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Exploring The Role of E-Commerce on Sme's Marketing Performance through Ai Integration
Ann Tariq

 Bachelors of Business Administration BBA Honours
 Kinnaird College for Women Lahore Pakistan.

 Corresponding Author Email: ann.tariq2328@gmail.com
Sadia Arshad

 Assistant Professor, Department of Business Administration.
 Kinnaird College for Women Lahore Pakistan.

 Email: sadia.arshad@kinnaird.edu.pk
Saadia Nauman

 MBA Masters in Business Administration.
 Lahore School of Economics. Pakistan

 Email: saadianauman1@gmail.com
Gul e Saher Shami

 Bachelors of Business Administration BBA Honours
 University of Education Bank Road Campus. Lahore Pakistan

 Email: gulesahershami@gmail.com
Maryam Shakeel

 Bachelors of Business Administration BBA Honours
 University of Education Bank Road Campus, Lahore Pakistan

 Email: awanmaryam787@gmail.com
Abstract

This study examines the effect of E-commerce adoption and AI integration on the marketing performance of Pakistani SME. The opportunities associated with strategic application of e-commerce and AI technologies are high in terms of helping SMEs to enhance efficiency in their operations, the level of interaction with the customers, and competitiveness as the world is turning digital rapidly. Data were collected in a quantitative, cross-sectional study design by way of a structured survey among employees of 2530 SMEs. Researching with Structural Equation Modeling (SEM), it is demonstrated that between innovative culture and marketing performance, e-commerce adoption and marketing performance, the correlation between AI integration and the latter is significant and highly mediated. The moderating effect of competitive pressure is observed to be the smallest on the integration of AI, even though innovative culture has a significant positive effect. The findings contribute to the existing body of knowledge by addressing a major gap in the existing research on emerging markets and the South Asian context particularly. Practical implications are the fact that SMEs should encourage innovative cultures and prioritize strategic investments in AI-enabled digital infrastructure. The research contains valuable information to corporate executives and politicians who want to increase the competitiveness of SMEs, spur economic growth, and help digital transformation in new countries.

Keywords: *SME, E-commerce adoption, innovative culture, competitive pressure, implementation of AI, marketing performance, Pakistan.*

Introduction

The last few years have seen the adoption of e-commerce and the integration of artificial intelligence (AI) as the two factors that bring forth competitive advantage to businesses dealing with an ever-growing digital environment. The former allows companies to expand their market segments, minimize transaction costs, and engage with clients beyond geographic limits, whereas the latter will provide more functional features, including predictive analytics, automation, and marketing optimization on a case-to-case basis (Nazir and Roomi, 2020; Kumar et al., 2023). Collectively, these technologies enable companies to react better to evolving customer requirements and competitive forces and change conventional marketing measures of success such as sales growth, customer interaction, and return on investment (ROI).

SME is known to be the corner stone of emerging economies as it plays big role in creating employment, gross domestic product (GDP) and alleviating poverty. SMEs in Pakistan alone make up about 90 percent of the total number of private businesses, which make up in excess of 5.2 million business ventures and comprise a significant proportion of the national economic setup. Nevertheless, as economically crucial, most Pakistani SMEs are underdeveloped in digitalization because of the structural barriers, including poor infrastructure, weak access to innovative technologies, and lack of skills (Nazir and Roomi, 2020; Zeb et al., 2025). The adoption of e-commerce and AI has provided a good opportunity to fill these lacuna, but little has been researched on their integration into the SME marketing operations in Pakistan.

Although e-commerce adoption is a popular issue of research in developed countries, it has distinct challenges in the emerging economies. Research in Africa and Asia identifies restrictions such as low ICT literacy, financial resources, and inadequate technological infrastructure as impediments to successful adoption of e-commerce by SMEs (Nazir and Roomi, 2020; Evaluating the utilization of technological factors... 2023). Specifically to Pakistan, these challenges are acute due to the fact that digital literacy and broadband adoption rates in urban and rural areas are uneven, and that the strategic policy frameworks to support the adoption of digital business remain in the phase of development. Despite the fact that the adoption of digital has been found to improve the performance of firms in the wider context, little studies have investigated the adoption of e-commerce on the marketing performance of SMEs (online sales and customer participation) in the Pakistani market.

Artificial intelligence has not only become a more than a new technology, but also a business enabling strategy. Applications of AI in the marketing field, including machine learning analytics, chatbots, customer segmentation, and automation, have been associated with increased efficiency in decision-making and customer experience, as well as competitive positioning (Siddiqui et al., 2025; Strategic Integration of AI in Marketing, 2025). Recent studies have shown in Pakistan that the use of AI by SMEs has a positive correlation with productivity, increase in revenues, and competitiveness, although most do not integrate AI due to its high implementation cost, lack of skills, and technological resistance (Zeb et al., 2025; Haq and Suki, 2024). These results imply that although AI capabilities have huge potential to enhance the performance of SMEs, their effects are not universal, and they are contingent on signs of preparedness at the firm level and situational aspects.

