

INNOVATIVE AND SUSTAINABLE PATHWAYS IN HOSPITALITY AND TOURISM BUSINESSES: HOW AI, DIGITAL INNOVATION, AND ORGANIZATIONAL AGILITY ENHANCE MARKETING PERFORMANCE

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Abstract: The study aims to investigate how artificial intelligence (AI) influences marketing performance in the hospitality and tourism sector, both directly and indirectly, through the mediating roles of digital innovation and organizational agility. The research employed a quantitative approach, with data collected from marketing professionals working in five-star hotels across Saudi Arabia. A total of 692 questionnaires were distributed, yielding 448 valid responses. The findings confirmed that AI has a strong positive effect on marketing performance, while also significantly enhancing digital innovation and organizational agility. In turn, both innovation and agility were found to exert substantial positive effects on marketing performance. Mediation analysis further revealed that digital innovation and organizational agility partially mediate the link between AI and marketing performance. This study contributes to the theoretical literature by integrating the Resource-Based View (RBV) and Dynamic Capabilities Theory, showing how AI functions simultaneously as a strategic resource and as a capability enabler. The originality of the research lies in empirically validating a comprehensive model that explains the mechanisms through which AI enhances marketing performance in the hospitality and tourism context. Practically, the results provide actionable insights for managers by highlighting the necessity of embedding AI adoption within innovation practices and agile processes to achieve sustainable marketing advantages.

Keywords: artificial intelligence, marketing performance, digital innovation, organizational agility, tourism and hospitality

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INTRODUCTION

The rapid evolution of digital technologies has intensified this competitiveness, compelling businesses to rethink their strategies for survival and growth (Ferrer-Rosell et al., 2023). Within this context, AI has emerged as a transformative force, fundamentally reshaping the way hospitality and tourism organizations design their services, interact with customers, and manage their resources (Salah El-Din, 2024). Beyond its role as a technological upgrade, AI has become a catalyst for reimagining value creation in marketing, operations, and customer relationship management, making its integration no longer optional but imperative (Al-Romeedy & Singh, 2025). In marketing specifically, AI applications have opened new avenues for precision, personalization, and predictive analytics (Davenport et al., 2020). For tourism and hospitality enterprises, where customer expectations are highly diverse and continuously evolving, AI offers opportunities to anticipate demand, customize offerings, and strengthen loyalty (Correia et al., 2024). Machine learning algorithms and recommendation systems allow businesses to analyze vast amounts of behavioral data, identify subtle patterns, and translate them into actionable marketing insights (Theodorakopoulos & Theodoropoulou, 2024; Kontogianni et al., 2024).

Equally important is the role of AI in accelerating digital innovation within tourism and hospitality businesses. Digital innovation refers to the ability to deploy emerging technologies to create new products, services, and business models (Alnasser et al., 2024; Kontogianni et al., 2024). By integrating AI into digital platforms, firms can automate complex processes, develop intelligent service systems, and implement adaptive decision-support tools. This AI-enabled innovation allows companies to differentiate themselves in crowded markets, sustain customer engagement, and unlock new forms of value that extend beyond traditional service delivery (Shalan, 2025). AI also plays a central role in enhancing organizational agility, the capability of firms to sense, seize, and respond rapidly to environmental changes (Khan, 2025). In a sector highly sensitive to seasonal fluctuations, global crises, and changing consumer behaviors, agility has become an indispensable trait (Alnasser et al., 2025). AI supports organizational agility by equipping managers with real-time analytics, forecasting tools, and scenario simulations, thereby enabling swift strategic adjustments (Razzak et al., 2025).

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The implications of AI for marketing performance in hospitality and tourism are particularly profound. Marketing performance—reflected in market share growth, customer acquisition, retention, and profitability—is increasingly dependent on firms' ability to harness AI for smarter decision-making (Alnasser et al., 2024). AI-driven customer insights allow managers to identify untapped market segments, optimize promotional campaigns, and allocate resources efficiently (Salah El-Din, 2024). Moreover, AI empowers firms to deliver hyper-personalized customer experiences, thereby strengthening brand equity and long-term competitiveness. In this regard, AI does not simply contribute to operational gains but directly elevates the effectiveness and strategic impact of marketing activities (Bilgihan et al., 2025; Correia et al., 2024).

Alongside AI, digital innovation and organizational agility constitute crucial mediators in the pathway toward superior marketing performance. Digital innovation equips hospitality and tourism firms with the tools to modernize their marketing functions, integrate omnichannel strategies, and continuously refresh their value propositions (Dixit, 2025). Agility enables hospitality and tourism organizations to reconfigure resources swiftly, adapt marketing messages to emerging customer preferences, and pivot strategies in response to market shocks. When combined with AI and digital innovation, agility transforms marketing into a dynamic capability, ensuring that organizations are not only able to innovate but also to sustain superior performance in highly uncertain environments (Kröger & Marx, 2025). Although AI has been widely discussed in management and marketing, its strategic implications for tourism and hospitality remain limited. Most research emphasizes AI's operational benefits—like cost savings, automation, and efficiency—while neglecting its role in driving marketing performance and long-term competitive advantage in dynamic, customer-focused industries (e.g., Al-Romeedy & Singh, 2025; Shalan, 2025; Bilgihan et al., 2025). Furthermore, although digital innovation and organizational agility are key drivers of business transformation, their combined mediating role between AI and marketing performance is still underexplored. Previous studies (e.g., Sekhar et al., 2022; Musa & Enggarsyah, 2025) have treated them separately—focusing on innovation for modernization or agility for adaptability—without integrating them into a unified framework. This limits understanding of how both factors jointly translate AI capabilities into marketing success.

