

Artificial Intelligence in the Global Tourism Industry:

Impacts and the Case of Thailand

ปัญญาประดิษฐ์ในอุตสาหกรรมการท่องเที่ยวทั่วโลก:

ผลกระทบและกรณีศึกษาประเทศไทย

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Abstract

Artificial Intelligence (AI) is increasingly transforming the global tourism industry by revolutionizing how travel is planned, experienced, and managed. This paper provides a comprehensive review of AI applications in tourism worldwide, and includes a focused case study of Thailand's tourism sector as an illustrative example of a developing destination. By synthesizing existing literature, scholarly articles, and industry reports, this study evaluates how AI technologies enhance operational efficiency, personalize visitor experiences, and support sustainable tourism initiatives. The review identifies key areas where AI has significant impacts, including AI-driven customer service (e.g., chatbots and virtual assistants), predictive analytics for resource management, robotics for operational efficiency, and data analytics for personalized travel experiences. Additionally, the research highlights Thailand's innovative adoption of AI, showcasing strategic projects like AI-based traffic management in Phuket to reduce congestion, smart surveillance for visitor safety, and smart hotels with robotic services. Despite these advancements, the integration of AI presents important ethical considerations, including concerns related to data privacy, algorithmic biases, cybersecurity threats, and workforce displacement. This dual focus on global trends and a developing destination case provides new insights into AI adoption in tourism. The paper emphasizes that while AI offers considerable advantages, the adoption process must be thoughtfully managed through balanced strategies, transparent policies, and inclusive practices. Recommendations for tourism stakeholders include establishing clear ethical guidelines, investing in workforce training, and fostering cross-sector collaboration. Ultimately, this study underscores AI's transformative potential in tourism, bridging global trends with local context.

Keywords: Artificial intelligence; Smart Tourism; Hospitality and Tourism Businesses; AI Ethics; Tourism Innovation

บทคัดย่อ

ปัญญาประดิษฐ์ (AI) กำลังพลิกโฉมอุตสาหกรรมการท่องเที่ยวระดับโลกด้วยการเปลี่ยนวิธีการวางแผน สร้างประสบการณ์และบริหารการเดินทาง งานวิจัยนี้ทบทวนการประยุกต์ใช้ปัญญาประดิษฐ์ในการท่องเที่ยวทั่วโลก และเพิ่มกรณีศึกษาจากภาคการท่องเที่ยวของประเทศไทยในฐานะจุดหมายปลายทางกำลังพัฒนาเพื่อประกอบการวิเคราะห์ โดยสังเคราะห์วรรณกรรม งานวิชาการ และรายงานอุตสาหกรรมเพื่อประเมินว่าปัญญาประดิษฐ์ช่วยเพิ่มประสิทธิภาพการดำเนินงาน สร้างประสบการณ์เฉพาะบุคคล และสนับสนุนความยั่งยืนด้านการท่องเที่ยวอย่างไร ผลการทบทวนชี้ให้เห็นพื้นที่ผลกระทบสำคัญของปัญญาประดิษฐ์ ได้แก่ การบริการลูกค้า (เช่น แชทบอตและผู้ช่วยเสมือน) การวิเคราะห์เชิงพยากรณ์เพื่อบริหารทรัพยากร ไรบอตเพื่อเพิ่มประสิทธิภาพการปฏิบัติงาน และการวิเคราะห์ข้อมูลเพื่อปรับประสบการณ์ท่องเที่ยวเฉพาะบุคคล นอกจากนี้ยังเน้นตัวอย่างนวัตกรรมของไทยในการใช้ปัญญาประดิษฐ์ เช่น ระบบจัดการจราจรอัจฉริยะที่ภูเก็ตเพื่อลดความแออัด ระบบเฝ้าระวังอัจฉริยะเพื่อความปลอดภัยนักท่องเที่ยว และโรงแรมอัจฉริยะที่ให้บริการด้วยหุ่นยนต์ แม้จะมีความก้าวหน้าดังกล่าว การบูรณาการปัญญาประดิษฐ์ยังก่อให้เกิดประเด็นจริยธรรมและการปฏิบัติที่สำคัญ เช่น ความเป็นส่วนตัวของข้อมูล ความลำเอียงของอัลกอริทึม ความมั่นคงปลอดภัยไซเบอร์ และผลกระทบต่อแรงงาน

