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WHERE SUSTAINABILITY MEETS INTELLIGENCE: SMART DESTINATIONS IN THE TOURIST EXPERIENCE EQUATION

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Abstract: The convergence of artificial intelligence (AI) and smart destinations has attracted increasing academic and industry interest; however, the specific mediating role that smart destinations play in the relationship between AI and the tourist experience remains underexplored. This study explores how artificial intelligence (AI) influences both the development of smart tourist destinations and the overall tourist experience. It further investigates the direct impact of smart destinations on tourist experiences, as well as their mediating role in the relationship between AI and those experiences. To empirically test these relationships, the researchers employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using WarpPLS 7.0, analyzing quantitative data collected from 482 managers and supervisors operating within travel agencies, hotels, and destination management organizations across various regions in Saudi Arabia. The findings reveal that AI has a statistically significant and positive effect on both the advancement of smart destination capabilities and the enrichment of tourist experiences. In turn, smart destinations were found to have a direct positive impact on tourist experiences, while also functioning as a partial mediator, indicating that their presence strengthens—but does not fully account for—the influence of AI on experience quality. These results contribute to the growing body of knowledge on AI-enabled tourism and provide practical implications for destination managers, tourism developers, and policymakers. Specifically, they underscore the importance of investing in smart infrastructure and AI applications not merely as tools of modernization, but as strategic enablers for enhancing visitor satisfaction, fostering loyalty, and securing sustainable competitive advantages in an increasingly digital tourism economy.

Keywords: artificial intelligence, smart destination, tourist experience, travel agencies, hotels, destination management companies, Saudi Arabia

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INTRODUCTION

Artificial Intelligence (AI) plays a crucial role in enhancing destinations. It has the potential to transform destination operations, improve the tourist experience, and boost overall competitiveness. AI technologies enable destinations to offer personalized experiences to individual visitors (Farahat, 2023). By analyzing large volumes of data on visitor preferences, behaviors, and demographics, AI algorithms can provide tailored recommendations for attractions, activities, dining options, and accommodations. This personalization enhances visitor satisfaction, increases engagement, and fosters a sense of connection with the destination (Gaafar, 2020). Additionally, AI-powered chatbots, virtual assistants, and voice-enabled devices offer 24/7 customer service to visitors. These AI systems can respond to queries, provide real-time information, and offer assistance, thereby enhancing the overall customer service experience (Rao et al., 2023). AI technologies are capable of managing a large volume of inquiries simultaneously, ensuring prompt and accurate responses while reducing the workload on human staff (Ragab & Ezzat, 2021; Fonseca et al., 2025).

AI allows destinations to analyze large volumes of data quickly and efficiently. By utilizing AI-powered analytics, destinations can gain valuable insights into visitor behavior, preferences, and trends. This data-driven approach helps destinations make informed decisions, optimize resource allocation, target marketing efforts, and identify new growth opportunities (Prentice, 2023; Allam & Dhunny, 2019). AI stands as a forefront in technological progress, and destinations that welcome AI are positioning themselves as innovative and future-ready. Through investments in AI infrastructure, collaborations with technology providers, and staff training, destinations can maintain a competitive edge, adapting to evolving visitor expectations and industry trends (Shalan, 2024a; Benckendorff et al., 2019).

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AI technologies play a pivotal role in shaping smart destinations. AI enables the sophisticated analysis of data sourced from various channels like social media, sensors, and IoT devices, empowering destination managers with profound insights into visitor behaviors and preferences. This data-centric approach facilitates resource optimization, enhances visitor experiences through tailored services, and boosts operational efficiencies (Aliyah et al., 2023; Farahat, 2023). AI-driven technologies have the capacity to forecast tourist flows, streamline traffic and public transport, manage crowds efficiently, and promote sustainable practices by monitoring environmental impacts. Additionally, AI contributes to safety and security by implementing real-time surveillance and response systems, thus making destinations not only more appealing but also safer for visitors. Consequently, AI plays a crucial role in aiding tourism destinations to become more adaptive, sustainable, and attractive in a fiercely competitive global market (Farheen et al., 2024; Aliyah et al., 2023; Ionescu & Sârbu, 2024).