Another gap lies in the insufficient theoretical integration across strategy and marketing scholarship. Much of the current literature relies on either the Resource-Based View (RBV) or Dynamic Capabilities Theory (DCT) independently, resulting in partial explanations of how AI affects firm-level outcomes. The lack of a combined theoretical lens hinders the ability to capture both the resource-based and capability-driven dimensions of AI adoption. Addressing this shortfall is essential for developing a richer conceptualization of how AI, innovation, and agility converge to enhance marketing performance in tourism and hospitality businesses. Finally, most prior research on AI in hospitality and tourism has focused on customer-oriented tools like chatbots, recommendation systems, and robots, overlooking how organizations use AI to enhance performance. This study addresses that gap by examining how firms can strategically integrate AI with innovation and agility to achieve sustainable marketing improvements, contributing to both theory and practice.

Building upon the identified gaps, the primary objective of this study is to:

- A) assess the influence of AI on marketing performance, digital innovation, and organizational agility.
- B) examine the influence of digital innovation and organizational agility on marketing performance.
- C) investigate how AI shapes marketing performance in tourism and hospitality businesses through the mediating roles of digital innovation and organizational agility.

In this vein, this study aims to provide practical insights for hospitality and tourism managers by demonstrating how AI, digital innovation, and organizational agility work together to enhance marketing performance. Grounded in the RB and DCT, it bridges theory and practice by explaining how AI evolves from a mere technology into a strategic driver of organizational transformation and sustainable competitiveness in an increasingly digital industry.

Literature review and hypotheses development

Dynamic Capabilities Theory and Resource-Based View (RBV)

The relationship between the RBV and Dynamic Capabilities Theory provides the intellectual scaffolding for this study and offers a compelling explanation for how AI enhances marketing performance in tourism and hospitality businesses. From the RBV standpoint, AI constitutes a valuable, rare, inimitable, and non-substitutable resource that has the potential to deliver sustainable competitive advantage (Ferrer-Rosell et al., 2023; Larabi, 2025). Yet, as RBV scholars acknowledge, resources by themselves do not automatically translate into superior performance; they must be effectively leveraged and aligned with strategic objectives (Al-Romeedy & Singh, 2025). This is where Dynamic Capabilities Theory extends and complements the RBV by focusing on the processes through which organizations sense opportunities, seize them through innovation, and transform structures and routines to remain competitive in volatile environments (Farahat, 2023). Within this framework, digital innovation and organizational agility emerge as the core dynamic capabilities that unlock the strategic value of AI (Shalan, 2025). Digital innovation enables firms to transform AI's analytical and predictive potential into novel marketing practices, interactive customer experiences, and differentiated service models (Correia et al., 2024). Organizational agility, in turn, ensures that these innovations can be rapidly scaled, adapted, and realigned with evolving market conditions, customer preferences, and technological disruptions (Jaafar et al., 2025). Together, these two mediators operationalize the theoretical proposition that resources must be embedded within dynamic processes to yield performance outcomes.

AI and marketing performance

AI has increasingly become a cornerstone in reshaping marketing strategies across industries, and its role is particularly critical in tourism and hospitality, where customer experiences and service personalization define competitive advantage (Talukder et al., 2024). In the context of tourism and hospitality, where customer preferences are highly dynamic and

service differentiation is crucial, AI enables businesses to deliver hyper-personalized experiences, strengthen brand loyalty, and enhance customer satisfaction (Bilgihan et al., 2025). AI has been widely acknowledged in recent scholarship as a direct enhancer of marketing performance across organizations (Farahat, 2023). Wu & Monfort (2023) provide evidence that AI adoption significantly improves firms' ability to achieve superior marketing outcomes, while Desta & Amantie (2024) confirm that AI technologies directly contribute to measurable gains in marketing effectiveness. Similar conclusions are drawn by Abrokwah-Larbi & Awuku-Larbi (2024), both of whom report that organizations implementing AI observe notable improvements in their marketing performance indicators. In a more recent study, Chen et al. (2025) demonstrate that AI strengthens overall marketing performance by enabling more accurate performance measurement and outcome realization. Kumar et al. (2023) similarly document that AI adoption consistently translates into enhanced marketing performance, reinforcing the empirical consensus in the literature. Hence, the following hypothesis was suggested:

H1: AI has a positive effect on marketing performance.

AI and digital innovation

AI has emerged as a powerful enabler of digital innovation, particularly in industries where service differentiation and customer-centricity are essential, such as tourism and hospitality (Salah El-Din, 2024). In tourism and hospitality, where technological advancements directly affect customer experiences, AI-driven digital innovation creates opportunities for enhanced personalization, seamless service delivery, and interactive marketing campaigns (Shalan, 2025). Trocin et al. (2021) provide evidence that the integration of AI technologies directly stimulates digital innovation by enabling firms to redesign processes and develop novel digital solutions. Wicaksono et al. (2024) similarly report that AI adoption strengthens organizations' digital transformation efforts, leading to significant advances in digital innovation practices.

This relationship is reinforced by Zeng et al. (2022), they confirm that AI acts as a direct enabler of digital innovation through its ability to support experimentation and the development of advanced digital capabilities. Kanellopoulou et al. (2025) also demonstrate that AI adoption consistently translates into stronger digital innovation outcomes, establishing a clear and positive relationship between the two constructs. So, the following hypothesis is highlighted:

H2: AI has a positive effect on digital innovation.

AI and organizational agility

AI plays a pivotal role in enhancing organizational agility, a capability that allows firms to sense environmental changes, seize emerging opportunities, and adapt strategies with speed and precision (Jaafar et al., 2025). In the tourism and hospitality sector, where demand is highly volatile and influenced by external shocks such as seasonality, global crises, or shifts in consumer behavior, agility is not merely desirable but essential for survival (Kontogianni et al., 2024).

