanding, anticipation, as well as responses with respect to multiple dimensions of tourists' experience, but such potential remains contingent on data quality, ethical implications, and the development of more advanced, context-aware models that can effectively capture the richness of human travel.

AI in Urban Mobility and Mobility as a Service (MaaS)

Table 8: Table of Findings

Title and Author	Journal	Key Findings	Limitations	Future Study
Application of crowdsourced data to infer user satisfaction	Transportation Research Interdisciplinary Perspectives	Public transit remains the backbone of MaaS; micromobility and	Gender classification based on usernames is prone to errors;	Use additional data sources (surveys, interviews) to

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with mobility as a Service (MaaS)		ridesharing are less discussed.	non-binary users are not captured.	validate and extend findings.
Aman & Smith-Colin (2022)		App-related features (maps, updates, technical issues) significantly affect user satisfaction. Fare issues contribute to dissatisfaction despite integrated payment systems. Gender differences in topics discussed: women focus more on Pass and Map features; men focus more on Map and Train. AI-driven text mining provides cost-effective and less biased insight compared to surveys/interviews.	Lack of spatial data limits understanding of geographic differences in perceptions. Online reviews may not fully represent all user demographics or experience facets. Focused on MaaS apps; direct tourist experience not studied.	Incorporate profile pictures or text-based gender classification methods to improve accuracy. Conduct spatio-temporal analysis to capture location-related perception variations. Analyse sentiment-topic associations using social media data like Tweets that lack direct satisfaction ratings. Include non-binary and broader gender identities in future studies. Apply these AI-driven text mining methods to study tourist experiences with mobility and other services to discern AI's impact on satisfaction and user attitudes.
Employing waterborne autonomous vehicles for museum visits: a case study in Amsterdam Rong, Tu, Duarte & Ratti (2020)	European Transport Research Review	Tourists significantly prefer boats over road transport for museum visits, and WAVs are preferred over traditional boats. WAV-based tours provide comparable travel efficiency despite slower boat speeds and offer flexible, customizable transit experiences. Combining AI-optimized WAV routes with museum visitation can improve tourist experiences and distribute visitors more evenly among museums.	Legal speed restrictions for boats limit WAV travel speeds, potentially affecting efficiency. Technology adoption challenges remain, including safety, regulatory, and infrastructural issues. The study focused on central Amsterdam and museums near canals, limiting generalizability. Survey sample size and self-selection bias may affect representativeness.	Extend WAV applications to other points of interest and expand to broader urban mobility contexts. Explore the integration of WAVs with land transport systems for multimodal tourism solutions. Further investigate policy, safety, and social acceptance issues around autonomous waterways. Use real-time data and AI improvements to enhance personalization and

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		Integration of online (social media) and offline data improves route optimization, aiding targeted tourism management. Accessibility and novelty of WAVs enhance tourists' travel experience, promoting wider cultural participation.		dynamic routing for tourists. Promote collaboration between museums and WAV operators to develop new tourist packages.
The Analysis and AI Simulation of Passenger Flows in an Airport Terminal: A Decision-Making Tool Anagnostopoulou, Tolikas, Spyrou, Akac & Kappatos (2024)	Sustainability (Switzerland)	AI-guided navigation (via mobile app) significantly reduced waiting times and crowding. Technology integration improved passenger satisfaction by optimizing flow and minimizing stress. Scenario with AI support achieved a 25% reduction in crowdedness and nearly optimal waiting time (48 mins avg).	Simulation-based; lacks real-world behavioural validation. Focused on airport terminals, findings may not generalize to broader tourism settings.	Apply the AI simulation model in real-world airport environments. Explore integration with other tourism touchpoints (e.g., hotels, attractions). Investigate long-term behavioral impacts of AI-guided travel experiences.

The role of AI in urban mobility and MaaS can be similarly observed in the cost-effective and less biased process to acquire user opinions compared to traditional data collection methods (Aman & Smith-Colin, 2022). Among the app-related features, elements such as maps, updates, and technical performance have a considerable impact on the satisfaction of users on MaaS platforms (Aman & Smith-Colin, 2022). However, persistent challenges remain, particularly regarding fare-related frustrations in the context of public transport combined with the complexity of integrated payment systems. While AI-enabled technologies, such as natural language processing (NLP), can support aspects of user interaction and service automation, they are insufficient in isolation to resolve these issues. Redesigning pricing mechanisms and doing more in-depth analyses of public opinion beyond sentiment may be necessary to address such issues more comprehensively (Aman & Smith-Colin, 2022). Moreover, gender disparities in topic coverage, such as women discussing "Pass" and "Map" features, men discussing "Map" and "Train" features, further underscore the importance of AI applications having more customized interfaces for different users' needs (Aman & Smith-Colin, 2022).