Further, AI is reshaping the tourist experience by delivering personalized, seamless, and engaging interactions (Milton, 2024; Ben Saad, 2024; Bujdosó et al., 2025). Technologies such as machine learning, natural language processing, and data analytics are utilized to customize travel recommendations, streamline booking processes, and provide tailored itineraries based on individual preferences and past behaviors (Bulchand-Gidumal, 2022). AI-driven virtual assistants and chatbots offer tourists round-the-clock support, addressing queries promptly and resolving issues efficiently, thereby enhancing convenience and satisfaction (Alyasiri et al., 2024; Doğan & Niyet, 2024). Moreover, AI enhances the physical travel experience by optimizing navigation with real-time updates and interactive guides that enrich tourists' understanding and enjoyment of destinations. By delivering more responsive and personalized experiences, AI significantly enhances the overall quality of tourism services, fostering increased satisfaction and loyalty among travelers (Yang et al., 2024; Said, 2023; Erdős et al., 2025).

Smart destinations significantly enhance the tourist experience by harnessing advanced technologies to create a more seamless, personalized, and interactive travel journey (Farid et al., 2023; Şahin, 2024). These destinations integrate technologies such as IoT, big data analytics, and AI to analyze tourist behaviors and preferences, optimize resource management, and enhance service delivery (Aliyah et al., 2023; Ionescu & Sârbu, 2024). This technologically-driven approach enables real-time customization of tourist experiences, ranging from tailored activity recommendations to personalized communication and services (Farahat, 2023). Moreover, smart destinations prioritize convenience through digital integrations that streamline processes like payments, bookings, and navigation. They also emphasize sustainability, utilizing technology to monitor and mitigate environmental impacts while safeguarding natural and cultural resources. By fostering a more connected, efficient, and responsive environment, smart destinations significantly bolster visitor satisfaction, thereby enriching travel experiences with greater enjoyment, convenience, and meaning (Farheen et al., 2024; Jeong & Shin, 2020).

The convergence of artificial intelligence (AI) and smart destinations has attracted increasing academic and industry interest; however, the specific mediating role that smart destinations play in the relationship between AI and the tourist experience remains underexplored (Farahat, 2023). While previous studies have examined the individual impact of AI on tourism and highlighted the benefits of smart destination technologies, there is a lack of in-depth analysis on how smart destinations translate and operationalize AI capabilities to enhance tourist experiences. This gap calls for a comprehensive investigation into the mechanisms and processes through which smart destinations mediate the influence of AI on the tourism experience, offering a more integrated understanding of their role in technology-driven tourism development.

So, the primary objective of the study is to explore and analyze the mediating role of smart destinations in the link between AI and the tourist experience. To achieve this overarching objective, the following specific objectives can be outlined as follows: A) evaluating the effects of AI on both smart destination and tourist experience, B) examining the effect of smart destination on tourist experience, and C) investigating the effect of AI on tourist experience through the mediating role of smart destination. By pursuing these research aims, the study aims to enrich the current knowledge base by offering a thorough comprehension of the mediating function of smart destinations in connecting AI with the tourist experience. The results will furnish policymakers and industry stakeholders with valuable insights into the efficient integration and utilization of AI technologies within smart destinations. This knowledge will not only enhance the overall tourist experience but also foster innovation and promote sustainable development in the tourism sector.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The effect of artificial intelligence (AI) on smart destination

The integration of Artificial Intelligence (AI) technologies holds immense significance in shaping and enhancing smart destinations (Aliyah et al., 2023; Kulavijit & Chansanam, 2025). AI-powered systems enable smart destinations to deliver advanced customer service through intelligent chatbots and virtual assistants, which can handle inquiries, offer real-time assistance, and provide personalized recommendations in multiple languages. Furthermore, AI-driven augmented reality (AR) and virtual reality (VR) applications create highly immersive and interactive experiences at attractions, museums, and cultural sites, thereby fostering visitor engagement and educational opportunities (Farahat et al., 2022; Al-Romeedy et al., 2025a, b). Additionally, AI empowers smart destinations to continuously innovate and adapt, allowing them to stay ahead of industry trends and improve their offerings, ultimately enhancing the visitor experience and maintaining a competitive edge in the tourism sector (Tehseen et al., 2022; Xu et al., 2024). AI empowers smart destinations to collect and analyze vast data from diverse sources such as sensors and social media (Haldorai et al., 2024; Aliyah et al., 2023). Through AI-driven data analytics, destinations acquire insights into visitor behavior and preferences, which inform decisions related to resource allocation, infrastructure planning, and marketing strategies (Farahat, 2023; Bedu et al., 2024). AI algorithms optimize pricing by scrutinizing market trends and adjusting prices based on demand and availability. This dynamic pricing strategy aims to maximize profitability while meeting visitor expectations. Additionally, AI facilitates targeted marketing campaigns by scrutinizing visitor data, enabling destinations to tailor messages and promotions for specific segments, thereby