ด้วยการร่อนการนำเสนอที่ผสมผสานทั้งแนวโน้มระดับโลกกับกรณีศึกษาจุดหมายปลายทางที่กำลังพัฒนา งานวิจัยนี้จึงเติมเต็มช่องว่างเดิมและนำเสนอมุมมองใหม่ต่อการยอมรับปัญญาประดิษฐ์ในการท่องเที่ยว ซึ่งจำเป็นต้องกำกับดูแลอย่างรอบคอบผ่านยุทธศาสตร์ที่สมดุล นโยบายที่โปร่งใส และแนวปฏิบัติที่ครอบคลุม งานศึกษานี้เสนอให้ผู้มีส่วนได้ส่วนเสียกำหนดแนวปฏิบัติด้านจริยธรรม การลงทุนพัฒนาทักษะแรงงาน และส่งเสริมความร่วมมือภาครัฐ-เอกชน ท้ายที่สุดงานศึกษานี้ตอกย้ำศักยภาพการพลิกโฉมของปัญญาประดิษฐ์และชี้แนะทางการนำไปใช้อย่างมีความรับผิดชอบ โดยเชื่อมโยงแนวโน้มโลกเข้ากับบริบทท้องถิ่นของไทย

คำสำคัญ: ปัญญาประดิษฐ์ การท่องเที่ยวอัจฉริยะ ธุรกิจบริการและการท่องเที่ยว จริยธรรมการใช้ปัญญาประดิษฐ์ นวัตกรรมการท่องเที่ยว

Introduction

Tourism is a major global industry **that is increasingly** embracing artificial intelligence (AI) to innovate travel experiences. Just as the jet engine and the internet revolutionized travel **in previous eras**, AI is driving an era of “smart tourism,” enabling more seamless, data-driven, and personalized journeys (García-Madurga, & Grilló-Méndez, 2023). Travel companies are deploying AI and machine learning to reimagine how trips are planned, booked, and managed, optimizing services through deeper customer insights. For travelers, AI-powered tools such as itinerary recommendation engines, voice-activated assistants, and real-time translation services make trips more convenient and tailored to individual preferences. According to a recent survey, 40% of travelers have used AI-based tools for trip planning and 62% are open to doing so (Wigmore, 2025), underscoring the growing demand for quick information and customization.

Tourism businesses are also rapidly adopting AI to gain competitive advantages. Airlines use AI for dynamic pricing and route optimization, hotels **employ** service robots and chatbots to provide 24/7 guest assistance, and destination marketers leverage AI analytics for targeted promotions (Almasi, Cosmas, Cowan, & Ellencweig, 2023). Reflecting this trend, the **global** AI-in-tourism market is projected to grow from **approximately** USD 2.95 billion in 2024 to USD 13.38 billion by 2030 (Research and Markets, 2025). This surge (nearly 29% annual growth) signals high expectations for AI-driven value creation across travel and hospitality.

A robust ecosystem of tech providers now offers accessible AI solutions, and academic interest in AI for tourism has likewise intensified (García-Madurga, & Grilló-Méndez, 2023).

Despite this optimism, integrating AI into tourism poses several challenges. Key concerns include potential workforce displacement (as automation could replace some service jobs) and data privacy and security risks due to the vast personal data collected from travelers. Moreover, not all tourism stakeholders are prepared for AI; smaller enterprises and developing destinations may lack the resources or skills to implement these technologies, creating a digital divide in smart tourism adoption (Samara, Magnisalis, & Peristeras, 2020). These issues highlight the need for responsible and inclusive AI integration strategies.

This paper addresses the current state of AI adoption in the global tourism industry and presents a case study of Thailand, a leading destination actively incorporating AI to illustrate these trends. The aim is to explore how AI is impacting tourism operations and visitor experiences, analyze the ethical and practical challenges that arise, and offer recommendations for leveraging AI-driven innovation in tourism responsibly. However, previous research on AI in tourism has not explicitly addressed certain gaps. Notably, few studies examine AI adoption in developing destinations or provide cross-sector policy analysis, leaving an incomplete picture of how AI can be deployed responsibly in different contexts. This study helps fill these gaps by integrating a global industry overview with a detailed case from Thailand, offering both theoretical insights and practical guidance for smart tourism development.

Research Questions

The research questions addressed by the article are:

1. How is artificial intelligence (AI) currently being applied in the global tourism industry, and what are its main impacts?
2. What ethical, operational, and workforce challenges arise from integrating AI into tourism practices?
3. How has Thailand specifically implemented AI technologies within its tourism sector, and what lessons can be learned from Thailand's experience for effective and sustainable AI adoption in tourism globally?

These questions guide a comprehensive exploration of AI's practical benefits, its associated risks, and best practices in implementation, using Thailand as a focused case study to provide deeper insights and applicable recommendations for the broader international tourism community.