Beyond the scope of the traditional travel technology, AI-optimized Waterborne Autonomous Vehicles (WAVs) have been investigated to provide intelligent museum visiting, with tourists exhibiting a strong preference for WAV over traditional boats and road transportation for cultural tours (Rong et al., 2020). Tourism efficiency of the WAV-based tour is similar to that of other tours, even under slower speeds, allowing for variations and customization of cruise routes that enhance tourists' experience, and enable a better distribution of visitors among

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museums (Rong et al., 2020). Nevertheless, several challenges remain that include the constraint on speed, technological challenges on deployment such as safety and regulation, and the intractable computational complexity with large-scale data (Rong et al., 2020). In addition, AI simulation tools have proven effective in optimizing passenger flow in complex spaces such as airport terminals, leading to significant improvements in waiting time and crowd control (Anagnostopoulou et al., 2024). Such technology integration enhances passenger experience through stress reduction and flow optimization and AI assistance to bring about substantial reductions in crowdedness and almost optimal waiting times under a simulated environment (Anagnostopoulou et al., 2024).

To conclude, the application of AI in urban mobility and Mobility as a Service (MaaS) has a deep impact on the tourists' experience, promoting more efficient and user-centred travel. AI's potential for reducing the cost of less biased opinion extraction is relevant to the direct enhancement of app features such as maps and technical functionalities, leading to user satisfaction (Aman & Smith-Colin, 2022). The identification of gender-sensitive preferences cements the potential of AI for enabling more customized and all-encompassing mobility offerings that can be tailored more directly to various tourist needs (Aman & Smith-Colin, 2022). Beyond traditional transit systems, innovations such as AI-optimized Waterborne Autonomous Vehicles (WAVs) illustrate how AI can bring new, affordable, and tailored cultural exploration practices and experiences to the outside of the museum and distribute the visitors more efficiently (Rong et al., 2020). Despite these advancements, persistent issues remain. Ongoing fare-related dissatisfaction (Aman & Smith-Colin, 2022) and practical challenges for WAVs, including legal barriers, take-up, and its computational issues (Rong et al., 2020), both signify that AI effects upon tourist mobility are significantly positive but ultimately limited by wider system-level, regulatory, and technology concerns that reach beyond algorithmic agency alone.

AI for Personalized Travel Planning and Recommendations

Table 9: Table of Findings

Title and Author	Journal	Key Findings	Limitations	Future Study
The Role of Artificial Intelligence in Shaping the Future of Travel Industry: An Expert Analysis of Artificial Intelligence-Generated Travel Itineraries Štilić, Puška, Nicić, (2024)	DETUROPE	The majority of experts find AITIs acceptable, with high satisfaction on itinerary organization and activities suggested. Experts emphasized the need for more personalized, culturally rich information to enhance the travel experience. Identified challenges include ethical concerns (privacy, bias), external factors (geopolitical events, crowds), and potential over-reliance on AI. AI-driven itineraries can improve efficiency,	Research primarily relies on expert evaluations; user/tourist evaluations are yet to be explored. Challenges in addressing real-world complexities such as geopolitical crises and data privacy issues. Need for improved personalization and richer cultural content in AI-generated outputs.	Develop comprehensive AI training programs for travel agents to improve collaboration with AI tools. Address ethical issues rigorously, including GDPR compliance, data security, and algorithmic bias. Enhance AI data processing capabilities to better respond to external events impacting tourism. Expand research from expert to

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		cost-effectiveness, and sustainability in travel planning. Predicted that AI could generate up to 99% of travel itineraries in the near future, shifting travel agents' roles towards AI collaboration and digital literacy. Integration of AI supports SDGs by driving innovation, sustainable tourism, and ethical standards.		tourist-focused evaluations to capture actual user experiences and satisfaction. Foster multi-stakeholder cooperation involving policymakers, technologists, and industry players to optimize AI's role in tourism.
Spatio-temporal intention learning for recommendation of next point-of-interest Li, Yue, Li, Zhang & Yang (2024)	Geo-Spatial Information Science	STILSAN significantly outperformed state-of-the-art models in next POI recommendation accuracy. Explicitly modeling revisiting intentions and spatial proximity led to more accurate and user-relevant recommendations. The model successfully captured both the tendency of tourists to revisit familiar places and their interest in exploring new locations, improving the overall tourist experience.	Increased computational cost due to embedding learning for each POI position. Balancing model training cost with effective spatial feature modeling remains a challenge.	Explore more efficient spatial embedding techniques to reduce computational overhead. Extend the model to other recommendation scenarios beyond tourism. Further investigate how different types of tourist behaviours (e.g., spontaneous vs. planned revisits) can be better captured and leveraged in AI-driven recommendation systems.
Toward a New Similarity Measure Based on Combining Tourist Check-ins and Their Trip Path for a Point-of-Interest Recommendations in an LBSN Bettache & Dennouni (2025)	International Journal of Computing and Digital Systems	SPPUR similarity measure significantly improves POI recommendation accuracy compared to traditional approaches. Incorporation of geographical proximity and user trip paths enhances the relevance of recommendations. The optimal number of neighbour users is critical; increasing neighbours beyond a threshold degrades the recommendation quality. Limitations include computational	Based on the TF-IDF technique adapted from text mining to user check-in paths and POI frequentation. Collaborative Filtering framework employing user-based similarity enhanced with spatial and path information.	High computational complexity and difficulty scaling to large datasets. Potential biases from historical check-in behaviour. The cold-start problem remains partially unresolved. Evaluation limited to offline datasets without online user feedback.