By embedding AI into decision-making and operational routines, tourism and hospitality businesses strengthen their ability to remain flexible, resilient, and adaptive, thereby cultivating organizational agility as a source of competitive advantage (Xinlin et al., 2025). Mariani & Mancini (2025) demonstrated that AI integration significantly improves firms' capacity to adjust resource allocations and organizational routines in volatile environments.

Al-Romeedy & Alharethi (2024) further support this association, showing that AI-enabled analytics and automation enhance flexibility and responsiveness across industries. Additional contributions by Lamrhary & Slaoui (2025) reinforce the consensus that AI is a direct driver of organizational agility, ensuring that firms remain competitive in uncertain and fast-changing markets. Accordingly, the following hypothesis is reported:

H3: AI has a positive effect on organizational agility.

Digital innovation and marketing performance

Digital innovation has become a defining driver of marketing performance in contemporary service industries, particularly in tourism and hospitality where competitive advantage rests on creativity, differentiation, and customer-centric value creation (Katsoni & Costa, 2025). For tourism and hospitality businesses, this capacity to continuously innovate digitally is critical in strengthening customer loyalty, enhancing brand equity, and capturing new market segments (Dixit, 2025). In this sense, digital innovation operates as a strategic mechanism that translates technological adoption into superior marketing outcomes (Salah El-Din, 2024). Jung & Shegai (2023) reinforce this link, showing that digital innovation strengthens firms' ability to sustain marketing competitiveness in rapidly changing markets.

Erhan et al. (2024) further highlight that digital innovation contributes to superior marketing performance by improving communication efficiency and market reach. More recently, Yu et al. (2025) confirm that firms adopting digital innovation consistently achieve higher levels of marketing performance, validating its role as a key determinant of marketing success. Therefore, the following hypothesis is developed:

H4: Digital innovation has a positive effect on marketing performance.

Organizational agility and marketing performance

Organizational agility is increasingly recognized as a critical determinant of marketing performance, particularly in industries where consumer preferences and market conditions shift rapidly, such as tourism and hospitality (Alnasser et al., 2025). Agility enables firms to anticipate changes, realign resources, and adjust marketing strategies in real time, ensuring that promotional efforts, pricing models, and customer engagement initiatives remain relevant and impactful. In a sector highly sensitive to external shocks—ranging from economic downturns to global crises—agile organizations are better positioned to maintain customer trust and market presence (Asseraf et al., 2019; Talukder et al., 2024; Soomro &

Khan, 2025). Er & Mukti (2023) confirm that agility enhances marketing effectiveness by enabling firms to rapidly adjust strategies in line with consumer expectations. More recently, Della Corte et al. (2025) provide strong empirical validation that organizational agility significantly contributes to marketing performance, particularly in contexts characterized by uncertainty and rapid change. So, the following hypothesis is assumed:

H5: Organizational agility has a positive and significant effect on marketing performance.

The mediating role of digital innovation

Although AI provides firms with advanced analytical capabilities, predictive models, and automation tools, its strategic value does not automatically translate into superior marketing outcomes (Correia et al., 2024). The mere possession of AI as a technological resource is insufficient unless organizations are able to embed it into innovative digital practices (Farahat, 2023). Digital innovation acts as the critical bridge between AI and marketing performance, ensuring that technological capabilities are converted into meaningful value propositions (Alnasser et al., 2024). In hospitality and tourism, where customer experiences are shaped by immediacy, personalization, and emotional engagement, digital innovation allows businesses to translate AI insights into interactive service platforms, dynamic pricing mechanisms, virtual and augmented reality applications, and personalized recommendation systems (Salah El-Din, 2024; Kontogianni et al., 2024). These innovations enhance customer satisfaction, foster stronger loyalty, and expand firms’ ability to compete on differentiation rather than cost alone (Shalan, 2025). Moreover, digital innovation provides the organizational context through which AI’s potential can be scaled and sustained (Ferrer-Rosell et al., 2023). Consequently, digital innovation not only strengthens the direct influence of AI on marketing outcomes but also operationalizes it, positioning innovation as the indispensable mediator in the AI–performance nexus (Monroy-Osorio, 2024; Salah El-Din, 2024). Hence, the following hypothesis is formulated:

H6: Digital innovation mediates the relationship between AI and marketing performance.

The mediating role of organizational agility

While AI equips organizations with powerful analytical and predictive tools, its contribution to marketing performance depends heavily on how firms integrate these insights into their strategic and operational routines (Correia et al., 2024). Organizational agility functions as a crucial mediator that transforms AI capabilities into timely, adaptive, and market-responsive actions (Panda, 2025; Talukder et al., 2024). In the hospitality and tourism industry—where demand is highly volatile and influenced by crises, seasonality, and shifting consumer expectations—agility allows firms to sense market disruptions, seize emerging opportunities, and rapidly adjust marketing strategies (Alnasser et al., 2025).

Agility also ensures that AI-driven innovations are not static or one-off initiatives but are continuously adapted to fit the evolving market environment. This dynamic adjustment is particularly vital in-service industries where customer experiences and perceptions change rapidly, and where competitive advantage relies on speed and responsiveness as much as on innovation (Alnasser et al., 2025; Al-Romeedy & Alharethi, 2024). By fostering flexible structures, decentralized decision-making, and rapid execution, organizational agility operationalizes AI’s strategic potential, ensuring that technological insights are swiftly converted into superior marketing outcomes (Jaafar et al., 2025; Kontogianni et al., 2024). Thus, agility mediates the AI–performance relationship by acting as the organizational mechanism that bridges technological capability with strategic marketing impact (Ferrer-Rosell et al., 2023). So, the following hypothesis is suggested:

H7: Organizational agility mediates the relationship between AI and marketing performance.