enhancing visitor engagement and satisfaction (Venigandla et al., 2023; Shanmugam et al., 2023). AI plays a crucial role in bolstering safety and security within smart destinations, employing surveillance systems to monitor video feeds for potential threats and analyzing social media to address safety concerns. This guarantees a secure environment for tourism activities (Gaafar, 2020; Yu et al., 2025). Moreover, AI enhances accessibility by overcoming language barriers with translation systems and developing assistive technologies for individuals with disabilities. Additionally, AI optimizes infrastructure by overseeing transportation networks, predicting congestion, and refining resource management, thereby fostering sustainability and cutting operational costs (Ragab & Ezzat, 2021; Mohamed et al., 2022). So, the following hypothesis is suggested:

H1: Artificial intelligence has a positive effect on smart destination.

The effect of AI on tourist experience

AI technologies revolutionize guided tours by offering interactive and informative content. AI-powered tour guides deliver real-time information about landmarks, historical sites, and points of interest, enriching the tourist experience (Familoni & Onyebuchi, 2024; Semwal et al., 2023). Furthermore, AI enables augmented reality overlays and virtual reality simulations, creating immersive and educational interactions with destinations. AI-driven AR and VR technologies redefine tourist engagement, offering interactive guides and virtual tours of attractions. AI facilitates continuous improvement by analyzing tourist feedback, allowing destinations to refine experiences based on suggestions (Mohamed et al., 2022). Additionally, AI algorithms analyze pricing data to identify trends and suggest optimal booking times, while personalized travel platforms offer tailored deals, enhancing savings and decision-making for tourists (Farahat, 2023).

AI optimizes queue management at tourist attractions by analyzing visitor flow data to predict peak hours, minimizing waiting times and overcrowding, thus enhancing the overall tourist experience (Anagnostopoulou et al., 2024; Jiao et al., 2024). Additionally, AI enhances cultural experiences through language learning platforms and AR/VR experiences, facilitating meaningful interactions and providing historical context. AI-driven chatbots and virtual assistants offer instant customer support, including language translation and booking assistance, improving convenience throughout the journey.

Moreover, AI-powered travel planning platforms suggest optimized itineraries based on budget, preferences, and real-time information, streamlining trip planning for tourists (Chen & Wei, 2024; Gaafar, 2020). AI technologies revolutionize travel experiences by breaking down language barriers with real-time translation services, facilitating effective communication and cultural immersion (Sharma & Aggarwal, 2024). Through AI-powered recommendation systems, tourists receive personalized suggestions for accommodations, attractions, and activities tailored to their interests, enhancing the relevance and enjoyment of their travels (Song & He, 2023; Farahat et al., 2022). Furthermore, AI continues to enhance the post-travel experience by offering recommendations for souvenirs, personalized photo albums, and suggestions for future trips, allowing tourists to relive memories and maintain connections with destinations. AI provides real-time updates on weather, local events, transportation, and attractions, empowering tourists to make informed decisions and optimize their travel experiences on the go. Additionally, AI enhances safety and security by monitoring public spaces, detecting potential threats, and providing real-time updates on safety concerns, fostering confidence and peace of mind for travelers (Sharaievska & Mirehie, 2023; Rosário & Dias, 2024; Mohamed et al., 2022). Hence, the following hypothesis is assumed:

H2: Artificial intelligence has a positive effect on tourist experience.

The effect of smart destination on tourist experience

Smart destinations utilize data analytics to enhance management and planning, leveraging insights from visitor data to inform decisions on infrastructure, resource allocation, and marketing strategies, ensuring alignment with tourist preferences and expectations (Gaafar, 2020). Additionally, these destinations foster community engagement through digital platforms, allowing tourists to connect with locals, participate in cultural events, and enrich their experience through cultural exchange (Kusumastuti et al., 2024; Vinodan et al., 2024). Moreover, smart destinations optimize mobility with intelligent traffic management, real-time transportation information, and sustainable transportation options, enhancing convenience for tourists (Ristama, 2023; Chang et al., 2024). Finally, these destinations prioritize inclusivity by implementing assistive technologies, accessible transportation, and providing detailed accessibility information, creating a welcoming environment for all visitors, including those with disabilities or special needs (Theofanous et al., 2024; Farahat, 2023).