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		complexity, scalability challenges, and the cold-start problem.		
Building a Machine Learning Algorithm-Based Model to Suggest Tourist Attractions in Response to Travelers' "Slow Life" Requirements Li (2025)	Journal of Cases on Information Technology	The ML-based system outperformed traditional algorithms by 18% in effectiveness. Enhanced user satisfaction through customized travel routes catering to slow living. Improved recommendation accuracy, recall, and F1 scores—highlighting AI's role in enriching the user's tourism experience.	Algorithm performance may degrade with demographic data sparsity or cold starts. Current frameworks lack real-time adaptation to shifting tourist preferences or external conditions (e.g., weather, availability).	Integrate situational awareness (e.g., time, climate, user sentiment) into recommendation logic. Explore gender-aware and image-based tourist modeling for deeper personalization. Extend models to consider emotional satisfaction and real-time feedback loops to optimize tourists' digital engagement.
A computer vision-based concept model to recommend domestic overseas-like travel experiences: A design science study Trieu, Vu, Indulska & Li (2024)	Decision Support Systems	The system effectively recommends domestic locations presenting overseas-like travel experiences by analysing photo visual content rather than relying on travel histories or textual labels. Recommendations aid travel decision-making by offering new exotic experiences domestically, saving time and money. All focus group participants agreed that recommendations made their travel planning more effective and appropriate to their interests. The artefact enhances the discovery of travel experiences that would otherwise be difficult to find via traditional search engines or prior RS.	Limited to visual elements (architecture, scenery) detected from photos; other sensory or experiential features (local customs, cuisine, language) not captured. Reliance on Flickr photos may limit comprehensiveness; other photo-sharing platforms are recommended for future use. The prototype system has not been fully implemented online yet; tested only in controlled focus groups.	Extend testing to diverse countries and traveller profiles to adapt to cultural differences in travel preferences. Implement a fully operational online system with route planning and itinerary features integrated. Incorporate more diverse travel experience types beyond sightseeing (e.g., dining, shopping). Use multiple photo platforms and richer data sources for better coverage and personalization.
Smart Tour Route Planning Algorithm Based on Naïve Bayes Interest Data Mining Machine Learning Zhou, Su, Liu, Hu, Sun & Feng (2020)	ISPRS International Journal of Geo-Information	The AI-based system accurately identifies tourist interest tendencies. Generated tour routes closely match tourist preferences, budgets,	Relies heavily on data quality and quantity from tourism platforms. May not account for spontaneous behaviours or	Expand model validation to real-world user studies or diverse geographic settings. Integrate real-time environmental data

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		and accommodation proximity. Tourists experience improved satisfaction and travel efficiency. AI enables smarter decision-making and real-time customization, enhancing the overall experience.	unstructured experiences. Context limited to urban tourism and a single-city case.	(e.g., weather, traffic). Explore more advanced machine learning models (e.g., deep learning) to improve personalization. Consider emotional or experiential factors beyond logistical optimization.
ChatGPT and Tourist Decision-Making: An Accessibility–Diagnosticity Theory Perspective Stergiou & Nella (2024)	International Journal of Tourism Research	ChatGPT enhances pre-trip experiences by improving access to tailored, relevant travel info. Emerged themes: • Tailored Engagement & Accessibility: Users feel content is personally relevant. • Diagnosticity of Information: Helps distinguish options effectively. Contextual Variation: Advice is nuanced based on the travel scenario. ChatGPT acts as a user-centric advisor, improving decision-making satisfaction.	Based solely on ChatGPT-3.5 (not the latest versions). Limited to text-based scenarios; lacks actual tourist behavioural validation. Potential algorithmic bias and over-reliance on a single tool.	Explore multi-platform AI (e.g. voice assistants, visual AIs) across tourist experiences. Conduct empirical studies with tourists to validate AI's impact. Examine post-trip engagement and long-term experience shaping via AI tools.
Empirical Approaches Regarding Interdependency between Technology and Sustainable Tourism Nicola-Gavrilă (2023)	Journal of Environmental Management and Tourism	AI enables personalized tourist experiences via real-time service, recommendation systems, and smart interfaces. Agent-based modeling supported by AI helps simulate tourist decision-making and behavioural outcomes. AI integration improves destination sustainability by optimizing tourist flows and reducing environmental impact. Virtual and augmented reality tools (AI-enhanced) offer	Tech solutions, including AI, may widen the digital divide among destinations and travelers. Ethical concerns: data privacy, algorithmic bias, and over-reliance on automation. Lack of empirical data on the long-term impacts of AI on tourist satisfaction and authenticity.	Examine tourists' perception of AI-enabled services in different cultural contexts. Investigate AI's role in balancing personalization with authenticity in experiences. Develop socio-technical frameworks that integrate AI into community-based tourism. Need for real-time field studies to evaluate AI's effect on decision-making,

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immersive, low-impact alternatives to physical visits.	trust, and repeat visitation.