In order to illustrate the hypothesized connections among the study variables, the following figure presents the conceptual research model.

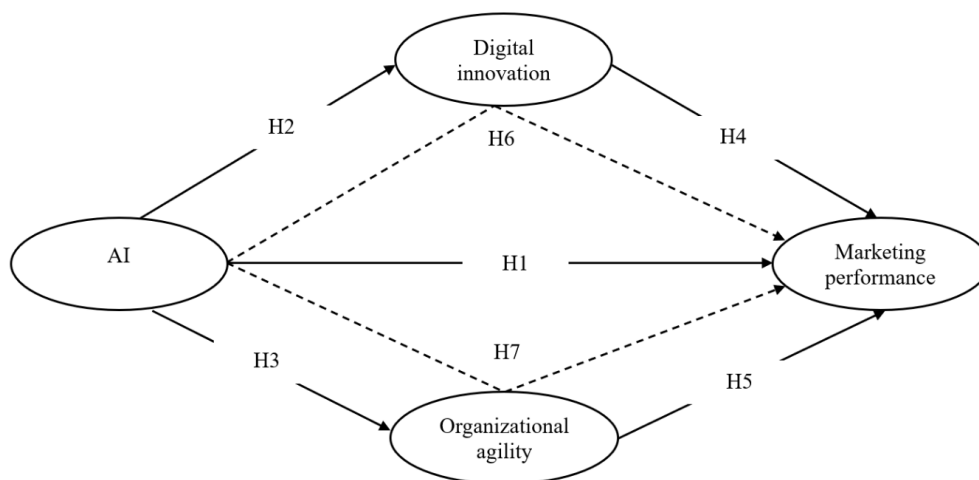


Figure 1. The proposed research model

METHODS

For the purpose of testing the study model, data were collected from marketing staff working in five-star hotels located throughout Saudi Arabia. The fieldwork was carried out between February and the end of April 2025. Because of the dispersed nature of the hotel sector and the practical challenges of obtaining a probability-based sample, a convenience sampling approach was selected. This method is frequently used in hospitality research where direct access to targeted

respondents is constrained. The survey instrument contained 30 measurement items, and following the recommendations of Hair et al. (2021)—which suggest at least ten responses per item—a minimum of 300 completed questionnaires was required. To exceed this threshold, 692 printed surveys were distributed to hotel marketing employees with the assistance of trained field researchers, who coordinated closely with hotel management to facilitate access.

At the close of the data collection phase, 448 usable questionnaires were retrieved, representing a valid response rate of 64.7%. This sample size comfortably meets the recommended standards and provides sufficient robustness for the statistical analyses employed in the study. Confidentiality of responses was strictly maintained, and no identifying details were requested from participants. Participation was voluntary, with all respondents briefed that their input would be used exclusively for academic purposes. Efforts were made to ensure a neutral data collection environment, thereby reducing the likelihood of social desirability bias and enhancing the credibility of the responses.

Measures

All constructs in the study were measured using multi-item scales adapted from prior validated instruments, and all items were rated on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. AI was measured with 10 items developed from Farahat (2023); sample items included “The extent to which AI technologies are adopted across different departments” and “The extent to which AI-generated insights are used in strategic and operational decision-making.” Digital Innovation was assessed using 8 items adopted from Wang et al. (2020) and Ndlovu et al. (2022), such as “The company actively adopts new digital processes, products and services” and “The company actively improves current digital services, products, and processes.” Organizational Agility was measured with 6 items adapted from Chen et al. (2014), with illustrative items including “The company responds easily and quickly to changes in aggregate consumer/user demand” and “The company customizes products or services to suit an individual customer/user.” Marketing Performance was assessed with 6 items developed from Al-Azab & Al-Romeedy (2020), with sample statements such as “The company’s marketing plan achieves its targeted results” and “The marketing plan does not require a long time to implement.” Finally, demographic information including age, gender, education level, and years of professional experience was collected to describe the sample.

Common Method Bias

Because the data in this study were obtained through a single self-reported survey, the potential issue of common method bias (CMB) was carefully addressed to ensure the robustness of the statistical results (Alhemimah et al., 2024). CMB can artificially inflate the observed relationships among constructs when information is gathered from the same respondents using one measurement instrument, a concern particularly relevant in cross-sectional designs (Jasim et al., 2024; Tehseen et al., 2017). To examine this risk, Harman’s single-factor test was performed by conducting an exploratory factor analysis using principal component extraction, consistent with the procedures recommended by Podsakoff et al. (2003). The analysis showed that the first factor did not account for the majority of the explained variance, with the total variance explained by a single component remaining well below the 50% threshold.

This outcome suggests that no single factor dominated the results and, consequently, that common method variance is unlikely to represent a significant threat to the validity of the findings. In addition, anonymity of responses and assurances of confidentiality were emphasized during data collection to further mitigate potential response biases.

RESULTS

Demographic profile

Table 1 presents the demographic characteristics of the respondents. In terms of age, 11.6% were less than 30 years old, 40.4% were between 30 and less than 40, 42% were between 40 and less than 50, and 6% were 50 years or above. Regarding gender, 64.1% of the participants were male and 35.9% were female. For educational background, 15% held less than a bachelor’s degree, 77.7% had a bachelor’s degree, and 7.3% had a postgraduate qualification. With respect to work experience, 9.6% had less than five years of experience, 35.3% had between five and less than ten years, 37.7% reported between ten and less than fifteen years, and 17.4% had fifteen years or more.