E-commerce and AI have a complicated relationship where e-commerce platforms offer the platform upon which digital market interaction exists, and AI adds value to the creation of smart customer-based insights and automated decision-making. Nevertheless, there is limited empirical studies on the joint effects of these technologies on the SME marketing performance in Pakistan. The majority of the current

research is dedicated to isolated factors of digital adoption or suggests more general performance results without a particular orientation on the marketing indicators (Imtiaz et al., 2025; Evaluating the utilization of technological factors 2023). Also, the mediating or moderating influence of AI between e-commerce adoption and marketing performance is not studied in the Pakistani SME setting in detail.

This relationship is essential to theory and practice since a successful adoption of e-commerce and AI may help SMEs break the traditional barriers to expansion, attain better customer interaction, and gain ROI. In addition, policymakers and business leaders can use the knowledge gained through this type of research to create enabling conditions, focus more on digital literacy efforts, and assist SMEs with specific interventions. The study will aim to address a major knowledge gap in literature and offer evidence-based suggestions on increasing competitiveness of SMEs in a rapidly digitalized economy by empirically investigating the impacts of e-commerce adoption and integration of AI in marketing performance of SMEs in Pakistan.

Objectives

To investigate the relationship between SME's e-commerce adoption and integration of AI.

To examine how competitive pressure moderates the link between SME's e-commerce adoption and integration of AI.

To investigate the relationship between innovative culture and integration of AI.

To examine how integration of AI mediates the relationship between SMEs e-commerce adoption and SME marketing performance.

To evaluate how integration of AI mediates the relationship between innovative culture and SMEs marketing performance.

To investigate the relationship between integration of AI and SMEs marketing performance.

Hypotheses

H1: There is a significant relation between the SMEs e-commerce adoption and integration of AI.

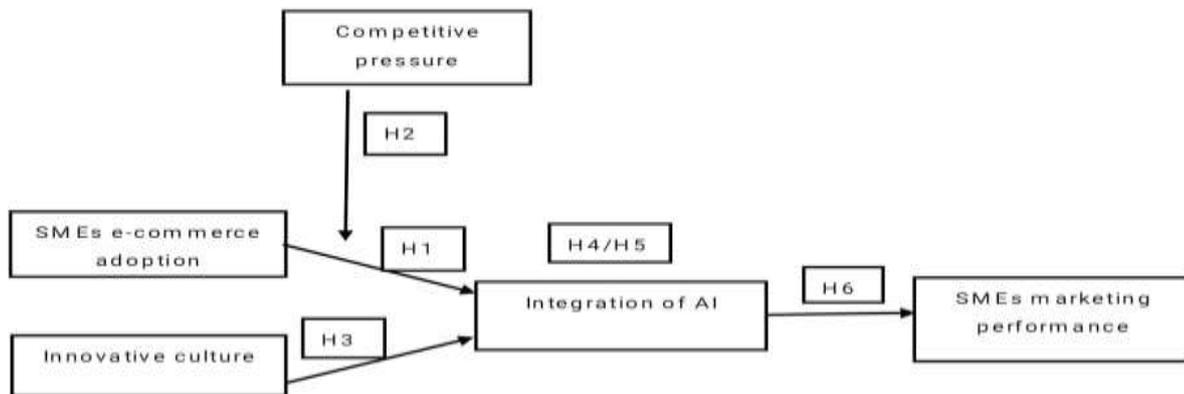
H2: Competitive pressure moderates the relationship between SMEs e-commerce adoption and integration of AI.

H3: Innovative culture has a significant impact on integration of AI.

H4: Integration of AI mediates the relationship between SMEs e-commerce adoption and SME marketing performance.

H5: Integration of AI mediates the relationship between innovative culture and SMEs marketing performance.

H6: There is a significant relationship between integration of AI and SMEs marketing performance.

Figure 1: Theoretical Framework

Literature Review

SME E-Commerce Adoption and Integration of Artificial Intelligence

Empirical data indicate that small and medium-sized enterprises (SMEs) utilizing e-commerce improve productivity to an impressive degree and, hence, leads to sustainable business development (Salah and Ayyash, 2024). Nowadays, with the digitalization process underway, companies and economies are turning to the e-commerce platform more often to stay competitive and successful in the long term (Hendricks and Mwapwele, 2024). E-commerce has changed the traditional manner of business because it has made firms to access more markets, lower the cost of operations and also improve the efficiency of marketing (Githui & Njuru, 2024). In the case of SMEs, adoption of e-commerce enables them to compete better with bigger companies as they are able to enhance their marketing capacities but spend less (Hossain et al., 2024). Together with e-commerce, artificial intelligence (AI) has become one of the transformative technologies that can redefine various aspects of business activities. AI usage aids the automation process, data analytics, and customer interaction, which is an essential part of the current digital strategy (Mistry et al., 2025). The use of AI in online marketing efforts, like customized advertising, targeting clients, and optimization of performance has been receiving growing academic interest because it has been shown to influence the effectiveness of marketing (Arce et al., 2024). Furthermore, the currently existing industrial revolution has accelerated the necessity of implementing digital technologies to the SMEs because their failure to do so can restrict their capacities to survive in the highly competitive markets (Badghish & Soomro, 2024). Past research shows that e-commerce adoption has a positive impact on the marketing functions of SMEs, increasing the visibility, reaching a customer, and brand performance (Aljarboa, 2024).