Research Objectives

1. To investigate the current applications and impacts of AI in the global tourism industry.
2. To analyze the ethical, operational, and workforce challenges that arise from integrating AI into tourism practices.
3. To explore the implementation of AI technologies in Thailand's tourism sector and derive lessons for effective and sustainable AI adoption in tourism globally.

Literature Review

Scholarly interest in the role of artificial intelligence (AI) in tourism role in tourism has surged in recent years, yielding numerous studies and reviews that examine its applications and impacts (García-Madurga, & Grilló-Méndez, 2023; Samara et al., 2020). Researchers often discuss AI advancements in the context of “smart tourism,” reflecting the integration of advanced information and communication technologies (ICT) to enhance tourist experiences and management (Tussyadiah, 2020). Conceptual frameworks have been proposed to map how AI and automation integrate into tourism operations – for example, Ivanov and Webster (2019) outline key functional domains (e.g. customer service, operations management, analytics) where robots and AI can be implemented in travel and hospitality organizations. Across the literature, core areas of AI application identified include service automation (such as chatbots and robots), personalized marketing and recommendation systems, operational optimization through predictive analytics, and data-driven decision support. These works provide a theoretical foundation for understanding how AI technologies can transform tourism processes.

From a theoretical perspective, scholars have pointed to broader frameworks to interpret AI adoption. For instance, Rogers’ diffusion of innovations theory and the service-dominant logic concept help explain how AI tools spread and co-create value in tourism services. A socio-technical systems view also emphasizes the interplay between technological innovations and human or organizational factors in tourism (Rather, 2024). However, these perspectives are not yet deeply integrated into most tourism AI studies, reflecting a need for greater theoretical grounding.

Existing research also highlights the benefits and challenges of AI adoption in tourism. On the one hand, AI can significantly improve efficiency and service quality. AI-driven tools streamline information delivery, reservations, and customer support, enabling faster and more personalized services. For instance, AI chatbots and recommendation engines enhance customer satisfaction by providing instant, tailored assistance (Rather, 2024; Tussyadiah, 2020).

On the other hand, researchers caution that AI implementation comes with issues such as data privacy risks, algorithmic bias, and the potential loss of the “human touch” in hospitality services (Rather, 2024; Samara, Magnisalis, & Peristeras, 2020). There is a growing emphasis on ethical AI practices and transparency, ensuring AI decisions are explainable and fair, as well as on workforce preparedness to work alongside intelligent systems (Tussyadiah, 2020). Overall, the literature calls for balanced approaches that leverage AI’s advantages while proactively mitigating its risks, laying a foundation.

However, prior studies have not fully examined how differing contexts (such as developing destinations or varying policy environments) influence AI’s outcomes in tourism. This gap in understanding motivates the present study.

Furthermore, research in Thailand is beginning to reflect these themes: Suanpang and Pothipassa (2024) demonstrate how generative AI and IoT can be integrated for sustainable smart tourism, and Chotisarn, & Phuthong (2025) report that AI-enabled service attributes enhance customer satisfaction in Thai hotels. These Thai studies offer regional insights that align with the broader trends.

Methodology

This study uses a qualitative approach centered on a comprehensive literature review and analysis of secondary data. First, a systematic review of recent academic publications (peer-reviewed journals and conference papers from the last decade (2019-2025) was conducted across major databases (e.g., Google Scholar, Scopus, and TCI) using keywords such as “artificial intelligence tourism,” “smart tourism,” and “hospitality AI.” Only publications explicitly related to tourism and AI were included in the review.

This provided a foundation on how AI is applied in various tourism domains (e.g., travel planning, hospitality management, destination marketing) and the benefits and challenges identified by prior studies. The search strategy also included terms capturing AI-related challenges (e.g., “AI ethics tourism,” “algorithmic bias tourism”) to address the second research question on ethical and operational issues. In parallel, industry reports, market research, news articles, and trade publications were examined to capture up-to-date insights on real-world AI implementations and trends (e.g., market size, growth rates, and adoption statistics).

For the case study of Thailand, relevant local sources were reviewed, including press releases and official reports from the Tourism Authority of Thailand (TAT) and other government agencies, to gather data specific to Thai tourism innovations (addressing RQ3). The collected information was analyzed using a narrative synthesis approach, with organizing findings into key themes: AI’s impact on tourism operations and customer experience, ethical and workforce implications, and the Thailand-specific context. Data triangulation (cross-verifying facts across multiple sources) ensured the reliability of findings. No primary data (e.g., surveys or interviews) were collected, hence there is no defined population or sample for this research; the analysis relies entirely on existing literature and documented examples. Key AI initiatives in Thailand (e.g., in traffic management, hospitality, and marketing) were identified from these sources based on their prominence and relevance, ensuring the case study highlights representative applications of AI.