Table 1. Demographic profile

Participants’ profile		Freq.	%
Age	Less than 30 years	52	11.6%
	From 30: less than 40 years	181	40.4%
	From 40: to less than 50 years	188	42%
	50 years and above	27	6%
Gender	Male	287	64.1%
	Female	161	35.9%
Education	Less Bachelor	67	15%
	Bachelor	348	77.7%
	Postgraduate	33	7.3%
Work experience	Less than 5 years	43	9.6%
	From 5: less than 10 years	158	35.3%
	From 10: less than 15 years	169	37.7%
	15 years and above	78	17.4%

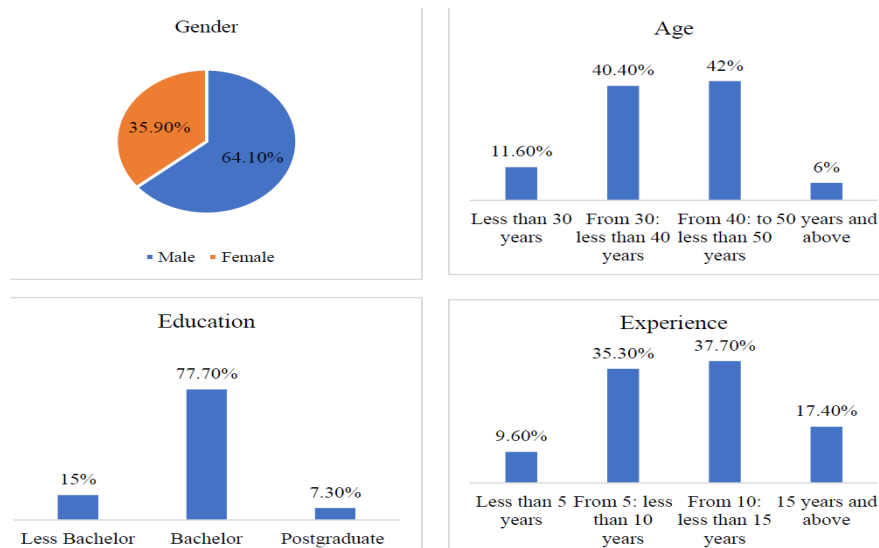


Figure 1. Visual representation of demographic data

Measurement model

Table (2) presents the assessment of the measurement model. All item loadings were above the recommended threshold of 0.70, confirming strong indicator reliability for each construct. The Cronbach’s alpha values ranged from 0.809 to 0.881, while the composite reliability (CR) scores were between 0.934 and 0.967, both of which exceeded the minimum benchmark of 0.70, demonstrating high internal consistency. Similarly, the average variance extracted (AVE) values for all constructs were greater than 0.70, indicating satisfactory convergent validity (Haji-Othman & Yusuff, 2022). Multicollinearity was not a concern, as variance inflation factor (VIF) values for all constructs fell well below the cut-off point of 5, supporting discriminant validity. These results collectively establish that the measurement instruments are both reliable and valid (Hair et al., 2021). Beyond reliability and validity checks, overall model fit was also evaluated to ensure robustness. The chi-square ratio (CMIN/DF) was observed at 2.669, falling comfortably within the acceptable range. In addition, absolute and incremental indices showed excellent fit: GFI = 0.954, AGFI = 0.951, NFI = 0.958, IFI = 0.949, CFI = 0.943, and TLI = 0.955. All values were above the recommended 0.90 threshold, further confirming model adequacy. The Root Mean Square Error of Approximation (RMSEA) was recorded at 0.022, well below the maximum acceptable value of 0.08. Collectively, these results confirm that the measurement model provides a robust representation of the data and is suitable for proceeding with the structural model analysis (El-Sisi et al., 2025).

Table 2. Measurement model

Construct	Loading	Cronbach Alpha	CR	AVE	VIF
Artificial intelligence (AI)		0.881	0.967	0.751	2.198
The extent to which AI technologies are adopted across different departments	0.901				
The degree to which AI systems are integrated with existing business processes and workflows	0.876				
The adequacy of the technical infrastructure to support AI applications	0.846				
The availability of skilled personnel to develop, implement, and maintain AI systems	0.859				
The extent to which AI-generated insights are used in strategic and operational decision-making	0.866				
The perceived benefits of AI in terms of efficiency, productivity, and innovation	0.819				
The organization’s adherence to ethical guidelines and regulatory compliance in AI usage	0.887				
The level of financial investment in AI technologies and related resources	0.894				
The availability and effectiveness of training programs to upskill employees in AI technologies	0.877				
The extent to which AI has improved customer interactions and satisfaction	0.839				
Digital innovation		0.809	0.953	0.718	2.665
The company actively adopts new digital processes, products and services	0.879				
The company dynamically exploits new digital services, products and processes	0.819				
The company actively identifies new digital markets	0.858				
The company actively entertains new digital technologies	0.849				
The company actively improves current digital services, products, and processes	0.827				
The company robustly adjusts existing digital processes products, and services	0.858				
The company actively reinforces current digital markets	0.845				

The company actively supports current digital tools and technologies	0.847				
Organizational agility		0.857	0.941	0.728	1.998
To what extent do you agree that your organization easily and quickly perform the following business actions?	0.887				
Respond to changes in aggregate consumer/user demand					
Customize products or services to suit an individual customer/user	0.836				
React to new product or service launched by the competitors	0.867				
Adjust (i.e. expand or reduce) the variety of products/services availability	0.851				
Adopting new technologies to produce better, faster and cheaper products and services	0.819				
Sensing and responding to the dynamic business changes posed by the business environmental hostility	0.858				
Marketing performance		0.873	0.934	0.704	3.209
The company's marketing plan achieves its targeted results	0.819				
The marketing plan does not require a long time to implement	0.841				
The company's management has clear strategic marketing decisions for the future	0.811				
The company's marketing plan does not require a large team to execute	0.848				
The company's goals are well-known and clear to all employees	0.844				
The company's market share has increased as a result of having strong marketing programs	0.871				