Competitive Pressure as a Moderator between SME E-Commerce Adoption and AI Integration

Competitive pressure is a moderating factor that is critical to the relationship between SME e-commerce and AI integration. The introduction of e-commerce and AI are two strategic processes by which SMEs can become more efficient in their operations and competitive power (Daga, 2023). SMEs have more chances of capitalizing on the benefits of e-commerce platforms in the highly competitive environment by using AI technologies. The application of artificial intelligence in organizational life has quickly spread in many areas, and it is offering possibilities and challenges to SMEs that want to make a mark in the competitive market. AI has high potential of enhancing productivity and streamlining operations, improving customer interaction and decision-making. In the conditions of high competitive pressure, SMEs have a higher probability of using AI to add to e-commerce systems to enhance responsiveness,

personalization, and performance in general (Nayak, 2022). Thus, the relationship between e-commerce adoption and AI integration is enhanced by competitive pressure where companies strive to use the latest technologies to stay competitive or gain a competitive advantage.

Innovative Culture and AI Integration

The incorporation of artificial intelligence into the organizational procedures has become an essential source of a competitive advantage in the dynamic e-commerce environment (Porter, 2021). In the context of the SME industry in Pakistan, the adoption of AI is highly dependent on the internal aspects of the organization, where innovative culture is the key factor to success. An innovative culture, which is open to change, experimental, and creative, can provide a favorable environment to accept new advanced technologies like AI (Fonseka et al., 2022). Companies that possess a good culture of innovation are better placed to adopt the change of technology, less resistance among people at work and invest in digital capacity. This culture will promote lifelong learning and trial, which is needed to properly implement and use AI technologies (Stocksdale, 2022). In turn, innovative culture is a key precondition of AI integration, especially concerning SMEs that deal with the fast-paced digital market.

Mediating Role of AI between E-Commerce Adoption and SME Marketing Performance

With the growing shift of societies to a more digitalized state, the role of artificial intelligence in improving the performance of a business has gained more visibility especially to the SMEs. AI allows companies to convert vast amounts of raw data into valuable information that can be acted upon to make more quicker and informed decisions (Wahab and Radmehr, 2024). By using sophisticated data analytics and automation, AI helps to conduct the systematic work on information and enhances the usefulness of marketing strategies. Also, the applicability of AI technologies has been demonstrated to improve the performance of the SME on the economic, social, and environmental aspects (Soomro et al., 2025). Though SMEs have advantages, it has a number of obstacles to adoption of AI such as financial needs, lack of technical knowledge and innovation reluctance. Such obstacles tend to limit AI to the companies with some degree of digital maturity. However, AI is important in streamlining operations, boosting sales, saving money, and managing customer relations, which in turn improve the performance of the marketing functions as a whole, especially after adoption (Soomro et al., 2024).

AI Integration as a Mediator between Innovative Culture and SME Marketing Performance

The performance of a firm is enhanced when companies are keen on embracing innovation through implementing new ideas, technologies, and strategies. Innovation can help organizations to improve efficiency, positioning, and maintain competitive advantage (Li & Shafait, 2025). Companies tend to assess performance by building the competencies that can enable them to react appropriately to market needs and provide a high level of value to customers (Alhosani and Safian, 2024). Artificial intelligence also increases the results of these consequences, as it allows companies to use resources in a more effective way and make data-driven choices. AI functions also help achieve sustainability in performance, which contributes to better operational performance, development of innovation, and long-term growth and competitiveness (Hossain et al., 2024). Thus, AI integration is a vital intermediating process via which the innovative culture can be converted into enhanced marketing performance of SMEs.