Findings

The literature and industry evidence show that AI is having a multifaceted impact on tourism worldwide (García-Madurga, & Grilló-Méndez, 2023; Samara et al., 2020). Broadly, AI technologies are enhancing operational efficiency for tourism businesses, enabling more personalized services for travelers, and contributing to data-driven decision-making in the sector. For instance, recent industry statistics suggest that AI chatbots now handle roughly 80% of routine customer inquiries in the travel industry, significantly reducing response times and customer service workloads (Shalw, 2025). As numerous studies indicate (Ivanov, & Webster, 2019; Tussyadiah, 2020), AI’s influence spans all major domains of tourism operations. Table 1 summarizes key application areas of AI in tourism and provides examples of their uses and impacts.

Table 1: Key Applications of AI in Tourism and Their Impacts

Application Area	AI Applications & Uses	Key Impacts on Tourism
Customer Service	Chatbots and virtual assistants for traveler inquiries; voice-activated support	24/7 multilingual service availability; shorter wait times for customers; reduced labor costs for routine inquiries; improved service consistency and convenience for travelers.
Personalized Marketing & Planning	Recommender systems for travel products; AI itinerary planners; dynamic pricing algorithms	Tailored recommendations and itineraries matched to user preferences (more relevant offerings, higher booking conversion rates); dynamic pricing maximizes revenue yield while offering competitive deals to travelers.
Operations & Logistics	Predictive analytics for demand forecasting; AI-guided route optimization; robotics in hotels/airports	More accurate demand forecasts improve resource planning (e.g., staffing, inventory management); optimized routes and traffic management reduce delays; service robots handle routine tasks (e.g., cleaning, luggage delivery), boosting operational efficiency and consistency.
Safety & Security	Facial recognition and video analytics for surveillance; AI fraud detection; AI health screening tools	Enhanced security via automated threat detection and faster incident response (e.g., AI surveillance in tourist areas); fraudulent transactions and fake reviews identified, protecting consumers; health screening AI (e.g., during COVID-19) helps ensure traveler safety.
Sustainable Tourism	Smart energy management systems; AI-based crowd management; virtual/augmented reality experiences	Lower environmental footprint as AI optimizes energy and water usage in tourism facilities; real-time crowd management prevents overtourism at attractions, aiding conservation; virtual/augmented reality can supplement or replace physical visits, reducing pressure on popular sites.

As Table 1 indicates, AI serves as a catalyst for innovation throughout tourism, driving improvements in efficiency, personalization, and sustainability. These technological advancements are starting to yield tangible benefits, from faster customer service and streamlined operations to richer, more tailored travel experiences. Importantly, the data generated through AI interactions can feed back into continuous improvements in service and strategy. However, alongside these benefits, stakeholders must remain mindful of certain challenges to ensure AI is implemented in an ethical, inclusive, and secure manner issues that are addressed in the following discussion section.

Discussion

Ethical Considerations (Privacy & Bias). The adoption of AI in tourism raises important ethical concerns. Because AI systems rely on large personal data sets, so privacy and data security are major issues; companies must handle customer information responsibly and comply with protection laws. Users should be made aware when AI algorithms influence decisions that affect them (such as pricing or security screenings), underscoring the need for algorithmic transparency in deployments. Algorithmic bias is another risk: if AI models are trained on skewed data, their recommendations or pricing might inadvertently discriminate against certain groups. Conducting regular fairness audits and using diverse training data can mitigate these issues. Establishing clear ethical guidelines for AI use in tourism (and auditing compliance) will help maintain traveler trust and equity.

Workforce Implications and the Human Touch. Tourism is a people-centric industry, and AI-driven automation (e.g., chatbots handling inquiries, robots cleaning rooms) could affect employment. Some routine jobs may be reduced as AI takes over repetitive tasks, but many experts emphasize that AI should augment rather than replace human workers. By offloading mundane duties to machines, employees can focus on interpersonal service, creativity, and complex problem-solving areas where human touch is irreplaceable. In practice, new roles are emerging (such as staff who manage AI systems or interpret AI data) instead of massive job losses. With proper training and reskilling programs, a collaborative human AI workforce can improve efficiency while preserving service quality. This “hybrid intelligence” approach ensures that AI enhances the work of humans (García-Madurga, & Grilló-Méndez, 2023) instead of rendering them obsolete.