The results in Table (3) provide evidence of discriminant validity using the Fornell–Larcker criterion. The square roots of AVE values (shown on the diagonal) are greater than the inter-construct correlations in all cases, confirming that each construct is more strongly associated with its own indicators than with other latent variables. For example, AI (0.866) and digital innovation (0.847) demonstrate higher values on the diagonal compared to their correlations with other constructs, consistent with the reliability and convergent validity results previously established in Table (2). This indicates that the constructs are conceptually distinct and that multicollinearity is not an issue. Thus, the Fornell–Larcker test supports the adequacy of discriminant validity (Alansari et al., 2025).

Table 3. Discriminant validity results - Fornell-Larcker Criterion

	AI	Digital innovation	Organizational agility	Marketing performance
AI	0.866			
Digital innovation	0.581	0.847		
Organizational agility	0.609	0.453	0.853	
Marketing performance	0.576	0.603	0.571	0.839

Table (4) further evaluates discriminant validity using the Heterotrait-Monotrait (HTMT) ratio. All HTMT values fall well below the conservative threshold of 0.85, with values ranging from 0.478 to 0.611. These results reinforce the Fornell–Larcker outcomes by showing that correlations between constructs are not excessively high, thereby supporting clear differentiation among AI, digital innovation, organizational agility, and marketing performance. When considered together with the measurement model and overall fit indices, these results provide consistent evidence that the measurement framework is robust. Accordingly, the HTMT assessment confirms discriminant validity (Seraj et al., 2025).

Table 4. HTMT for validity

	AI	Digital innovation	Organizational agility	Marketing performance
AI				
Digital innovation	0.509			
Organizational agility	0.611	0.548		
Marketing performance	0.478	0.555	0.528	

Structure model

The structural model was tested to examine both the direct and mediated relationships among AI, digital innovation, organizational agility, and marketing performance. As shown in Table (5), all hypothesized paths (H1–H7) were statistically significant, with standardized coefficients ranging from 0.216 to 0.561, critical ratios exceeding 1.96, and p-values below 0.001. These results provide strong empirical support for the proposed theoretical model and affirm the central role of AI in driving marketing performance through innovation and agility.

Direct relationships reveal that AI significantly enhances marketing performance ($\beta = 0.498, p < 0.001$), confirming that AI adoption strengthens firms' marketing effectiveness by enabling data-driven decision-making, customer personalization, and predictive analytics. Moreover, AI exerts a strong positive effect on both digital innovation ($\beta = 0.505, p < 0.001$) and organizational agility ($\beta = 0.453, p < 0.001$), indicating that AI functions not only as a technological resource but also as a catalyst for innovation-oriented and adaptive practices. These findings are consistent with the Resource-Based View (RBV), which positions AI as a strategic resource that enhances organizational value creation, and with Dynamic Capabilities Theory (DCT), which emphasizes adaptive responsiveness to environmental changes.

Indirect effects further reinforce this dynamic. Mediation analysis shows that digital innovation ($\beta = 0.283$, $CR = 5.27$, $p < 0.001$) and organizational agility ($\beta = 0.216$, $CR = 5.01$, $p < 0.001$) significantly mediate the AI–marketing performance link. However, because the direct path from AI to marketing performance remains significant, both mediations are partial. This implies that while innovation and agility strengthen AI’s overall impact, AI also directly contributes to marketing outcomes through mechanisms not captured by these mediators—such as enhanced market intelligence, customer engagement, or process optimization.

This layered effect highlights the synergistic interaction between technological and organizational capabilities, underscoring that AI’s value creation extends beyond operational efficiency toward strategic competitiveness.

Table 5. Direct and indirect effects

Path	β	s.e	C.R	p-value	Results
Direct effect					
H1: AI → Marketing performance	0.498	0.069	7.22	$p < 0.001$	Yes
H2: AI → Digital innovation	0.505	0.073	6.92	$p < 0.001$	Yes
H3: AI → Organizational agility	0.453	0.065	6.97	$p < 0.001$	Yes
H4: Digital innovation → Marketing performance	0.561	0.069	8.13	$p < 0.001$	Yes
H5: Organizational agility → Marketing performance	0.476	0.066	7.21	$p < 0.001$	Yes
Mediation effect					
H6: AI → Digital innovation → Marketing performance	0.283	0.054	5.27	$p < 0.001$	Yes
H7: AI → Organizational agility → Marketing performance	0.216	0.043	5.01	$p < 0.001$	Yes

DISCUSSION

This study set out to examine how AI contributes to marketing performance in tourism and hospitality businesses, both directly and through the mediating roles of digital innovation and organizational agility. The results confirm the strategic importance of AI as a valuable resource and highlight the dynamic processes that transform technological adoption into measurable marketing outcomes. By integrating insights from the RBV and DCT, the findings provide a nuanced understanding of the mechanisms through which AI strengthens competitiveness in highly volatile and customer-driven service environments. The first result demonstrates that AI has a clear positive effect on marketing performance, a finding that aligns with several prior studies. Consistent with this insight, Farahat (2023) confirmed that AI adoption directly improves marketing performance indicators, reinforcing its role as a resource that organizations can no longer overlook. Similarly, Abrokwah-Larbi & Awuku-Larbi (2024) reported that AI contributes to superior marketing results by reshaping how firms structure and evaluate their marketing activities. More recently, Chen et al. (2025) provided further support by demonstrating that AI enables organizations to achieve stronger marketing performance through improved alignment between strategic objectives and measurable outcomes.