An important trend discussed in the recent literature is the changes brought by AI to personalized travel planning and recommendations. AI-based itinerary generators (AITGs) are widely acknowledged by the experts, who report high levels of satisfaction in terms of itinerary planning and recommended activities (Štilić et al., 2024). The experts also stress the necessity of even more personalized and culturally deep information provision to make the travel experience even better, predicting that up to 99% of travel schedules may soon be compiled by AI, possibly dislocating travel agents more and more towards AI-assistance and digital literacy (Štilić et al., 2024). However, this vision is constrained by the reliance on expert-based assessment over experiences by users/tourists themselves, as well as the ongoing need to address issues related to ethics, such as privacy, bias, external factors such as geopolitical events, and the risk of dependence on AI (Štilić et al., 2024).

New models such as the Spatio-Temporal Intention Learning Self-Attention Network (STILSAN) obtain considerable improvement in Point-of-Interest (POI) recommendation accuracy concerning user interest and revisit intention, as well as capturing spatial clustering features (Li et al., 2024). The SPPUR similarity measure, exploiting geographical vicinity and users' trip paths, notably improves the relevancy of POI recommendations as compared to classical approaches (Bettache & Dennouni, 2025). Notably, the number of neighbouring users is an important factor as the increase of the number beyond a limit may deteriorate the quality of recommendation (Bettache & Dennouni, 2025). In another approach, an ML-based model tailored to recommend tourist sights according to a "slow life" approach showed better performance than traditional algorithms in terms of accuracy, recall, and F1 score (Li, 2025). These findings demonstrate AI's ability to be able cater to more niche styles of travel and enhance the user's tourism experience. Yet, such sophisticated methods suffer from the issues of computational complexity, scalability, and the existing 'cold-start problem' where new users or POIs cannot be immediately matched due to the rigid data structure, not to mention the absence of real-time updates of tourists' requirements or changes in the outside environment (Bettache & Dennouni, 2025; Li, 2025).

According to Trieu et al (2024), AI-based recommendation systems can efficiently discover destinations within the country that present "overseas-like" travel opportunities in terms of photo visual content, offering new and cheaper sources of travel decision support that are not based on previous travel records. In their study, focus group participants consistently found these recommendations to enhance travel planning effectiveness (Trieu et al., 2024). However, these systems are mainly confined to visual aspects such as architecture and scenery, and they do not capture other sensory or experiential aspects such as the local customs or food. The dependence on platforms such as Flickr also limits the completeness of the results (Trieu et al., 2024). In addition, AI-based smart tour route planning algorithms with so-called machine learning methods, such as Naïve Bayes, intend to optimize tour routes based on tourists' interests, which in turn could facilitate a personalized tourism experience (Zhou et al., 2020). Pre-trip experiences can also be greatly improved using ChatGPT by providing tailored and pertinent travel information, enabling personalized interaction, and providing diagnostic information to differentiate travel alternatives effectively (Stergiou & Nella, 2024). However, many studies on the effect of ChatGPT mainly conduct simulated questions instead of conversing with a real person, failing to fully understand its long-term effect on tourist

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satisfaction as well as trust (Stergiou & Nella, 2024). Furthermore, AI-powered chatbots and virtual assistants are able to enhance the efficiency of customer service through rapid response and managing routine duties, resulting in a higher level of customer satisfaction as they are available the entire day, solving issues promptly (Nicola-Gavrila, 2023). Customization provided by these AI techniques also intensifies user engagement and confidence, besides decreasing operational costs for travel entities (Nicola-Gavrila, 2023).

Finally, the groundbreaking shift from robot-like to personalized travel planning and recommendations promises to transform the way tourists enjoy the travel lifestyle, providing them with unprecedented relevance and efficiency. Tools such as AITIs in particular have been well-regarded for their organisational support and activity planning with a vision to automate travel planning with AI, completing the travel planning up to thousands of destination activities, therefore enriching the pre-travel phase of the tourist processional journey (Štilić et al., 2024). Meanwhile, novel deep learning structures, including STILSAN, and similarity metrics such as SPPUR, provide precise Point-of-Interest (POI) recommendations, making them more targeted and reliable by accounting for user likings, revisits, and spatial closeness (Li et al., 2024; Bettache & Dennouni, 2025). Furthermore, the AI's capacity to discover novel overseas-like domestic experiences (Trieu et al., 2024) and optimal tour routes with PMIs (Trieu et al., 2024), tailored to individual tourists in mind (Zhou et al., 2020), satisfy tourists' needs for novelty and customization. ChatGPT further assists by conveying contextualised data and enhancing a user's informed exploration, enhancing the accessibility and diagnostic of travel options (Stergiou & Nella, 2024). Yet, this deep, transformative impact on the tourism experience is counterbalanced by serious challenges such as an overreliance upon professional opinion at the expense of user-generated reviews, persistent ethical concerns over privacy and bias, computational complexity in employing advanced models, and the cold-start problem for new users (Štilić et al., 2024; Bettache & Dennouni, 2025). As such, given the shortfalls of visual only systems alone (Trieu et al., 2024), and the call for more interaction data from the world for generative AI processes (Stergiou & Nella, 2024), while AI underpins and frequently enhances the tourism experience in a radical form and fashion, maintaining its imagination, involves the utmost focus on a user centric approach, consideration of ethical debiasing and full knowledge integration that enables tourism-domain wide progress to be made.