Data Security and Reliability. As tourism operations become more AI-driven, robust data security is paramount. AI platforms in airlines, hotels, and travel apps handle sensitive personal and financial data, making them targets for cyberattacks (Rather, 2024). A breach or hack not only compromises customer privacy but can disrupt services (for instance, if an AI booking or payment system is tampered with). To mitigate these risks, Companies must invest in cybersecurity by encrypting data, securing networks, and monitoring for threats to protect their systems. Reliability is equally critical: if an AI system fails (say a chatbot malfunctions or an automated check-in system goes down), it can frustrate customers and halt business. Thus, firms should have backup plans and human override options for crucial AI functions. Regular testing and maintenance of AI systems can reduce glitches. By prioritizing data protection and operational resilience, tourism providers can build trust in their AI-powered services.

Adoption Gaps and Equity. Not all tourism stakeholders can adopt AI at the same pace, which risks creating a digital divide. Large international airlines or hotel chains are investing heavily in AI, whereas many small and medium-sized businesses (boutique hotels, local tour operators) struggle due to limited funds or technical expertise. Likewise, high-tech urban destinations might implement AI solutions quickly, whereas smaller or developing destinations lag behind. If unaddressed, these gaps mean the benefits of AI (like cost savings and improved customer experiences) will accrue mainly to well-resourced players. To promote inclusivity, industry and government initiatives can help democratize AI access. Affordable, cloud-based AI tools (for example, subscription chatbot or analytics services) enable smaller businesses to use AI without huge upfront costs. Training programs and knowledge-sharing can assist less tech-savvy operators in adopting AI effectively. On a broader scale, international support and partnerships can help developing regions build smart tourism capabilities, ensuring AI’s advantages are shared widely rather than concentrated in a few markets.

Regulatory and Policy Considerations. AI’s rapid growth in tourism is outpacing many existing regulations. Policymakers are now challenged to create frameworks that protect consumers and workers while allowing innovation to flourish. Key issues include updating data privacy regulations (so that AI-driven personalization and tracking respect user consent and confidentiality) and establishing liability for AI errors or accidents (e.g., if an autonomous shuttle or robot butler causes harm, who is legally responsible?). Requiring transparency in AI operations can also be important travelers should be informed when AI influences significant decisions like pricing or security screening. Additionally, labor laws and standards may need revisions to address AI in the workplace, such as guidelines for human–AI collaboration and support for workers displaced by automation. Some countries and industry bodies have begun drafting AI ethics guidelines, but international coordination would benefit a global industry like tourism. By creating clear policies and perhaps certification

standards for trustworthy AI systems, governments can ensure that the adoption of AI in tourism maintains safety, fairness, and accountability.

In summary, AI offers tremendous opportunities to improve tourism services and operations, but these opportunities come with challenges that must be managed responsibly. Privacy protection, ethical AI practices, workforce adaptation, and supportive policies are all crucial to sustainable AI integration. With proactive strategies establishing guidelines, investing in people, and fostering collaboration the tourism industry can leverage AI's benefits while minimizing its risks. Notably, these impact categories are interrelated and AI innovation can simultaneously influence operational efficiency, customer experience, and ethical considerations. Recognizing such overlaps is important for a holistic approach to AI integration. The following case study of Thailand illustrates how a major destination is navigating this AI-driven transformation in practice, balancing innovation with inclusivity and ethics.

Case Study: AI in Thailand's Tourism Sector

Thailand's tourism sector provides a compelling case of national-level AI implementation, showing how a major destination is navigating an AI-driven transformation while balancing innovation with inclusivity and ethics. As one of the world's most popular destinations, Thailand has made technology a cornerstone of its tourism strategy (under the "Thailand 4.0" policy) to improve competitiveness and visitor satisfaction. Reflecting this commitment, TAT organised the "Thailand Travelution 2022" event to showcase how big data and technology can drive the tourism industry's digital transformation (Tourism Authority of Thailand, 2022c). Public-private partnerships and strong government backing have accelerated Smart Tourism initiatives that leverage digital innovations, with AI-related projects gaining particular momentum (Tourism Authority of Thailand, 2022a). Thailand's experience illustrates how AI is being used to improve service efficiency, enrich visitor experiences, and promote sustainable tourism in practice. In 2023, Thai tourism authorities launched a "Digital Tourism" campaign built around a national platform, Thailand CONNEX, to connect tourism businesses via digital technology (Digital Economy Promotion Agency, 2023). Similarly, TAT has partnered with blockchain company Bitkub in 2023 to develop a metaverse tourism experience, creating virtual Thai landmarks and attractions for immersive promotion of Thailand (Tourism Authority of Thailand, 2023a).