Smart destination technologies prioritize safety and security by employing surveillance systems, sensors, and real-time data analysis to detect and respond to potential risks or emergencies, ensuring tourists' well-being through timely alerts and assistance (Rosário & Dias, 2024; Dinkoksung et al., 2023). Additionally, these destinations integrate with smart devices and wearables, allowing tourists to access personalized information and interact with services seamlessly, enhancing convenience. Furthermore, smart destinations utilize augmented reality (AR) and virtual reality (VR) to offer interactive and immersive experiences, bringing historical sites and cultural landmarks to life, deepening tourists' understanding and connection with the destination (Farid et al., 2023; Mohamed et al., 2022). Smart destinations utilize data analytics and AI to offer personalized recommendations based on visitor preferences, enhancing the relevance and enjoyment of the tourist experience (Hu & Li, 2023; Ionescu & Sârbu, 2024). Additionally, crowd management systems monitor visitor flow in popular areas, providing real-time updates to help tourists optimize their visits and avoid congestion. Seamless connectivity through Wi-Fi, mobile apps, and IoT devices enables tourists to access information and navigate the destination easily (Şahin, 2024; Liu et al., 2024). Furthermore, smart destinations streamline transactions with contactless payment options and digital ticketing systems, ensuring a hassle-free experience for tourists when purchasing tickets or making reservations (Kavitha & Senbagavalli, 2023; Farahat, 2023). Therefore, the following hypothesis is developed:

H3: Smart destination has a positive effect on tourist experience.

The mediating role of smart destination in the link between AI and tourist experience

AI technologies can gather and analyze vast amounts of data about tourists, their preferences, and behaviors. By integrating AI with smart destination systems, this data can be utilized to personalize the tourist experience (Gaafar, 2020). The smart destination acts as a mediator by collecting, processing, and interpreting the data from AI systems to deliver tailored recommendations, services, and experiences to individual tourists. This personalized approach enhances the overall tourist experience by offering relevant and customized options (Farahat, 2023). AI-powered technologies such as chatbots, virtual assistants, or voice recognition systems can enhance communication and interactions between tourists and the destination. These technologies can be integrated into smart destination platforms, providing tourists with instant access to information, assistance, and support. The smart destination acts as a mediator by facilitating seamless interactions between tourists and AI systems, ensuring that tourists can easily access the benefits of AI technology and have their needs met efficiently (Battour et al., 2023; Doğan & Niyet, 2024; Chuang, 2023).

AI algorithms can analyze tourist data to generate intelligent recommendations for attractions, activities, or services. These recommendations can be integrated into smart destination platforms, guiding tourists in their decision-making process (Hu & Li, 2023; Aliyah et al., 2023). The smart destination presents AI-generated recommendations to tourists, helping them discover relevant options and make informed choices. This enhances the tourist experience by reducing information overload and assisting tourists in exploring the destination based on their preferences (Çolak, 2023; Chaturvedi et al., 2023). AI can leverage predictive analytics to anticipate tourist needs and provide proactive services (Bulchand-Gidumal et al., 2023). By analyzing historical and real-time data, AI algorithms can make predictions about tourists' preferences, behavior patterns, or future demands (Shalan et al., 2024a; Song & He, 2023). The smart destination acts as a mediator by utilizing AI-generated insights to offer proactive services, such as personalized recommendations, customized itineraries, or targeted offers. This proactive approach enhances the tourist experience by anticipating and fulfilling tourists' needs before they even express them (Kaya et al., 2023; Mohamed et al., 2022). A smart destination provides the necessary infrastructure to support the integration and deployment of AI technologies. This infrastructure includes robust connectivity, data storage and processing capabilities, and a network of sensors and devices that collect real-time data.

The smart destination acts as a mediator by establishing the technological foundation required for AI systems to operate effectively and deliver enhanced tourist experiences (Farahat, 2023). Accordingly, the following hypothesis is formulated:

H4: Smart destination mediates the link between artificial intelligence and tourist experience.

METHODOLOGY

The study targeted a population of managers and supervisors from travel agencies, hotels, and destination management companies (DMCs) in Saudi Arabia. The researchers distributed the questionnaire electronically, reaching out to the sample through relevant groups on social media platforms such as Facebook, Twitter, and LinkedIn. The link to the survey was sent privately to the accounts of the selected participants, who were members of these industry-related groups. Participants were assured of data confidentiality, and no personally identifiable information was collected.