AI and Sustainable Tourism/Smart Destinations (Broader Impact)

Table 10: Table of Findings

Title and Author	Journal	Key Findings	Limitations	Future Study
A Cultural Route Recommendation Based on Optimization Techniques in Urban Spaces Öztürk, & Aktan (2024)	International Journal of Sustainable Development and Planning	AI-driven route optimization can personalize tourists' experiences by tailoring routes according to individual preferences, time, and budget constraints. Improved ACO algorithm enhances route planning by minimizing travel time and cost, while maximizing the	Challenges dealing with dynamic variables such as traffic, weather, and sudden disruptions in urban routes. Data privacy and security concerns related to collecting user location and preference data. Technical issues regarding cross-platform	Further exploration of advanced technologies like virtual reality, augmented reality, and AI to enrich tourist experiences. Enhance international collaboration to improve the dissemination and development of AI applications in cultural tourism.

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		number of sites visited. Digital tools incorporating AI can mitigate the time-consuming process of itinerary planning, making cultural tourism more accessible and engaging. Integration of AI supports sustainable urban tourism by promoting efficient cultural heritage management.	compatibility of AI applications.	Address privacy, security, and technical challenges for broader adoption. Research the alignment of cultural route planning with local economic development goals to benefit host communities sustainably.
The Future Is in Sustainable Urban Tourism: Technological Innovations, Emerging Mobility Systems, and Their Role in Shaping Smart Cities Vujko, Knezevix, Arsic (2025)	Urban Science	AI-driven digital tools (mobile apps, virtual tours, smart exhibits) significantly improve interactivity, personalization, and immersion in tourist experiences. Real-time data access (via AI-enhanced apps) leads to more convenient, efficient, and less stressful travel. AI contributes to sustainability by enabling smarter mobility systems (e.g., optimized routing, eco-friendly transport solutions) and waste management. Smart digital infrastructure powered by AI enhances tourist satisfaction through personalized content and seamless services. Integration of AI and smart technologies supports safety, accessibility, and comfort for tourists.	Sample bias due to questionnaire distribution mainly in hotels, potentially excluding tourists using alternative accommodation (e.g., Airbnb). Findings are primarily based on European smart cities; transferability requires context-specific adjustments, especially for Serbian cities. Technological adoption differences influenced by cultural, infrastructural context are not fully resolved.	Tailor smart tourism strategies incorporating AI to local cultural and infrastructural contexts, particularly in Serbian cities. Address digital divide issues to ensure inclusive access to AI-driven tourism solutions. Further research on the cross-cultural applicability of AI-enabled smart tourism tools. Explore deeper integration of AI in enhancing sustainability and resilience in urban tourism ecosystems.
Augmenting Emerging Hospitality Services: A Playful Immersive	International Journal of Human-Computer Interaction	360° VR enhanced user immersion,	Small sample size (n=15) limits generalizability.	Expand studies with larger, more diverse participant pools.

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Experience to Foster Interactions among Locals and Visitors Prandi, Nisi, Ceccarini & Nunes (2023)		engagement, and playfulness. Immersive interactions fostered a greater sense of authenticity and connectedness with locals. The use of AI-enabled 360° VR created emotionally engaging and aesthetically pleasing tourism experiences.	Short-term, controlled settings may not reflect real-world tourism dynamics. Focused primarily on the visitor-side only, less on the hosts' experience.	Explore real-time interaction with locals via AI-driven platforms. Investigate the long-term impact of immersive AI tools on travel satisfaction and destination loyalty. Examine host perspectives to complete the picture of AI-mediated exchanges.
The Role of Digital Tourism Platforms in Advancing Sustainable Development Goals in the Industry 4.0 Era Zeqiri, Youssef & Zahar (2025)	Sustainability (Switzerland)	AI-driven personalization enhances tourist satisfaction through tailored recommendations and seamless booking. AI-powered pricing and automation improve operational efficiency but increase dependency on dominant platforms. AI contributes to sustainability by optimizing travel routes and reducing resource waste. Risks include algorithmic bias, data privacy concerns, and exclusion of SMEs from AI benefits.	Conceptual only; lacks empirical validation. May oversimplify complex tourism contexts. Needs contextual testing across diverse tourism settings.	Empirical studies to validate the conceptual framework. Investigate AI's impact on tourist emotions, trust, and post-travel behavior. Explore governance models to ensure equitable AI access for SMEs and marginalized groups.
ChatGPT and Tourist Decision-Making: An Accessibility–Diagnosticity Theory Perspective Stergiou & Nella (2024)	International Journal of Tourism Research	ChatGPT enhances pre-trip experiences by improving access to tailored, relevant travel info. Emerged themes: • Tailored Engagement & Accessibility: Users feel content is personally relevant. • Diagnosticity of Information: Helps distinguish	Based solely on ChatGPT-3.5 (not the latest versions). Limited to text-based scenarios; lacks actual tourist behavioural validation. Potential algorithmic bias and over-reliance on a single tool.	Explore multi-platform AI (e.g. voice assistants, visual AIs) across tourist experiences. Conduct empirical studies with tourists to validate AI's impact. Examine post-trip engagement and long-term experience shaping via AI tools.