Improving Operational Efficiency. A priority for Thailand has been using AI to manage the large volume of tourists more effectively, especially in congested areas. For example, the resort island of Phuket known for its heavy traffic has implemented an AI-powered traffic management system modeled after Singapore's smart city program. The system analyzes live traffic camera feeds and dynamically adjusts traffic signals across dozens of intersections to reduce bottlenecks. Officials project this AI control could cut Phuket's traffic congestion by 30–40%, significantly improving travel times for tourists and locals (*Phuket's game-changing approach to traffic with AI innovation and a mega expressway set to transform travel by 2030.*, 2025). Reducing gridlock not only enhances the visitor experience (by shortening transit times to beaches, hotels, and the airport) but also lowers carbon emissions from idling vehicles. If successful, similar smart traffic systems may be expanded to other popular tourist regions in Thailand. Another example of efficiency gains is in public safety: in 2025, the Thai Tourist Police rolled out an AI-enhanced surveillance network in key tourist areas (BW Security World, 2024). This system uses AI-driven video analytics and facial recognition to monitor crowds and identify potential security threats or missing persons in real time. It was introduced partly in response to high-profile incidents, aiming to

reassure visitors with a visible high-tech safety presence. Notably, the Prime Minister of Thailand even delivered an AI-generated greeting in Mandarin to welcome Chinese tourists and emphasize the new safety measures – an innovative use of AI to overcome language barriers in public communication (BW Security World, 2024). These initiatives show how Thailand is deploying AI not only behind the scenes but also in ways visible to tourists, simultaneously improving logistics and safety.

Automation in Hospitality. The Thai private sector is similarly leveraging AI to streamline hospitality services. A landmark development was the opening of Thailand’s first fully AI-integrated “smart hotel” in early 2025. The Furama Hotel in Chiang Mai adopted AI-powered service robots (for example, robotic bellhops and cleaners) managed by an intelligent network to automate many routine tasks (*Thailand’s hospitality future begins in Chiang Mai: Furama Hotel integrates AI-powered smart technology for a next-generation guest experience*, 2025). The hotel uses robots to deliver luggage and room service orders, clean public areas, and even assist with check-ins, all coordinated by a central AI system. This has improved operational efficiency, as guests experience shorter wait times for services and human staff can concentrate on personalized guest interactions. The initiative garnered significant media attention as a model for the future of Thai hotels, highlighting benefits such as contactless service (appealing in the post-COVID era) and consistent service quality. Early research on hotels in Thailand suggests that AI-enabled amenities can indeed boost customer satisfaction and loyalty (Chotisarn, & Phuthong, 2025). As the cost of service robots falls and their reliability improves, other hotels in Thailand are likely to adopt similar technologies to stay competitive.

Personalizing Marketing and Experiences. Thailand is also using AI to craft more personalized and engaging experiences for visitors. The Tourism Authority of Thailand (TAT) launched an initiative in 2024 called “Mueang Thai Pai Kub AI” (roughly, “Travel Around Thailand with AI”) that blends artificial intelligence with cultural tourism promotion. This project creates AI-generated travel itineraries based on a user’s astrological sign and birth date, tapping into the popularity of astrology among young Thais and tourists. Users enter their birth information into a mobile app, and the AI suggests a customized route through Thailand featuring temples, shrines, and cultural sites aligned with their astrological profile (Bhutia, 2024). For example, a traveler born in the Year of the Tiger might be recommended to visit specific temples considered auspicious for Tigers. This creative use of AI personalizes the travel experience in a culturally meaningful way and differentiates Thailand’s offerings. It also engaged local communities, TAT ran a promotional campaign inviting young artists to design digital tarot cards for the app, merging technology with traditional art (Bhutia, 2024). Such initiatives reflect how Thailand is aligning AI innovation with its cultural strengths. Initial feedback indicated strong interest from Gen Z travelers, and academic research supports the idea that interactive, tailored experiences can enhance tourists’ emotional connection to a destination (Chiengkul, Kumjorn, Tantipanichkul, & Suphan, 2025).