To ensure the reliability of the sample size, the study followed the guidelines recommended by Hair et al. (2010), which suggest that the appropriate sample size should be 10 to 20 times the number of latent constructs. Given that this study included three latent constructs, the researchers determined a sample size of 200–400 to be suitable. A larger sample size is generally preferred to minimize the possibility of sampling bias (Al-Romeedy & Alharethi, 2025). Accordingly, the questionnaire link was distributed to 631 managers and supervisors via social networking sites, and between February and April 2024, the researchers received 528 responses, resulting in a high response rate of 83.7%. After data screening, 482 responses were deemed suitable for further analysis. The responses are considered free from significant bias for several reasons. First, the participants were drawn from a diverse set of professional roles across different types of tourism organizations, ensuring sectoral representativeness within the Saudi tourism industry. Second, the use of private invitations via professional networks reduced the likelihood of self-selection bias commonly associated with open survey links. Third, the anonymity and confidentiality assurances given to participants minimized social desirability bias and encouraged honest and uninfluenced responses. Furthermore, no personal identifiers were collected, and the high response rate further decreased the risk of non-response bias. These methodological precautions collectively enhance the validity of the findings and indicate that the responses accurately reflect the views and experiences of the target population.

Measures

The study examines three variables: artificial intelligence, smart destinations, and tourist experiences. Each variable is evaluated using a series of questions on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). To ensure content validity, the items for all variables were derived from previous research. Artificial intelligence was measured using 10 items adapted from Farahat (2023). Smart destinations were assessed with 6 items developed from Elyazid et al. (2023). Lastly, tourist experience was evaluated using a 4-item scale from Allan (2016). In addition to the core variables, the questionnaire also included a section designed to collect demographic data about the respondents. These demographic indicators—such as gender, age, educational level, job position, and work experience.

RESULTS

Respondents profile

As illustrated in Table 1 and Figure 1, the majority of the sample comprised males (66.6%), with females accounting for 33.4%. Concerning age distribution, 53.9% of respondents fell into the age range of 40 to less than 50 years, followed by

27.4% in the age range of 30 to less than 40 years, and 18.1% aged 50 years and above. The majority of respondents held a bachelor's degree (92.3%). In terms of job roles, supervisors constituted 61% of the sample, while managers made up 39%. Regarding work experience, 50.8% of respondents reported having 10 to less than 15 years of experience, followed by 26.1% with 15 to less than 20 years of experience, 20.4% with 15 years and above, and 2.7% with less than 5 years of experience.

Table 1. Respondents' profile

Profile	Freq.	%
Gender		
Male	321	66.6%
Female	161	33.4%
Age		
Less than 30 years	3	0.6%
From 30 to less than 40 years	132	27.4%
From 40 to less than 50 years	260	53.9%
50 years and above	87	18.1%
Educational level		
Less than bachelor	5	1%
Bachelor	445	92.3%
Postgraduate	32	6.7%
Position		
Manager	188	39%
Supervisor	294	61%
Work experience		
Less than 5 years	13	2.7%
From 5 to less than 10 years	126	26.1%
From 10 to less than 15 years	245	50.8%
15 years and above	98	20.4%
Total	482	100%

Table 2. Measurement model

Construct	Factor loading	α	CR	AVE
Artificial intelligence (AI)		0.822	0.952	0.668
AI1	0.777			
AI2	0.821			
AI3	0.795			
AI4	0.874			
AI5	0.743			
AI6	0.822			
AI7	0.788			
AI8	0.864			
AI9	0.881			
AI10	0.803			
Smart destination (SD)		0.781	0.929	0.688
SD1	0.794			
SD2	0.831			
SD3	0.786			
SD4	0.888			
SD5	0.876			
SD6	0.799			
Tourist experience (TE)		0.805	0.880	0.648
TE1	0.811			
TE2	0.787			
TE3	0.793			
TE4	0.830			

