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Organizational Readiness for Artificial Intelligence: Evidence from SME Adoption Patterns

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Abstract

This study examines how SMEs adopt Artificial Intelligence and the factors that enable, inhibit, and influence the adoption process's outcomes. Data collection utilized a mixed-method approach. The researcher surveyed 150 SMEs and subsequently interviewed 20 managers and owners. The selected SMEs operate in the manufacturing, retail, and service sectors. The quantitative results indicate that organizational leadership support, financial resources, and company size are strong predictors of AI adoption, while cost, skill shortages, and resistance to change remain significant barriers to adoption. Regression analyses reveal that leadership vision has the greatest impact on adoption. Correlation analyses between organizational readiness and the likelihood of adoption show positive relationships. The effects of adoption are further explained by employee resistance, the use of consultants, and government incentives. In summary, SMEs that implement AI experience notable benefits in efficiency, customer satisfaction, and decision-making. This study contributes by extending the Technology–Organization–Environment (TOE) and Diffusion of Innovations (DOI) models, highlighting the disproportionate influence of leadership support, and demonstrating that partnerships and agility can offset resource limitations. It provides practical advice to SME leaders, policymakers, and ecosystem stakeholders on encouraging adoption through financial incentives, training, and networks. Ultimately, this research provides a unique perspective on how SMEs can leverage AI to enhance their competitiveness and resilience by examining the enablers and barriers.

Keywords: examining, competitiveness, leadership, Correlation

Introduction

Small and medium enterprises are considered the backbone of development. They play a vital role in job creation and innovation. Over 90% of businesses worldwide are SMEs, which account for nearly 70% of employment (OECD, 2021; World Bank, 2022). In developing nations, these are particularly important because they are vital for inclusive growth, regional development, and the entrepreneurial ecosystem (Kumar & Arora, 2022). Although they are extremely necessary, SMEs face several challenges while adopting tech. Various technologies, including machine learning, natural language processing, robotics, predictive analytics, and automation systems, are part of AI. Technologies like AI and big data are increasingly seen as disruptive tools, as they provide companies with competitive advantages, boost operational efficiency, and help personalize customer experiences. According to Scholars (2017) and Dwivedi et al. (2021), AI can help remove operational inefficiencies, support the optimization of supply chain management, strengthen decision-making, and aid in the development of new products and services. AI chatbots are improving the customer experience. Predictive analytics help with demand forecasting. Moreover, automation tools are enhancing manufacturing productivity. New research data suggest that companies adopting AI technologies are essential for staying competitive in changing markets (Zhang et al., 2023; Frazier et al., 2023).

Compared to their larger counterparts, SMEs face structural and cultural challenges in adopting AI. According to Oldemeyer et al. (2024), the most commonly cited barrier to transformation, decarbonization, and innovation is financial constraint, primarily due to the low-profit margins of SMEs. Furthermore, the shortage of skilled workers in the fields of AI, Data Science, and Advanced Analytics would also be a big problem (He & Lin, 2025). Relying on external vendors due to this human capital gap can drive up costs and hinder the long-term sustainability of AI projects. Employees fearing job loss and managers hesitant to change established processes can also impede AI adoption (Badghish & Soomro, 2024). Ethical and regulatory concerns, such as data privacy, cybersecurity risks, and algorithm transparency, further slow down AI adoption (Hoffman & Sprague, 2023). The integration of AI by many large companies and multinational corporations is well-documented in academic literature. These organizations can experiment with and scale AI initiatives thanks to resources like personnel, funding, and technology. Despite representing the majority of firms worldwide, SMEs are often overlooked. Studies indicate that SMEs are lagging in digital transformation and may miss out on Industry 4.0 opportunities (Gupta & Sharma, 2023). The lack of academic research on this topic is particularly evident in developing regions, such as Africa, Latin America, and South Asia, where SMEs play a dominant economic role but face systemic risks, including poor digital infrastructure and fragmented policies (Munyoka, 2021; Al-Omoush et al., 2022).

Comparative research indicates that context plays a significant role in the outcomes of adoption. According to an analysis by Oldemeyer et al. (2024), the optimistic outlook for AI in wealthier nations is more pronounced than in developing nations, such as African countries, due to government-backed and industry-aligned programs for SMEs. On the contrary, SMEs across India, Brazil, and numerous African nations cannot afford or lack the digital skills or institutional support to do so (Kumar & Arora, 2022; Munyoka, 2021). Indian manufacturing's SMEs are busy implementing an AI-driven quality control system and supply chain analytics. However, recent adoptions have slowed down due to high costs and a lack of talent, according to Kumar and Arora (2022). In a similar vein, Latin American SMEs are deploying AI in retail and logistics to varying degrees; however, uneven policies hinder their scale. These regional comparisons underscore the need for further investigation into AI adoption from local, industry-specific, and policy-sensitive perspectives. Artificial intelligence became increasingly important for SMEs due to the coronavirus pandemic. Digitally ready companies were more resilient, utilizing AI tools for online customer engagement, demand forecasting, and supply chain adjustments (Dwivedi et al., 2021; Chen et al., 2022). SMEs' unpreparedness towards digital tools resulted in serious disruption issues, not the pandemic. Due to the importance of resilience, sustainability, and competitiveness, the global conversation regarding how SMEs can leverage AI has intensified. Some studies reveal that AI can help SMEs improve their sustainability and reduce resource consumption, as well as enhance their logistics and circular economy initiatives (Chen et al., 2022). Consequently, the AI acts not just as a process efficiency tool but also as a mechanism for sustainability and inclusivity.