In addition, Thailand has partnered with technology companies to enhance tourism marketing and trip-planning services using AI. One prominent example is the TAGTHAi mobile app, a one-stop digital travel companion promoted by TAT. In 2024, TAGTHAi introduced a feature called “Design My Trip,” a generative AI-powered itinerary planner (Gandharv, 2024). International visitors can input their interests and constraints (for instance, “3-day foodie and beach trip”) and the AI quickly produces a suggested multi-day itinerary complete with attractions, restaurants, recommended routes, and travel times. This planner integrates with real-time data from Google Maps and other sources to ensure suggestions are up-to-date. The tool was developed in collaboration with Google Cloud and showcases how AI can simplify complex trip planning. By helping travelers discover less-

publicized attractions that match their preferences, the app also aids in dispersing tourist traffic beyond the usual hotspots contributing to a more balanced distribution of tourism benefits. Moreover, such AI-driven personalization is meant to reduce “travel anxiety” for foreign visitors by acting as a virtual concierge that provides instant recommendations and answers during their trip. The TAGTHAi platform, along with other digital services, also reduces reliance on printed guides or maps, supporting an eco-friendlier, paperless travel experience. Thai tourism agencies have even experimented with blockchain technology to engage visitors. For instance, the “Amazing Thailand NFTs” campaign allowed tourists to collect digital art tokens at attractions for special rewards (Tourism Authority of Thailand, 2022b, 2023b, 2023c, 2023d). For example, the “Sukjai Smart Travel” initiative in 2023 issued NFT-based digital coupons of TAT’s mascot for Songkran festival travelers, merging Thai cultural themes with smart tourism technology (Tourism Authority of Thailand, 2023d).

Toward Sustainable Smart Tourism. Sustainability is a growing focus in Thailand’s tourism development, and AI tools are being explored to support environmental management. One approach is using AI to monitor visitor impact on natural attractions. For example, national park officials are testing systems that analyze data from sensors and even social media check-ins to predict when a site is likely to become overcrowded. This allows them to preemptively limit admissions or redirect visitors to alternative sites, preventing environmental degradation at popular spots. Over time, AI could also assist in monitoring environmental indicators, for example, by using image recognition on drone footage to assess coral reef health in marine parks enabling quicker responses to ecological stress. In the hospitality industry, Thai hotels have been adopting smart energy management systems that rely on AI to optimize electricity and water usage. These systems learn from occupancy patterns to adjust lighting, air conditioning, and heating automatically, resulting in substantial energy savings. Some resorts report over 20% reductions in energy consumption after implementing AI-based energy controls (Suanpang & Pothipassa, 2024). Such efficiencies both reduce operating costs and help hotels achieve sustainability certifications. On the consumer side, digital innovations such as the TAGTHAi app contribute to sustainability by minimizing paper waste (replacing paper maps with digital information) and promoting lesser-known destinations (thus easing pressure on overcrowded sites). Thai authorities have shown willingness to take bold steps for conservation famously closing Maya Bay for reef recovery and they envision AI as a tool to help manage tourism in fragile environments when these reopen, ensuring that visitor levels remain within sustainable limits.

Outcomes and Lessons. Thailand’s adoption of AI in tourism has been largely positive to date, resulting in improvements in both operational efficiency and visitor experience. By easing pain points (traffic, safety, service delays) and adding unique value (personalized itineraries, language support), these AI initiatives help keep Thailand competitive as a destination. They also illustrate the importance of government support: the Thai government’s proactive stance from policy guidance to forming partnerships with tech firms such as Google and Baidu has been key in advancing tourism AI projects (AI-powered tourism boost: Thailand partners with Baidu to attract Chinese travelers in 2025, 2025). Still, Thailand faces challenges in scaling these efforts. Infrastructure upgrades (such as expanding high-speed internet to all tourism sites) and digital skills training for tourism workers and local entrepreneurs are ongoing needs to ensure broad-based benefits. Moreover, care is being taken to make these innovations inclusive; for example, ensuring that small businesses (such as local tour guides or homestays) can participate in digital platforms like TAGTHAi, and that older or less tech-savvy tourists are not left behind by the move toward cashless, app-based services. While other countries (e.g., Singapore or Japan) have also

embraced AI for smart tourism, Thailand's approach grounded in strong public-private partnerships and cultural adaptation, illustrates how a developing nation can innovate effectively. Its experience provides a useful reference, though strategies must be tailored to each destination's context.