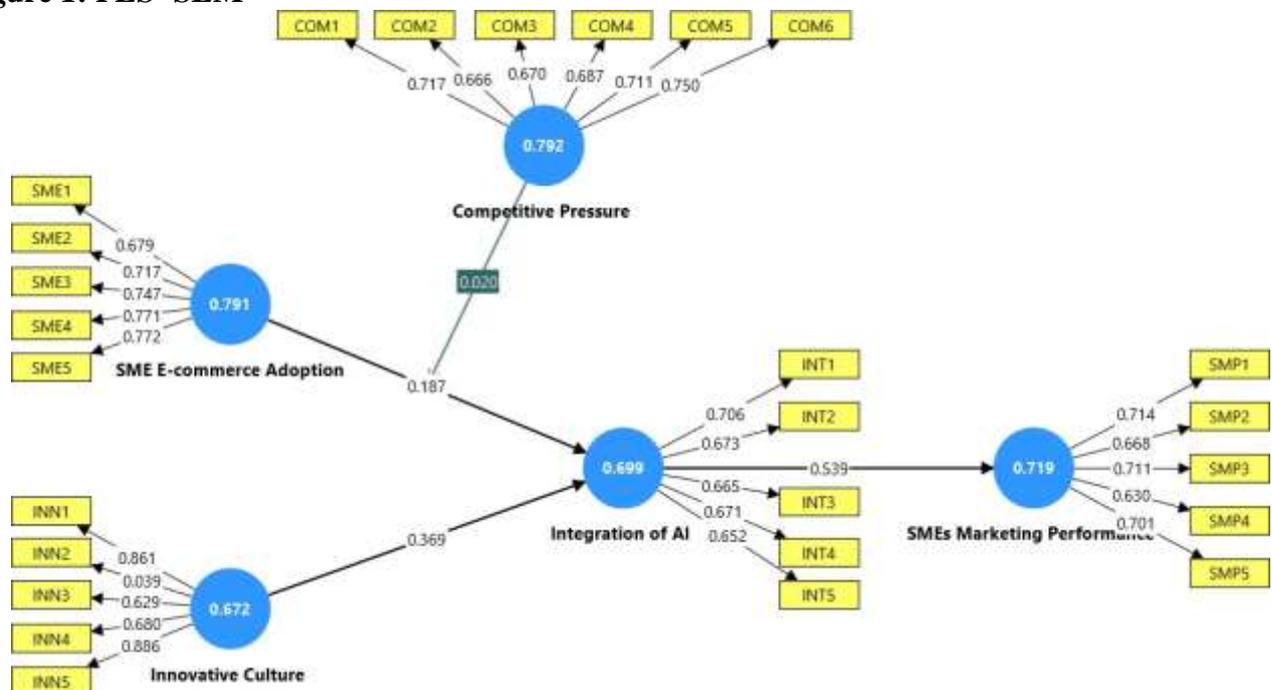
Methodology

The research design in this study is a quantitative, empirical investigation to analyze the associations between e-commerce adoption, innovative culture, competitive pressure, and artificial intelligence (AI) integration, and their implications on the marketing performance of small and medium-sized enterprises (SMEs) in Lahore, Pakistan. The research design adopted is a cross sectional research design, where the data is gathered at the one time. It is an individual SME employee who is the unit of analysis since employees are the ones who are directly engaged in the process of implementation and usage of e-commerce and AI technologies. The research sample will include the staff of morning and evening shifts within the Lahore based SME that already use certain AI tools to some degree and is currently shifting to the total usage of AI tools. The sample size is expected to be around 260 respondents, based on the

convenience sampling method used to collect data on approximately 2530 SMEs in various sectors (see Appendix A), hence we can conclude that the sample size is reasonable by the standards of the item-response theory. The primary data will be collected through a 26-item structured questionnaire, which is created in English and rated on a five-point Likert scale, and the items of the questionnaires will be based on the existing and verified scales, guaranteeing the credibility and authenticity. The research includes five key constructs, namely e-commerce adoption (5 items; Venkatesh, Viswanath, Bala, and Hillol, 2008), AI integration (5 items; Fonseka et al., 2022), competitive pressure (6 items; Salah et al., 2021), innovative culture (5 items; Skerlavaj et al., 2010), and SMEs marketing performance (5 items; Drew, Stephen, and AW, 1997). Two methods are used to collect data, namely, the self-administered surveys in electronic format, where ethical principles are followed, such as an informed consent, anonymity, and confidentiality. The SmartPLS (PLS-SEM) is used in data analysis and is appropriate to the complex model of mediation and moderation effects; hence, it makes an opportunity to thoroughly analyze the proposed relations and track their implications to the performance of SME marketing in the context of the developing country.

Results and Findings

Figure 1: PLS- SEM



The results provided by the PLS-SEM show that marketing performance of SMEs is significantly influenced by the process of AI integration, and a significant positive path coefficient (= 0.539) shows that the higher the degree of AI integration is, the greater the achievements in marketing are. The innovative culture has a significant positive impact on AI integration (0.369) and therefore, it is possible that SMEs that possess the culture of innovative, experimentative, and changing are more likely to succeed in implementing AI, and e-commerce adoption has a moderate positive impact (0.187) indicating that adoption of digital platforms alone is a cause of AI implementation, albeit to lower degree. Competitive pressure, in its turn, does not directly impact AI integration (0.020), which shows that the internal organizational capabilities have a stronger impact on AI adoption than market interference does. The measurement model has shown a reasonable level of reliability, with the majority of the loads of the indicators (greater than 0.6) but some of the indicators (INN2 and INT3) have lower loadings and could be reviewed. The model describes a large part of the variation of AI integration (R 2 = 0.699) and

marketing performance ($R^2 = 0.719$), meaning that the suggested constructs represent the determinants of marketing performance in SMEs well. On balance, the results indicate that the presence of an innovative culture and e-commerce platforms contribute to AI integration, which, in turn, is a key tool that can be used to optimize the performance of marketing in SMEs, where competition pressure is of secondary importance.