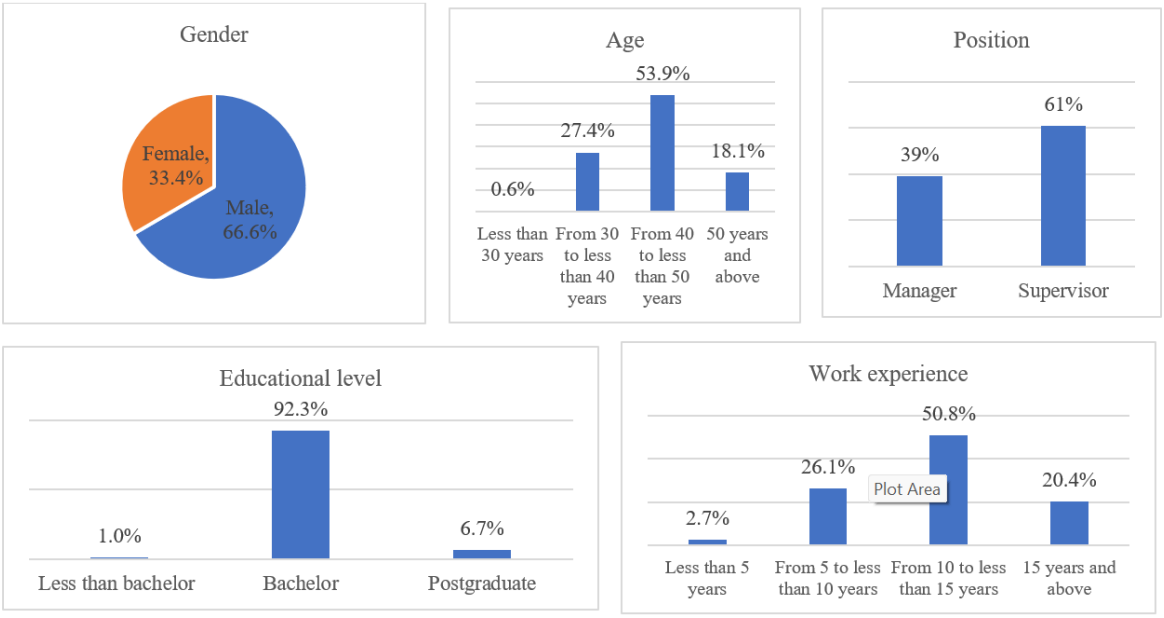

Figure 1. Visual representation of demographic data

Measurement model

Table (2) indicates that the loadings of all items in the final measurement model exceeded 0.50 (Hair et al., 2021), indicating the attainment of internal consistency. Moreover, Cronbach's alpha surpassed 0.70, meeting Nunnally's minimum reliability criterion (1978). In terms of convergent validity, all CR values exceeded the 0.80 threshold, and all AVE values exceeded the 0.50 threshold (Fornell & Larcker, 1981). Thus, it was confirmed that the measurement model demonstrated adequate reliability, convergent validity, and discriminant validity (Alnasser et al., 2024; Alshiha et al., 2024).

The measurement model's fit and validity for each construct were evaluated, before checking the full measurement model using the entire sample. The goodness-of-fit indices, including CMIN/DF= 2.776, GFI= 0.961, CFI= 0.953, IFI= 0.947, NFI= 0.960, TLI= 0.941, and RMSEA= 0.009, indicated that the model and data were well-matched (Hair et al., 2021). As shown in Table (2), the reliability of each variable ranged from 0.781 to 0.822, all values greater than the recommended threshold of 0.70. Additionally, all factor loadings were statistically significant, ranging from 0.743 to 0.888. The average variance extracted (AVE) value for each construct was greater than 0.60, exceeding the minimum requirement

for convergent validity, and all item loadings were higher than 0.5. Furthermore, the square roots of the AVE for all variables were greater than the highest correlations with any other variable, as presented in Table 3. This suggests that both convergent and discriminant validity were satisfactory, in line with the guidelines provided by Hair et al. (2021).

Table 3. Discriminant validity

Construct	Artificial intelligence	Smart destination	Tourist experience
Artificial intelligence	(0.817)		
Smart destination	0.554	(0.805)	
Tourist experience	0.601	0.700	(0.829)

Structural model

Table (4) was used to analyze the impact of artificial intelligence on both smart destinations and tourist experiences, as well as to explore the mediating role of smart destinations in the relationship between artificial intelligence and tourist experiences. This was done using path coefficient analysis (β), standard error (S.E.), critical ratio (C.R.), and p-values. The findings revealed that artificial intelligence significantly and positively affects smart destinations (β= 0.421, p-value= 0.000), supporting H1. Furthermore, the results indicated that artificial intelligence has a significant and positive effect on tourist experiences (β= 0.632, p-value= 0.000), thus supporting H2. Additionally, the results showed a significant and positive effect of smart destinations on tourist experiences (β= 0.552, p-value= 0.000), supporting H3. To investigate the role of smart destinations as a mediator in the relationship between artificial intelligence and tourist experiences, a mediation analysis was conducted, as shown in Table (4). The results indicated that smart destinations act as a partial mediator in the relationship between artificial intelligence and tourist experiences (β= 0.381, p-value= 0.000), supporting hypothesis H4.