In summary, Thailand's case demonstrates how a destination can strategically integrate AI into its tourism ecosystem. By focusing on specific problem areas (congestion, safety, resource efficiency) and leveraging its cultural strengths (as seen with the astrology-based tour app), Thailand has created a blueprint for "smart tourism" that balances technological innovation with cultural context. The outcome is a more resilient and responsive tourism sector: one that uses AI to enhance the visitor journey from planning to on-site experience, while managing impacts on society and the environment. As AI technology continues to evolve, Thailand is poised to expand these initiatives potentially exploring new applications such as augmented reality tours or advanced predictive analytics for tourism management. Thailand's experience offers valuable lessons to other destinations seeking to ride the wave of AI: namely, the importance of vision, collaboration, and a commitment to align technology with local needs and values to achieve sustainable tourism development.

Conclusion

First, regarding AI's current applications and impacts in global tourism (RQ1), this review found that AI technologies are being applied across multiple domains and have demonstrably improved customer service, operational efficiency, personalization, and sustainability in the industry. AI-driven tools including chatbots, virtual assistants, predictive analytics, service robots, and advanced data analytics, are streamlining operations and enabling more tailored, convenient experiences for travelers, while equipping tourism operators with better tools for resource management and decision-making.

Second, the integration of AI into tourism also brings several significant challenges (RQ2). On the ethical and practical side, privacy and data security concerns remain paramount given the vast personal data involved, and algorithmic biases can inadvertently lead to unfair or non-transparent outcomes if not properly addressed. AI-driven automation introduces workforce implications as well, though evidence from global cases and the Thailand study suggests a nuanced outlook rather than eliminating jobs entirely, AI is transforming roles and tasks. This shift creates a pressing need for retraining and continuous skill development so that human employees can collaborate effectively with AI systems. There is also a risk of a digital divide in AI adoption, as smaller businesses and less-developed destinations may lack the resources to implement advanced technologies. Ensuring inclusive access to AI tools and support for those with limited capacity is therefore crucial to prevent widening gaps in the tourism sector.

Third, Thailand's proactive embrace of AI in its tourism sector illustrates how these technologies can be implemented successfully at the destination level (RQ3). Thailand's experience from AI-based traffic control in Phuket and smart security surveillance in tourist areas to AI-enhanced hotel services clearly demonstrates AI's capacity to resolve common tourism challenges such as congestion, safety, and operational inefficiencies. The country has also leveraged AI creatively in line with local culture (for example, using an astrology-driven AI trip planner to engage young travelers), highlighting the strategic advantage of aligning technology with cultural context. These initiatives show that with strong public-private support, a destination can harness AI to enhance the visitor experience and address pain points, while also adding innovative, culturally resonant offerings that differentiate its tourism product.

The findings from this study yield several practical recommendations for tourism stakeholders globally. Firstly, tourism businesses should actively develop ethical AI frameworks and enforce transparent data governance practices to foster consumer trust. Secondly, investing in targeted workforce training programs that build digital and analytical skills will ensure employees can adapt to AI-driven workflows and continue delivering high-quality service. Thirdly, policymakers should enact clear regulations and standards addressing data privacy, algorithmic fairness, transparency, and labor issues related to AI adoption in tourism. Fourthly, industry and government bodies should support inclusive access to AI tools for smaller tourism enterprises and community-based operators. This may involve providing affordable cloud-based AI services and targeted training initiatives to ensure that even small businesses can adopt AI effectively.

Finally, cross-sector collaboration among government agencies, technology providers, educational institutions, and tourism businesses is crucial for successful and sustainable AI deployment, as it facilitates knowledge transfer and resource sharing.

Like all research, this study has limitations. It synthesizes secondary sources without primary data collection, which may introduce bias in example selection and does not allow for quantitative validation of findings. The focus on Thailand as a single case study may limit the generalizability of some insights to other contexts. Future research should consider comparative studies across multiple destinations or incorporate primary data (e.g., surveys or interviews with tourists and stakeholders) to test and enrich the patterns identified here. Further work is also needed to develop and refine theoretical frameworks for AI in tourism, which would advance the field's understanding of the socio-technical dynamics highlighted in this study.

Recommendations

Firstly, tourism businesses should actively develop ethical AI frameworks and enforce transparent data governance practices to foster consumer trust.

Secondly, invest in targeted workforce training programs that build digital and analytical skills to ensure employees can adapt to AI-driven workflows and continue delivering high-quality service.

Thirdly, policymakers should enact clear regulations and standards addressing data privacy, algorithmic fairness, transparency, and labor issues related to AI adoption in tourism.

Fourthly, industry and government bodies should support inclusive access to AI tools for smaller tourism enterprises and community-based operators e.g., affordable cloud-based AI services and targeted training initiatives.

Fifthly, promote cross-sector collaboration among government agencies, technology providers, educational institutions, and tourism businesses to enable knowledge transfer and resource sharing.

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