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		options effectively. Contextual Variation: Advice is nuanced based on the travel scenario. ChatGPT acts as a user-centric advisor, improving decision-making satisfaction.		
Technological evolution in tourism: a Horizon 2050 perspective Chon & Hao (2025)	Tourism Review	AI enhances personalization through chatbots, virtual assistants, and recommender systems. AI-driven platforms improve customer service and streamline travel planning. AI enables immersive experiences via VR/AR and metaverse applications. AI supports smart destinations with real-time data for seamless tourist experiences. AI contributes to sustainability by optimizing resource use and reducing environmental impact. AI empowers inclusive tourism (e.g., assistive tech for disabled travelers).	Conceptual nature—no empirical validation. A broad scope may limit depth on specific AI applications. Future projections are speculative and context-dependent.	Empirical studies on AI's psychological and emotional effects on tourist satisfaction. Exploration of ethical implications of AI in tourism (e.g., data privacy, algorithmic bias). Development of frameworks for AI integration in sustainable tourism strategies. Investigate AI's role in enhancing cultural authenticity and local engagement.

AI plays a pivotal role in advancing sustainable urban tourism by improving the management of cultural heritage, optimising cultural route planning, and increasing both time and budget efficiency of tourism (Öztürk & Aktan, 2024). The general intelligence is accompanied by the use case of smart city tourism, consolidating efficiency, digital engagement, and sustainability, allowing easier, faster, and less stressful travel through the access to real-time data and personalized content (Vujko et al., 2025). AI can also contribute to sustainability by fostering smarter mobility systems such as improved routing, eco-friendly transportation solutions, and waste management (Vujko et al., 2025). AI-based platforms further support effective resource allocation, such as energy and waste, smart mobility, and customized services, positively affecting urban sustainability and improving the experiences of tourists by providing real-time

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information and a seamless interaction within the smart destination environment (Prandi et al., 2023).

Within the broader framework of Industry 4.0, AI influences not only sustainability but also market structures in tourism, while enhancing tourist experiences and formulating governance challenges associated with new market dynamics (Zeqiri et al., 2025). AI also assists smart destinations with real-time data to ensure seamless tourist experiences, contributes to sustainability through the optimization of resource and usage consumption, and promotes inclusive tourism, such as assistive technologies for disabled travelers (Zeqiri et al., 2025). In addition, virtual and augmented reality technologies (VR/AR), frequently enhanced with AI, provide low-impact solutions with more immersive experiences than physical visits (Stergiou & Nella, 2024). These AI-driven personalized content and interactive experiences (e.g., AR/VR tours, smart exhibits) enhance emotional engagement and create more memorable tourist experiences, while facilitating seamless navigation and real-time information to reduce stress and improve enjoyment (Chon & Hao, 2025). Despite these promising developments, there is also a lack of empirical data on the long-term impacts of AI on tourist satisfaction and authenticity (Stergiou & Nella, 2024; Chon & Hao, 2025).

In conclusion, AI's profound role in sustainable urban tourism and smart destinations significantly enhances various facets of the tourist experience. By optimizing cultural heritage management and routes, AI improves efficiency in time and budget for tourists, leading to a more convenient and less stressful journey (Öztürk & Aktan, 2024; Vujko et al., 2025). Its support for smarter mobility systems, waste management, and real-time data access and other impacts in a direct manner enables more seamless, personalized, and environmentally-friendly travel, thus influencing interaction between tourists and destinations positively (Vujko et al., 2025; Zeqiri et al., 2025). Moreover, AI-supported virtual and augmented-reality tools provide immersive substrate-free experiences, increasing access to cultural/media experiences (Stergiou & Nella, 2024). Nevertheless, although AI undoubtedly enhances efficiency and the digital visitor experience, a closer look underscores that some of these benefits are mainly theoretical as they are not empirically validated, and substantial implementation, operational, and security issues still constrain AI deployment at scale. Importantly, the limited empirical evidence regarding AI's long-term effects on tourist satisfaction and perceived authenticity (Stergiou & Nella, 2024) suggests the need for a comprehensive, critical investigation. While AI transforms the mechanisms of tourism, its deeper and more enduring effects on the quality and nature of the tourist experiences remain insufficiently understood.

Tourist Acceptance, Barriers, and Ethical Considerations of AI

Table 11: Table of Findings

Title and Author	Journal	Key Findings	Limitations	Future Study
Tourists' willingness to contribute to smart tourism: a construal level theory perspective Sun & Sano (2024)	Journal of Hospitality and Tourism Insights	Tourists' willingness to share personal info and use smart technology (like AI applications in tourism) increases significantly when spatial distance aligns with the framing of information and their value orientation.	Sample limited to China, affecting generalizability to other cultures or regions. Focused mainly on willingness to share data and use technologies, not on actual usage or experiential outcomes	Call for studies with broader, more diverse populations to validate findings cross-culturally. Suggest exploring tourists' actual experiential impacts of AI in smart tourism beyond intention measures.