Table 4. Direct and indirect effects

Path	Estimate	S.E.	C.R	P Value	Result
H1: Artificial intelligence → Smart destination	0.421	0.050	8.420	0.000	Supported
H2: Artificial intelligence → Tourist experience	0.632	0.044	14.363	0.000	Supported
H3: Smart destination → Tourist experience	0.552	0.061	9.049	0.000	Supported
Mediation effect					
H4: Artificial intelligence → Smart destination → Tourist experience	0.381	0.041	9.292	0.000	Supported

DISCUSSION

The aim of this chapter is to investigate the mediating role of smart destinations in the relationship between AI and tourist experiences. To accomplish this, a model illustrating the impact of AI on tourist experiences via smart destinations was developed and tested using data from travel agencies, hotels, and DMCs in Saudi Arabia. The results indicated that AI affects significantly and positively smart destination. AI technologies enhance smart destinations by offering personalized experiences tailored to visitors' preferences, increasing satisfaction, engagement, and loyalty.

Predictive analytics enable these destinations to forecast demand, optimize resource allocation, and improve operational efficiency by analyzing historical data (Farahat, 2023; Shalan et al., 2024a, b). Real-time data analysis from various sources provides insights into visitor behavior and resource use, allowing for data-driven decisions and personalized experiences. Additionally, AI facilitates seamless connectivity and automation of processes like check-ins, ticketing, and reservations, improving efficiency and visitor experiences (Gaafar, 2020).

As well, the results highlighted the significant and positive effect of AI on tourist experience. AI technologies simplify transactions for tourists through facial recognition and biometric authentication, enabling contactless payments and streamlining check-in processes, thereby enhancing security and convenience. AI promotes sustainable travel by offering eco-friendly recommendations based on carbon emissions and environmental impact, helping tourists make environmentally conscious choices. By analyzing user-generated content from social media and reviews, AI provides valuable insights and summaries, aiding tourists in making informed decisions about their travel plans (Humza & Hacioglu, 2023; Khan et al., 2024). Additionally, AI-powered virtual travel assistants offer personalized guidance, booking assistance, real-time information, and tailored experiences, accessible via mobile apps, smart devices, or chat interfaces, ensuring continuous support throughout the travel journey (Farheen et al., 2024; Doğan & Niyet, 2024). In addition, the results revealed that smart destination has a significant and positive effect on tourist experience. Smart destinations enhance guest experiences by integrating technology into accommodations with smart room controls, IoT-connected devices, and personalized services. Guests can control lighting, temperature, and entertainment via voice commands or mobile apps, and receive tailored recommendations for attractions and dining based on preferences (Srinivasan et al., 2024; Semwal et al., 2023). Wayfinding technologies like GPS, beacons, and digital signage offer accurate navigation and real-time directions through mobile apps or kiosks, helping tourists explore efficiently. Encouraging social media sharing, these destinations showcase user-generated content to foster community and boost visibility (Kwok et al., 2024; Farahat, 2023).

Importantly, the results depicted that smart destination partially mediates the link between AI and tourist experience. AI technologies use geolocation data and contextual information to offer location-specific recommendations and services to tourists, enhancing their experience through personalized suggestions and directions (Ivanov, 2023; Díaz-Parra et al., 2023; Al-Romeedy & Singh, 2025). AI-powered chatbots, voice assistants, and mobile apps enable multichannel communication, allowing tourists to interact with the destination via their preferred method, improving convenience and accessibility.

Additionally, smart destinations integrate AI with IoT, blockchain, and big data analytics to create a unified ecosystem, optimizing these technologies to further enhance the tourist experience. This seamless integration and mediation by the smart destination ensure efficient and personalized interactions for visitors (Ahmad et al., 2024; Kontogianni et al., 2024).

CONCLUSION

This study contributes to the growing body of knowledge on smart tourism by empirically examining the role of artificial intelligence (AI) in enhancing tourist experiences through the mediating function of smart destinations.

Focusing on Saudi Arabia's rapidly evolving tourism and digital landscape, this study provides timely insights into the strategic use of AI to enhance destination management and tourist engagement. The findings confirm that AI positively influences both the development of smart destinations and the tourist experience, and that smart destinations serve as a significant mediating factor in this relationship. This underscores the importance of adopting a holistic approach that integrates technological innovation with destination planning and management to maximize the benefits for both tourists and stakeholders. Beyond its theoretical contributions, the study provides practical implications for tourism authorities, destination managers, and policymakers, emphasizing the need to invest in smart infrastructure, AI capabilities, and digital readiness to remain competitive in an increasingly experience-driven tourism market.