Building on this, the analysis reveals that AI significantly fosters digital innovation, a conclusion that aligns with the findings of several prior studies. Reinforcing this perspective, Wicaksono et al. (2024) reported that AI technologies help organizations achieve greater levels of digital transformation, which translate into more sustainable innovation outcomes. More recently, Kanellopoulou et al. (2025) highlighted that AI integration not only supports incremental digital improvements but also fosters radical innovation by reshaping how firms conceptualize and implement digital strategies.

The results further confirm that AI positively affects organizational agility, a finding consistent with prior research. Lamrhardy & Slaoui (2025) emphasized that AI contributes to organizational flexibility in turbulent environments, and Mariani & Mancini (2025) provided evidence that AI facilitates resource reallocation and strategic pivots, both of which are core elements of agility. Taken together, these studies corroborate the present finding while the current research advances the debate by showing that agility is not merely a by-product of AI but the organizational pathway through which AI capabilities are transformed into sustained adaptability and competitive resilience.

In addition to these direct effects, the findings emphasize that digital innovation itself has a strong positive influence on marketing performance, a conclusion that resonates with prior scholarship. Consistent with this, Jung & Shegai (2023) found that digital innovation allows firms to sustain marketing competitiveness by integrating advanced digital practices that strengthen market positioning. Further evidence is provided by Erhan et al. (2024), who showed that digital innovation contributes directly to superior marketing performance through enhanced communication effectiveness and improved market reach. More recently, Yu et al. (2025) confirmed that firms adopting digital innovation consistently outperform their counterparts in terms of marketing success, highlighting its central role as a performance enabler.

Similarly, the study demonstrates that organizational agility contributes positively to marketing performance, a result that is strongly supported by prior literature. In line with this, Er & Mukti (2023) extended this perspective by demonstrating that agility enhances marketing effectiveness by enabling rapid adjustments to promotional activities and market positioning. Della Corte et al. (2025) validated that agility is a critical determinant of marketing success, particularly in contexts characterized by uncertainty and intense competition.

Most importantly, the analysis reveals that both digital innovation and organizational agility partially mediate the link between AI and marketing performance. This result highlights that AI’s contribution to marketing effectiveness cannot be understood in isolation but rather through the mechanisms that allow its value to materialize. In practice, digital innovation translates AI-driven insights into new products, services, and digital processes, while organizational agility ensures that these innovations remain adaptive and responsive to changing market conditions.

Theoretical implications

This study provides substantial theoretical contributions by advancing both the RBV and Dynamic Capabilities Theory, offering new insights into how AI, digital innovation, and organizational agility interact to shape marketing performance in tourism and hospitality. First, the confirmation that AI positively and directly influences marketing performance extends the RBV in a critical way. Traditional applications of RBV have emphasized tangible and intangible assets as sources of competitive advantage, yet this study positions AI as a new generation of strategic resources. Unlike conventional resources, AI possesses adaptive and generative qualities that not only create value in the present but also continuously evolve through learning and data accumulation. By demonstrating that AI satisfies the VRIN criteria in service contexts characterized by high intangibility and volatility, this research redefines how RBV accounts for digital resources. It underscores that AI is not a static asset but a self-renewing strategic resource capable of driving sustained marketing performance in dynamic service industries.

Second, the finding that AI significantly fosters both digital innovation and organizational agility refines Dynamic Capabilities Theory by identifying AI as a direct enabler of sensing, seizing, and transforming processes. While the theory has traditionally emphasized managerial cognition and organizational routines as the foundation of dynamic capabilities, this study provides evidence that AI can itself function as an infrastructural enabler of dynamic capabilities. In other words, AI equips firms with real-time analytics, predictive intelligence, and adaptive mechanisms that accelerate innovation and responsiveness. This contribution broadens the scope of Dynamic Capabilities Theory by integrating technological agency into its core logic, suggesting that advanced technologies are not peripheral tools but integral drivers of dynamic capabilities in the digital era.

Third, the results showing that both digital innovation and organizational agility positively impact marketing performance deepen the theoretical understanding of how capabilities translate into outcomes. For RBV, these findings demonstrate that resources such as AI yield superior performance only when embedded within innovative and agile organizational processes. For Dynamic Capabilities Theory, they highlight that innovation and agility are not independent outcomes but the very pathways through which AI-driven capabilities materialize into competitive advantage. This dual perspective integrates the resource-based and capability-based logics, providing a richer explanation of how technological resources are converted into marketing excellence.

Most critically, the evidence that digital innovation and organizational agility mediate the AI–marketing performance relationship represents a novel theoretical advancement. This finding establishes that AI’s value as a strategic resource cannot be fully realized in isolation; it requires the dynamic capabilities of innovation and agility to unlock its potential. By empirically validating this dual mediation, the study offers a bridging framework between RBV and Dynamic Capabilities Theory, showing that the two perspectives are not competing but complementary. This integration moves beyond the limitations of each theory when applied separately, advancing a more holistic model that explains how emerging technologies are internalized, transformed, and leveraged for strategic outcomes in volatile service environments.

This study strengthens theoretical understanding by integrating the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT) into a unified framework that explains how AI drives strategic and marketing outcomes. By positioning AI simultaneously as a strategic resource (RBV) and a capability enabler (DCT), the research moves beyond traditional, isolated applications of each theory. The dual mediation of digital innovation and organizational agility empirically demonstrates how resources and capabilities interact to convert AI potential into sustained performance advantages. This theoretical integration expands the explanatory power of both frameworks and provides a solid foundation for future theory-building on intelligent technologies in hospitality and tourism.