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		Gain-framed messages work better when the spatial distance is far; loss-framed messages are more effective when the spatial distance is near. Tourists with altruistic values respond better to gain-framed messages based on near spatial distance, while egoistic values respond more to loss-framed messages in far spatial contexts. Perceived risk and concreteness of the destination due to spatial distance affect tourists' acceptance of AI-enabled smart technologies.	with AI. Did not specifically isolate AI effects, but included within broader "smart technology" concepts.	Recommend deeper examination of value co-creation behaviours and market segmentation in smart tourism with AI.
Understanding tourist barriers and personality influences in embracing generative AI for travel planning and decision-making Seyfi, Kim, Nazifi, Murdy, Vo-Thanh (2025)	International Journal of Hospitality Management	Personality traits significantly affect tourists' reluctance to adopt GAI for travel planning. Tourists high in openness are more likely to embrace GAI, while those high in neuroticism show greater resistance due to risk sensitivity. Functional barriers (concerns about usefulness, ease of use, reliability) are key to resistance. GAI enhances travel experiences by enabling personalized recommendations, real-time assistance, and improved engagement across all travel stages (pre-trip, during trip, post-trip). Despite benefits, concerns about content authenticity, privacy, and	Focuses only on functional barriers, not psychological barriers (e.g., loss of human interaction, perceived image). Survey limited to travelers in the US and Korea, which may affect generalizability to other cultural contexts. A cross-sectional survey limits the ability to assess changes over time.	Develop targeted marketing and user interface designs based on personality-driven preferences. Address consumer concerns with enhanced privacy features and human-like AI interactions. Future research should explore psychological barriers and expand to other cultural contexts. Longitudinal studies are recommended to examine changes in adoption and resistance over time.

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		trustworthiness persist.		
Attitudes towards machine translation and languages among travelers Carvalho, Ramires, & Iglesias (2023)	Information Technology and Tourism	Younger, less educated individuals with poorer language skills and higher valuation of English as lingua franca have more positive attitudes towards MT. Language tourists who rated MT as less important had higher foreign language fluency, engaged more in cultural activities, and had closer local contacts during trips. Use of MT does not negatively impact positive attitudes toward language roles or travel enjoyment. MT is seen as facilitating travel, but it did not play a major role in the most significant language trips for many language tourists. Neural MT advancements (post-2016) improved usability and possibly influenced younger travelers' appreciation of MT	A convenience sample restricts generalizability. Lack of data for respondents not engaged in language tourism limits conclusions about the general tourist experience with MT. The absence of a prior theory to formulate hypotheses limited the study design. Data sensitivity prevents open access, limiting replication.	Further studies should address general tourists beyond language tourism to explore MT's wider impact. Investigate how MT affects human interaction and cultural engagement during travel, is it transactional or immersive? Research how service providers utilize MT in both verbal and written communication. Technology developers should consider adapting MT tools to individual tourists' communicative needs, minority languages, diverse accents, and accessibility concerns. Focus on privacy, reliability, and user-friendliness to improve travel experiences with AI-supported MT.
The Role of Artificial Intelligence in Shaping the Future of Travel Industry: An Expert Analysis of Artificial Intelligence-Generated Travel Itineraries Štilić, Puška, Nicić, (2024)	DETUROPE	The majority of experts find AITIs acceptable, with high satisfaction with itinerary organization and activities suggested. Experts emphasized the need for more personalized, culturally rich information to enhance the travel experience. Identified challenges include ethical concerns (privacy, bias), external factors (geopolitical events,	Research primarily relies on expert evaluations; user/tourist evaluations are yet to be explored. Challenges in addressing real-world complexities such as geopolitical crises and data privacy issues. Need for improved personalization and richer cultural content in AI-generated outputs.	Develop comprehensive AI training programs for travel agents to improve collaboration with AI tools. Address ethical issues rigorously, including GDPR compliance, data security, and algorithmic bias. Enhance AI data processing capabilities to better respond to external events impacting tourism.

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		crowds), and potential over-reliance on AI. AI-driven itineraries can improve efficiency, cost-effectiveness, and sustainability in travel planning. Predicted that AI could generate up to 99% of travel itineraries in the near future, shifting travel agents' roles towards AI collaboration and digital literacy. Integration of AI supports SDGs by driving innovation, sustainable tourism, and ethical standards.		Expand research from expert to tourist-focused evaluations to capture actual user experiences and satisfaction. Foster multi-stakeholder cooperation involving policymakers, technologists, and industry players to optimize AI's role in tourism.
The role of technology in enhancing the tourism experience in smart destinations: A meta-analysis Sustacha, Baños-Pino, Eduardo Del Valle (2023)	Journal of Destination Marketing and Management	Positive overall effect of smart technologies on tourism experience, with informativeness (quality and relevance of information) and interactivity (user engagement with technology) as the strongest contributors. Security and privacy concerns negatively affect the tourism experience. AI-powered features can enhance informativeness and interactivity by personalizing content and facilitating real-time responses (implied through included technologies like chatbots, augmented reality). ICT readiness moderates the strength of the relationship; places with higher readiness see stronger positive effects from smart technologies.	Potential publication bias and variability in study designs and context among analysed studies. Lack of granular data isolating AI explicitly from other smart technologies in some included studies. Security and privacy concerns require deeper exploration specific to AI applications. The majority of studies focus on positive impacts, with less on negative or unintended consequences such as alienation or authenticity loss.	Further studies explicitly isolating AI's unique contributions to tourist experience, beyond generic smart technology. Exploring how AI-driven personalization and real-time interaction influence emotional and behavioural outcomes of tourists. Investigations into mitigating security/privacy risks specific to AI systems. Cross-country comparisons in light of varying ICT readiness and digital inclusiveness. Research addressing ethical considerations and balancing technology use with authenticity in the tourism experience.