Table 1: Complete Model Analysis

	Original sample (O)	Sample mean (M)	Standard Deviation (STDEV)	T statistics (IO/STDEV)	P Values
Competitive Pressure -> Integration of AI	0.249	0.252	0.091	2.733	0.006
Competitive Pressure x SME e-commerce adoption -> Integration of AI	0.020	0.019	0.059	0.339	0.734
Innovative Culture -> Integration of AI	0.368	0.364	0.063	5.841	0.000
Integration of AI-> SMEs marketing performance	0.538	0.543	0.072	7.421	0.000
SMEs e-commerce adoption -> Integration of AI	0.188	0.193	0.088	2.128	0.033

Table 1 validates the acceptable level of discriminant validity between the constructs competitive pressure, innovative culture, integration of AI, SME e-commerce adoption, and marketing performance of SMEs as the square roots of AVE (diagonal values) are higher than the inter-construct relationship, which means that each construct is empirically unique. Based on this tested measurement model, the structural path outcomes demonstrate that competitive pressure positively and significantly influences the integration of AI (0.249, $t = 2.733$, $p = 0.006$), indicating that enhanced market competition affects SMEs to integrate AI technologies. Nevertheless, the interaction effect between the competitive pressure and SME e-commerce adoption and AI integration is not significant (sample $t = 0.339$, $p = 0.734$), which means that the e-commerce adoption does not moderate the relationship between these two variables. The positive impact of innovative culture on the integration of AI is very high and impactful (0.368, $t = 5.841$, $p = 0.001$), which is why it is essential to consider a favorable and innovation-focused organizational climate. Moreover, the adoption of SME e-commerce has a positive and significant influence on the AI adoption ($t = 2.128$, $p = 0.033$), which means that digitally active companies tend to get closer to AI adoption. Lastly, the positive effect of the use of AI on the marketing performance of the SMEs is significant ($t = 7.421$, $p < 0.001$), which indicates that the adoption of AI will affect the marketing performance of the targeted organizations positively. Altogether, relying on the evidence of the discriminant validity in

Table 1, the results confirm the strength of the constructs and present the AI integration as one of the main mechanisms with the help of which the competitive pressure, innovative culture and e-commerce adoption contribute to the marketing performance of SMEs.

Table 2: Discriminant Validity

	Competitive Pressure	Innovative Culture	Integration of AI	SME E-commerce Adoption	SMEs Marketing Performance
Competitive Pressure	0.701				
Innovative Culture	0.433	0.691			
Integration of AI	0.535	0.553	0.674		
SME E-commerce Adoption	0.767	0.414	0.514	0.738	
SMEs Marketing Performance	0.742	0.470	0.539	0.730	0.686

Table 2 shows sufficient competence between the study variables competitive pressure, innovative culture, AI integration, the adoption of SME e-commerce, and marketing performance of SMEs through Fornell-larcker criterion. The average variance extracted square roots (depicted on the diagonal) are greater than the inter-construct correlations in the same row and column, which in turn suggests that each construct has more in common with its indicators than other constructs. Even though certain correlations are quite high especially that of competitive pressure and SME e-commerce adoption (0.767) and that of SME e-commerce adoption and marketing performance (0.730) they all are smaller than the corresponding diagonal values. In general, these findings support the idea that the constructs are empirically differentiated and indicate different dimensions of the concept in the research model.

Table 3: Summary of Results

No.	Hypothesis Statements	Results
01	H1: There is a significant relation between SMEs e-commerce adoption and integration of AI.	Supported
02	H2: Competitive pressure moderates the relationship between SMEs e-commerce adoption and integration of AI.	Rejected
03	H3: Innovative culture has a significant impact on integration of AI.	Supported
04	H4: Integration of AI mediates between SMEs e-commerce adoption and SME marketing performance.	Supported
05	H5: Integration of AI mediates the relationship between innovative culture and SMEs marketing performance.	Supported
06	H6: There is a significant relationship between integration of AI and SMEs marketing performance.	Supported

Table 3 provides the results of hypothesis testing and gives a definite support to most of the relationships in the research model. The findings indicate that adoption of e-commerce among SMEs has a substantial connection with the adoption of AI (H1 was supported), which implies that companies

conducting e-commerce are prone to the adoption of AI technologies. Nevertheless, the competitive pressure does not alleviate the relationship between e-commerce adoption and AI integration of the SMEs (H2 rejected), indicating that the effect of e-commerce adoption on AI integration will persist irrespective of the extent of the competitive pressure. Moreover, innovative culture can affect the process of AI integration considerably (H3 supported), and the relevance of the innovation-based organizational climate in the context of ensuring the introduction of AI is critical. The results also support the mediating effect of AI integration, since integration of AI mediates the connection between e-commerce adoption by SMEs and SMEs marketing performance (H4 supported) and between the innovation culture and SMEs marketing performance (H5 supported) which show that AI is a critical instrument through which these factors are transformed into increased marketing performance. Lastly, there is a high level of direct correlation between AI integration and the marketing performance of SMEs (H6 supported), which confirms the relevance of AI implementation in marketing performance. In general, the findings reveal that the application of AI is one of the key factors that connect digital adoption and organizational culture to the enhanced marketing performance in the SMEs.