Practical implications

The results of this study carry substantial practical significance for managers and policymakers in the tourism and hospitality industry. First and foremost, the confirmation that AI directly enhances marketing performance highlights the need for organizations to view AI not as a peripheral tool but as a central component of their strategic marketing infrastructure. Firms should therefore invest in AI capabilities that go beyond routine automation, such as predictive analytics for anticipating demand, machine learning for customer segmentation, and natural language processing for understanding guest feedback. By embedding these technologies into their marketing processes, managers can move from reactive strategies to proactive market shaping, gaining first-mover advantages in highly competitive environments.

Equally important is the finding that AI drives digital innovation, which calls for a shift in how tourism and hospitality firms design and deliver their offerings. Managers should actively leverage AI to experiment with new service models, such as AI-powered concierge systems, dynamic pricing engines, and immersive digital experiences (e.g., virtual or augmented reality tours). Rather than adopting technology for efficiency alone, firms should position digital innovation as a continuous process of value creation that directly enhances customer engagement and brand differentiation. To operationalize this, managers can establish cross-functional “innovation labs” within their organizations that integrate marketing, IT, and operations to co-create and pilot AI-driven innovations before scaling them across the enterprise.

The positive effect of AI on organizational agility also provides an actionable insight: agility must be deliberately cultivated, not left to chance. For practitioners, this means embedding AI into decision-making routines to allow for rapid sensing and responding to market fluctuations. Hospitality firms, for example, can deploy AI dashboards that provide real-time demand forecasts, competitor tracking, and sentiment analysis, enabling managers to pivot campaigns or reallocate resources within days rather than months. Building such adaptive capacity requires both technological infrastructure and a cultural orientation toward experimentation and responsiveness. Leaders should therefore focus on training programs that build digital

literacy and agile thinking among staff, ensuring that AI insights are translated into fast and flexible action at all levels of the organization. Moreover, the demonstrated positive effects of digital innovation and organizational agility on marketing performance suggest that firms should treat these capabilities as strategic imperatives. Investments in AI must be matched by organizational structures that facilitate innovation and agility. One actionable approach is to redesign performance measurement systems to reward innovative marketing experiments and rapid adaptation, even when immediate results are uncertain. This encourages risk-taking and flexibility, both of which are essential for sustaining marketing competitiveness in turbulent environments. Policymakers and industry associations can also play a role by creating innovation-friendly ecosystems, offering incentives for firms that adopt AI-driven practices that contribute to destination competitiveness.

Finally, the mediation results provide the most critical practical lesson: the benefits of AI are fully realized only when channeled through digital innovation and organizational agility. For managers, this means avoiding the trap of “technology for technology’s sake.” Instead, AI initiatives should be strategically aligned with organizational processes that foster innovation and adaptability. Concrete steps include integrating AI adoption into long-term digital transformation roadmaps, aligning innovation efforts with customer-centric marketing goals, and institutionalizing agile workflows that allow for constant iteration. By doing so, firms not only maximize the return on AI investments but also build a sustainable foundation for marketing excellence in an era where technological change is both relentless and disruptive.

Limitations and future research

While this study advances theoretical and managerial understanding of how AI, digital innovation, and organizational agility interact to enhance marketing performance, several limitations warrant critical reflection. First, the findings are contextually bound to tourism and hospitality businesses operating within a single national setting. Although this enhances contextual depth, it limits the external validity of the results. The observed relationships - particularly the dual mediation of digital innovation and organizational agility - may vary under different institutional, technological, or market conditions. Future research should therefore undertake cross-country comparative analyses to test the robustness and cultural transferability of the proposed model. Such research could reveal how national innovation systems, regulatory frameworks, or digital maturity levels moderate AI’s impact on marketing performance.

Second, the study conceptualized digital innovation and organizational agility as aggregate constructs, which may obscure the nuanced effects of their sub-dimensions. Empirical findings suggest that both constructs are significant mediators, yet the analysis does not disentangle which facets - such as process innovation, customer interface innovation, or strategic agility - drive these effects more strongly.

Future studies should adopt a multidimensional measurement approach to isolate these mechanisms and assess their relative contribution. Doing so would sharpen the theoretical precision of the Resource-Based View and Dynamic Capabilities Theory by identifying the micro-foundations through which AI fosters performance gains.

Third, while the mediating roles of innovation and agility were empirically validated, the model may underestimate other critical pathways linking AI adoption to marketing outcomes. The findings highlight AI’s strategic importance but do not capture complementary enablers such as knowledge management, customer experience design, data governance, or employee creativity, which could further explain variations in marketing success. Expanding the model to include these factors would provide a more holistic understanding of how AI capabilities translate into value creation.

Fourth, by focusing exclusively on marketing performance as the dependent variable, the study provides only a partial picture of AI’s organizational impact. Although marketing outcomes represent an essential performance dimension, AI-driven transformation also influences broader indicators such as customer satisfaction, service quality, financial performance, and destination competitiveness. Future research should therefore adopt a multi-dimensional outcome framework to capture the full spectrum of benefits and trade-offs associated with AI deployment.

Finally, the study did not empirically test moderating conditions that may strengthen or weaken the AI–performance relationship. Factors such as organizational culture, leadership style, technological turbulence, or market volatility could significantly alter the effectiveness of AI-driven innovation. Incorporating such contingencies in future models would allow scholars to identify boundary conditions under which AI, innovation, and agility jointly deliver optimal results.

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