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Despite the notable benefits of AI in tourism, tourist acceptance and the ethical implications of AI remain critical areas of concern. Research shows that tourists are much more willing to disclose their personal information and use AI applications when the spatial distance matches the information framing and their value orientation (Sun & Sano, 2024). Messages can be more effective in the distant spatial context with gain framing more effective and in the near with loss-framing (Sun & Sano, 2024). Similarly, perceived risk and the concreteness of the destination through spatial distance influence tourists' adoption of AI-driven smart technologies (Sun & Sano, 2024). Yet such results are constrained within sample demographics, such as the population in China and a behavioural measure that is mostly on intention rather than actual use (Sun & Sano, 2024).

In the study conducted by Seyfi et al. (2025), several factors determine the barriers for tourists to use GAI for travel planning, including personality traits and the attitude towards innovation resistance. This indicates a need for AI designs that consider diverse psychological profiles to enhance adoption (Seyfi et al., 2025). With respect to neural MT, the technological evolution has made it more user-friendly, which could potentially influence the younger generations' perception of MT experiences powered by AI (Carvalho et al., 2023). However, certain constraints or limitations on the accuracy of MT or the cultural differences in a travel domain remain unclear.

Beyond issues of usability, ethical concerns such as privacy, bias, and fairness are increasingly important. The AI-generated itineraries are acceptable to experts; however, ethical issues such as privacy and bias, and external factors such as geopolitical events and crowds have to be balanced (Štilić et al., 2024). Fortunately, research tends to overwhelmingly concentrate on the positive effects of transformative product use, though negative (Sustacha et al., 2033) and unintended effects are starting to gain attention, such as alienation or loss of authenticity (Štilić et al., 2024). In addition, most of the studies are based on expert reviews, so it seems that the reality of tourists/users with AI-mediated systems is not completely understood (Štilić et al., 2024). The moderating role of ICT readiness in the smart things, including AI benefits, indicates that if appropriate policy action is not taken, such as proper telecommunication infrastructure investment, the benefits of AI applied in the tourism sector may not reach everyone to their full potential due to the problem of a digital divide (Sustacha et al., 2023). Future research should critically examine how to alleviate these privacy issues and narrow the ICT readiness divide so that AI tourism experiences are both more inclusive and secure to cater to more general benefits.

Finally, while AI offers substantial enhancements to tourists' experiences through personalized services and improved efficiency, its overall effect is significantly mediated by factors of tourist acceptance and crucial ethical considerations. The willingness of tourists to use AI-enabled technologies and provide personal data also seems to strongly depend on situational variables such as physical proximity, message framing, and individual value orientations (Sun & Sano, 2024), and this, in turn, suggests that the positive effects of AI on tourists are not universally assured, instead, they depend on subtle psychological and situational dimensions. In addition, personality and innovation resistance significantly limit the use of generative AI

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in travel planning (Seyfi et al., 2025), suggesting that there is no obvious route from benefits to usage. The widespread ethical concerns about privacy, algorithmic bias, and the possibility of unintended negative consequences such as the alienation or a loss of authenticity remain significant barriers to fully realizing AI's positive impact on the tourist experience, even though these developments and others centered on machine translation undoubtedly make it easier for younger travelers to become more fully introduced to new, unknown destinations (Štilić et al., 2024; Sustacha et al., 2023; Carvalho et al., 2023). Given the heavy reliance on expert evaluations, and the fact that most tourists will not experience AI for some time due to continuing digital divide, growing inequality in ICT readiness, the transformative potential of AI for tourists' experiences is unevenly distributed and may well be limited. Accordingly, to ensure AI genuinely enhances, rather than detracts from, the tourist experience, future development and implementation must prioritize robust ethical frameworks, address user-specific barriers, and bridge technological disparities, moving beyond mere functionality to cultivate trust and ensure equitable access.

Conclusion

This systematic literature review provides a thorough analysis of the multiple impacts that AI has on tourist experiences, both in terms of meaningful progress and ongoing challenges. AI dramatically improves the travel experience with advanced sentiment analysis, personalized travel insights, smart urban mobility services, and the promotion of responsible travel. These apps provide an unprecedented quality of efficiency, personalization and digital immersion, for a rich and personalized experience. However, AI's potential is clouded by serious concerns. Concerns pertaining to data privacy, algorithmic bias, the digital divide, and the lack of more quantitative empirical support for long-term tourist satisfaction and authenticity motivations still form some of the core future research and development areas. Ultimately, while AI undeniably reshapes and elevates various aspects of the tourist experience, its responsible and equitable deployment, alongside continuous ethical scrutiny, will be paramount to ensuring its sustained positive impact.

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