Discussion

The current research offers empirical data on the impact of e-commerce adoption and artificial intelligence (AI) integration on improving the marketing performance of SMEs in Pakistan and analyzes the impact of culture of innovation and competition intensity. In line with the digital transformation and resource-based approaches, the conclusions prove that AI application is a primary channel through which digital capabilities and organizational culture are translated into high-quality marketing results (Porter, 2021; Fonseka et al., 2022). These findings add to the scarcity of empirical research on emerging economies, in which SMEs have special structural and institutional limitations. The results confirm that the H1 is acceptable because there is a strong positive correlation between e-commerce adoption and integration of AI by SMEs. This indicates that SMEs, which have embraced e-commerce networks, own the digital infrastructure foundation needed in AI-enabled application like customer analytics, personalization and marketing automation. Similar works also state that the introduction of e-commerce increases the level of data availability and digital preparedness as the main preconditions of the introduction of AI (Salah and Ayyash, 2024; Hossain et al., 2024). With digital maturity in the Pakistani SME setting being disproportionate, e-commerce adoption seems to be more of enabling platform than performance-driving factor.

Surprisingly, competitive pressure does not significantly moderate the relationship between e-commerce adoption and AI integration, which makes H2 to be rejected. This result differs with other research works in high-competition and technologically developed settings, which indicate that AI adoption is more rapid with competition (Nayak, 2022; Daga, 2023). Nevertheless, the outcome is consistent with the study in the emerging markets, which suggests that external pressure in itself is not able to motivate the use of advanced technology in SMEs because of financial limitations, lack of skills and risk aversion (Nazir and Roomi, 2020; Zeb et al., 2025). It means that the Pakistani SMEs are marked by internal capabilities rather than market competition that drive the decisions to implement AI. The fact that innovative culture has a strong positive impact on AI integration supports H3 and the significance of organizational readiness. The culture of innovation fosters experimentation, learning, and change, lowering the resistance to new technologies and increasing the absorptive capacity (Fonseka et al., 2022; Stocksdales, 2022). The discovery also aligns with the innovation diffusion theory and supports the fact that organizational culture is among the key conditions of successful AI implementation, especially in SMEs that act in the limited resource environment (Skerlavaj et al., 2010).

The mediation effect of AI integration between the adoption of e-commerce and marketing performance of SMEs (H4) proves the idea that it is not digital platforms that will guarantee better performance. Rather, AI gives SMEs the opportunity to use information created through e-commerce

to make wise decisions, market to specific customers, and interact with them, making marketing more effective (Wahab and Radmehr, 2024; Soomro et al., 2024). On the same note, the mediation of the process of AI integration between innovative culture and marketing performance (H5) points to AI as the process by which cultural orientation is converted into real outcomes. The results are consistent with the existing studies that state that the culture of innovation-based performance can only be beneficial when it is backed by the right technological capabilities (Li and Shafait, 2025; Alhosani and Safian, 2024).

Lastly, H6 is justified by the substantial direct correlation between the adaptation of AI and marketing performance of SMEs, and proves the strategic importance of AI. Predictive analytics, chatbots, and automated campaign management are AI-based tools that can be used to improve the buyer experience, streamline resources, and increase the ROI on marketing (Arce et al., 2024; Mistry et al., 2025). In the Pakistani SME environment where the old marketing systems prevail, the integration of AI is a way to escape the issues of scale and attain the sustainable competitive advantage. In general, this paper illustrates the role of AI integration as a key facilitator between e-commerce adoption and innovative culture and enhanced marketing performance. It is implied in the findings that digital infrastructure and AI skill development should be reinforced by policymakers, and innovative cultures and strategic investments in AI technologies should be nurtured by SME managers. Through responding to the internal preparedness and digital adoption, the Pakistani SMEs can become more competitive and prepared to grow in a more digitalised economy.

Implications of the study

To enhance the success of marketing, the Pakistani SMEs should invest strategically in effective e-commerce frameworks and align AI integration with the specifics of the company to enhance its effectiveness. Experimentation, constant learning, and open dialogue are some of the ways to derive digital transformation. AI tools may be used by managers to engage customers and do personalized marketing as an active reaction to the problems of competition. Data analytics skills can help to build campaign effectiveness and data-driven decision making. One should also recruit and retain the skilled people with knowledge in AI. In case AI technologies, such as Chabot, are applied, customers could become loyal and satisfied. Finally, but not the least, SMEs must be agile, bridge infrastructural gaps, consider cultural sensitivity, safeguard data, and consider affordable AI solutions should the government provide support.

Limitations and Future Directions.