Implications

The study offers several practical implications for policymakers and organizations in the tourism and hospitality industry. Policymakers can foster innovation ecosystems by bringing together technology companies, startups, research institutions, and tourism stakeholders. This collaborative environment can drive innovation, expedite the development of AI solutions, and promote their adoption within the tourism and hospitality sectors. Additionally, policymakers can establish platforms or frameworks to facilitate secure and controlled data sharing among tourism and hospitality organizations. By encouraging data sharing, policymakers can promote collaboration, increase the availability of data for AI applications, and support the development of data-driven smart destination solutions. Significantly, policymakers can facilitate testbed initiatives that enable tourism and hospitality organizations to trial and assess AI technologies in practical scenarios.

These initiatives serve as a valuable testing ground for organizations to experiment with AI, validate its effectiveness, and determine best practices for broader application. Policymakers should establish frameworks that promote the adoption and effective use of AI technologies within the tourism and hospitality industry. This could include offering financial incentives, bolstering research and development, and encouraging partnerships between industry participants and technology providers. Additionally, there should be a focus on developing robust digital infrastructure, such as high-speed internet connectivity and comprehensive data systems, essential for the effective integration and operation of AI technologies in smart destinations.

Regarding the tourism and hospitality organizations, they should prioritize digital transformation and recognize AI as a strategic asset to enhance the tourist experience. This involves investing in AI technologies, modernizing their digital infrastructure, and cultivating an environment that encourages innovation and experimentation. Collaborations with technology providers are essential for accessing AI solutions tailored to their specific needs and objectives.

Such partnerships allow organizations to benefit from specialized expertise, access advanced technologies, and navigate challenges related to implementation. Additionally, these organizations should focus on collecting and analyzing visitor data to uncover insights into preferences, behaviors, and trends. This information is crucial for crafting personalized experiences, designing targeted marketing strategies, and enhancing operational efficiencies. AI technologies can enhance customer engagement throughout the visitor journey. Organizations can utilize AI-powered chatbots, virtual assistants, and recommendation systems to deliver personalized and timely information, address customer queries, and offer tailored recommendations. Additionally, organizations should ensure the seamless integration of AI technologies into their existing systems and processes. This includes incorporating AI-powered solutions with reservation systems, customer relationship management tools, and other operational platforms to provide a cohesive and integrated experience for visitors.

Crucially, organizations should consistently monitor and assess the effectiveness of AI implementations to ensure they meet desired objectives. This requires gathering visitor feedback, reviewing performance metrics, and making informed adjustments to enhance AI initiatives. AI technologies can be utilized to streamline operations and boost efficiency.

For example, organizations can deploy AI systems for inventory management, dynamic pricing, and resource optimization, which contribute to reducing waste, enhancing operational efficiency, and boosting profit margins. Organizations need also to prioritize training their staff to proficiently use AI technologies. This training should cover data management, the operation of AI-driven tools, and techniques for interacting with customers. By equipping employees with AI skills, organizations can enhance customer service and facilitate the seamless integration of AI solutions. By implementing these implications, policymakers and tourism and hospitality organizations can tap into the transformative potential of AI to develop smart destinations that provide personalized, engaging, and sustainable tourist experiences. Effective use of AI can boost visitor satisfaction, enhance operational efficiency, and establish destinations as innovative and technologically forward-thinking.

Limitations and future research

The study examining the mediating role of smart destinations in the relationship between AI and tourist experience is a valuable contribution to the field. However, like any research, it may have certain limitations and opportunities for future investigation. The study was conducted with a specific sample of DMOs, travel agencies, and hotels, which could limit the generalizability of the findings to a broader range of tourism and hospitality organizations. Future research could aim to include a more diverse set of destinations and tourist segments to enhance the external validity of the results.

This would help provide a more comprehensive understanding of the interplay between AI, smart destinations, and the overall tourist experience. The current study has provided valuable insights into the mediating role of smart destinations in the relationship between AI and tourist experience. However, there are opportunities to further expand the research in this area. The directionality of the relationships and the causal linkages between these variables remain unclear, and future studies could utilize longitudinal or experimental designs to establish clearer causal relationships and explore potential reciprocal effects. Additionally, while the mediating role of smart destinations was proposed, the specific mechanisms through which AI influences tourist experience via smart destinations were not explicitly examined.

Future research could delve deeper into the underlying processes and mechanisms involved to offer a more nuanced understanding of this relationship. Furthermore, the study has not fully explored the influence of contextual factors, such as cultural differences, destination characteristics, or tourism-related policies and regulations, which could potentially moderate the relationships between AI, smart destinations, and tourist experience. Investigating the role of these contextual factors could yield important insights into the boundary conditions of the mediation process.

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