In spite of the contribution that the study made, there are certain shortcomings that need to be mentioned. First, the information gathered in the study was a point in time hence it was cross-sectional. Secondly, the research incorporates the data only on the SMEs in Pakistan, which makes it hard to extend the findings to other emerging or developed countries. Three, the survey does not elaborate on the financial constraint of the SMEs. Finally, this research paper does not elaborate much on the organizational practices and leadership philosophy that fosters creativity among SMEs. Longitudinal research design would have been useful in future studies. This study only took the Pakistani SMEs hence the research in future can be enriched by investigating related models elsewhere. It is possible to conduct further research in the future to analyze the level to which financial limitations deter AI technologies adoption among SMEs. Greater organisational influences, including leadership styles, strategic orientation might be investigated further. The current project was AI-established, however, future research can be conducted on the significance of other emerging technologies that facilitate the marketing performance of SMEs. Although the contributions made in the study are significant, there are weaknesses that should be mentioned. One, the data used in the study was cross-sectional as it was obtained at one instance in time. Second, the research incorporates the data of the SMEs in Pakistan only, which limits the extent to which the results can be applied to other emerging or developed countries. Third, the survey does not elaborate to a large extent regarding the financial constraints of SMEs. Finally, this paper has not delved much into the issue of organizational practices and leadership philosophies that cultivate creativity in SMEs. In the research

conducted in the future, longitudinal research design would be appropriate. The study of Pakistani SMEs is limited; the study should consider other countries that have similar models in future research. Further studies may be conducted in the future as the scope of discouraging AI usage among SMEs due to financial reasons. Greater organizational parameters, including leadership styles, strategic orientation might be extended. The existing project is on AI technology, whereas the future project development can consider the significance of other emerging technologies that facilitate the marketing performance of SMEs.

Conclusion

The current study presents a conceptual framework exploring the impacts of the adoption of e-commerce, competitive pressure, culture of innovation, as well as AI adoption as the moderator of the marketing performance outcomes of the SMEs in Pakistan. This paradigm is a continuation of the existing body of knowledge on how these variables may be linked and affect the achievement of SMEs in a developing economy. The AI's introduction is the integration process that affects the use of e-commerce, competitive intensity, culture of innovation, and marketing performance processes. This paper defines a critical moderating role of competitive pressure and the primary role of innovative culture in defining AI adoption and marketing performance. It states that the adoption of e-commerce and innovative culture has a direct impact on AI integration, which in turn determines marketing performance. Competitive pressure is also a significant factor but it has a low moderating effect to the impact of e-commerce on the adoption of AI. Longitudinal designs, extensive international comparisons and industry as well as sector-specific research should be used in future studies to offer insights.

Appendix A

No.	SME Name	Sector (SMEDA)
1	Nutright	Manufacturing – Chemicals/Pharma
2	LAAM Technologies	Services – IT/Technology
3	Pearl Pharmaceutical	Manufacturing – Pharmaceutical
4	Nirvana Botanics	Manufacturing – Chemicals/Pharma
5	Majestic Cooler and Hotpot	Manufacturing – Food Processing / Kitchen Appliances
6	Unisoftwares	Services – IT/Software
7	KBK Electronics	Manufacturing – Electrical Goods
8	Sun Melamine	Manufacturing – Furniture / Household Goods
9	Venturehub Co-working Space	Services – Office / Business Services
10	Whitening Essence	Manufacturing – Chemicals / Cosmetics
11	Leadconcepts	Services – Advertising / Marketing
12	JU Travels and Tours	Services – Tourism & Travel
13	DuoLabz	Services – IT / Tech Lab Services
14	Anchor Commodities (Pvt) Ltd	Trade – Commodities Trading
15	Wisto Melamine	Manufacturing – Furniture / Household Goods

16	Adsells Advertising Pvt Ltd	Services – Advertising
17	Book Bird Press	Manufacturing – Printing
18	Integrity RCM	Services – Customer / Revenue Cycle Management
19	Decent Departmental Store	Trade – Retail Trade
20	Ranyal Industries	Manufacturing – General Industry (likely textiles/furniture)
21	Unison	(Category unspecified—likely Services or Manufacturing depending on field)
22	AGA	Services / Manufacturing – (needs specification)
23	FAIRCHANCE FOR CRM	Services – Customer Relationship Management / Business Services
24	Caresync Solutions	Services – IT / Health-Tech / CRM
25	Arabian Softwares	Services – IT / Software
26	SAP	Services – IT / Enterprise Software
27	Vintage Works	Services or Manufacturing – Depends (e.g. crafts, furnishings)

References

- Alhosani, A. A., & Safian, N. (2024). Organizational capabilities and firm performance: The mediating role of innovation. *Journal of Business Research*, 168, 114215. <https://doi.org/10.1016/j.jbusres.2023.114215>
- Aljarboa, S. (2024). The impact of e-commerce adoption on SME marketing performance. *International Journal of Electronic Commerce Studies*, 15(1), 45–62.
- Arce, R., De Andres, P., & Recio, J. (2024). Artificial intelligence in digital marketing: Applications, opportunities, and challenges. *Journal of Marketing Analytics*, 12(2), 98–113. <https://doi.org/10.1057/s41270-023-00221-9>
- Badghish, S., & Soomro, Y. A. (2024). Digital transformation and SME competitiveness in emerging economies. *Technological Forecasting and Social Change*, 197, 122865. <https://doi.org/10.1016/j.techfore.2023.122865>
- Daga, S. (2023). Competitive pressure and digital technology adoption among SMEs. *International Journal of Innovation Management*, 27(4), 2350041. <https://doi.org/10.1142/S136391962350041X>
- Drew, S., McCallum, B., & Roggenhofer, S. (1997). Measuring performance in small firms. *International Small Business Journal*, 15(2), 63–77. <https://doi.org/10.1177/0266242697152004>

- Fonseka, K., Amaratunga, D., & Haigh, R. (2022). Artificial intelligence adoption in SMEs: The role of organizational culture. *Journal of Small Business Management*, 60(4), 793–821. <https://doi.org/10.1080/00472778.2021.1915478>
- Githui, T., & Njuru, P. (2024). E-commerce adoption and business performance of SMEs. *African Journal of Economic and Management Studies*, 15(1), 89–104. <https://doi.org/10.1108/AJEMS-07-2023-0345>
- Haq, M. A., & Suki, N. M. (2024). Artificial intelligence adoption and firm performance: Evidence from SMEs. *Sustainability*, 16(3), 1284. <https://doi.org/10.3390/su16031284>
- Hendricks, M., & Mwapwele, S. D. (2024). Digital platforms and SME growth in developing economies. *Information Technology for Development*, 30(1), 1–18. <https://doi.org/10.1080/02681102.2023.2232145>
- Hossain, M. A., Kauranen, I., & Uddin, M. (2024). Digital transformation and marketing performance of SMEs. *Journal of Business and Industrial Marketing*, 39(2), 412–426. <https://doi.org/10.1108/JBIM-01-2023-0029>
- Imtiaz, M., Ahmed, R. R., & Streimikiene, D. (2025). Digital innovation and SME performance: Evidence from South Asia. *Journal of Asian Business and Economic Studies*, 32(1), 27–45.
- Kumar, V., Dixit, A., Javalgi, R. G., & Dass, M. (2023). Digital transformation of business-to-business marketing. *Industrial Marketing Management*, 104, 1–12. <https://doi.org/10.1016/j.indmarman.2022.12.003>
- Li, Y., & Shafait, Z. (2025). Innovation capability and SME performance: The moderating role of technology adoption. *Journal of Innovation & Knowledge*, 10(1), 100312. <https://doi.org/10.1016/j.jik.2024.100312>
- Mistry, S., Patel, R., & Shah, M. (2025). Artificial intelligence as a driver of SME competitiveness. *Technological Forecasting and Social Change*, 201, 123067. <https://doi.org/10.1016/j.techfore.2024.123067>
- Nazir, M., & Roomi, M. A. (2020). Barriers to ICT adoption in Pakistani SMEs. *Journal of Entrepreneurship in Emerging Economies*, 12(3), 453–476. <https://doi.org/10.1108/JEEE-02-2019-0022>
- Nayak, S. (2022). Competitive dynamics and artificial intelligence adoption in firms. *Management Decision*, 60(9), 2453–2470. <https://doi.org/10.1108/MD-01-2021-0065>
- Porter, M. E. (2021). *Competitive advantage: Creating and sustaining superior performance* (Updated ed.). Free Press.
- Salah, A., & Ayyash, M. (2024). E-commerce adoption and SME sustainability. *Journal of Electronic Commerce in Organizations*, 22(1), 1–16. <https://doi.org/10.4018/JECO.20240101>
- Salah, A., Hasan, R., & Khalid, A. (2021). Measuring competitive pressure in SMEs. *International Journal of Productivity and Performance Management*, 70(8), 2015–2033. <https://doi.org/10.1108/IJPPM-06-2020-0317>
- Skerlavaj, M., Song, J. H., & Lee, Y. (2010). Organizational learning culture and performance. *Human*

Resource Development Quarterly, 21(3), 221–243. <https://doi.org/10.1002/hrdq.20047>

Siddiqui, K. A., Abbas, J., & Khan, A. (2025). AI-enabled marketing strategies and firm performance. *Journal of Retailing and Consumer Services*, 77, 103682. <https://doi.org/10.1016/j.jretconser.2024.103682>

Soomro, Y. A., Shah, N., & Ahmed, F. (2024). Artificial intelligence adoption and marketing efficiency in SMEs. *Journal of Small Business and Enterprise Development*, 31(1), 88–105. <https://doi.org/10.1108/JSBED-03-2023-0127>

Soomro, Y. A., Zeb, A., & Memon, M. A. (2025). Digital technologies and sustainable SME performance. *Sustainability*, 17(2), 845. <https://doi.org/10.3390/su17020845>

Stocksdale, R. (2022). Organizational readiness for artificial intelligence adoption. *Information Systems Management*, 39(4), 307–320. <https://doi.org/10.1080/10580530.2021.1913344>

Venkatesh, V., Bala, H., & Sykes, T. A. (2008). Enterprise systems adoption and use. *MIS Quarterly*, 32(3), 417–451. <https://doi.org/10.2307/25148849>

Wahab, S., & Radmehr, R. (2024). Data analytics capability and SME performance. *Journal of Business Analytics*, 7(1), 55–70. <https://doi.org/10.1080/2573234X.2023.2267142>

Zeb, A., Soomro, Y. A., & Ahmed, F. (2025). Artificial intelligence adoption barriers in SMEs: Evidence from Pakistan. *Journal of Entrepreneurship in Emerging Economies*. Advance online publication. <https://doi.org/10.1108/JEEE-09-2024-0391>