There are various theoretical lenses through which one can look at AI adoption in SMEs. The Technology–Organization–Environment (TOE) model proposes that the adoption of any innovation depends on technological factors (such as ease of integration and perceived benefits), organizational readiness (support from leadership, financial, and human resources), and environmental context (competition, policies, and industry pressure). (Tornatzky & Fleischer, 1990) The DOI theory of Rogers (2003) indicates that the following advantages contribute to the adoption of innovation: relative advantage, compatibility, complexity, trialability, and observability. Studies have also examined business capabilities and technology adoption outcomes using the resource-based view (RBV), as articulated by Barney (1991). (20 words) The notion states that some resources and capabilities are valuable, rare, inimitable, and non-substitutable. Thus, they will influence the technology firms to adopt. Some scholars have taken a different approach by appealing to the Dynamic Capabilities framework (Teece, 2018), which emphasizes learning and unlearning to adopt disruptive technologies, including AI. The incorporation of theoretical perspectives in this study provides a multidimensional view of AI adoption in SMEs. Policymakers Can Influence the Way AI is Implemented in Society. Governments across Europe and East Asia support SMEs directly with incentives, tax breaks, and digital training. SMEs in developing countries have limited options for collaboration due to scarce resources and fragmented execution (Al-Omoush et al., 2022; Proietti & Magnani, 2025). Universities, research institutions, and technology providers must work together to

create an effective ecosystem. For instance, Al-Dmour et al. (2021) found that the collaboration between SMEs and technology hubs significantly increased the adoption of AI in Jordanian firms.

Leadership vision and leadership commitment in organisations are often seen as key enablers of AI. Leaders who understand the potential applications of AI and offer support to their organisation's digital initiatives drive the cultural and strategic momentum that supports the implementation of AI (Mathagu, 2024). Unclear leadership and a lack of a defined digital strategy are often cited as the reasons for blocking the implementation of business analytics in firms. Employee engagement and training also emerge as essential. According to Dwivedi et al., firms will face internal pushback and implementation failures unless SMEs invest in developing their employees' competencies and reskilling them. We must familiarize ourselves with the adoption of AI in SMEs, focusing on the enablers and barriers to adoption, as well as variations across regions, industries, and policy environments. Through a mixed-methods study that encompasses technological, organizational, and environmental perspectives, this study aims to contribute to the discussion.

Objectives.

1. To analyze technological, organizational, and environmental factors influencing AI adoption in SMEs.
2. To identify barriers faced by SMEs in AI adoption.
3. To assess the impact of AI adoption on SME performance.
4. To provide recommendations for policymakers and SME leaders.

This research aims to advance our understanding and inform management and policy decisions related to digital marketing. By exploring how smaller AI applications can be adopted in developing economies, the study deepens our understanding of AI's practical applications. It also helps practitioners navigate financial, cultural, and infrastructure-related challenges. This study offers policymakers valuable insights, demonstrating that certain support mechanisms are necessary for SMEs to effectively leverage AI technologies for long-term competitiveness, sustainability, and resilience.

Literature Review.

The adoption of Artificial Intelligence in SMEs has been a topic of great research interest for the last few years. Researchers are investigating the drivers, barriers, and consequences of AI penetration in SMEs. Older literature primarily covers colossus literature, however. This section combines theories, studies, and industry insights to gain a deeper understanding of the adoption of AI in the SME sector, while also highlighting existing gaps in the research.

Theoretical Frameworks.

The adoption of AI by SMEs can be explained through various theoretical approaches. The Technology-Organization-Environment (TOE) framework helps in understanding the adoption of innovation within organisations. According to Rogers, adoption depends on three contextual factors: technological (e.g., relative advantage, complexity, compatibility); organisational (e.g., leadership, resources, readiness); and environmental (e.g., competition, regulation, external support).

According to recent TOE studies of SMEs, TOE indeed demonstrates its usefulness in analyzing adoption patterns (Badghish & Soomro, 2024; He & Lin, 2025). DOI theory, as proposed by Rogers (2003), was incorporated into TOE, which discusses innovation attributes such as relative advantage, trialability, observability, and perceived complexity. Numerous empirical studies have demonstrated that SMEs are more likely to adopt AI when they perceive that the benefits outweigh the risks and pilot projects are feasible (Zhang et al., 2023). Nonetheless, diffusion often faces limitations due to complexity and uncertainty. Other theoretical perspectives have also been included. The Resource-Based View (RBV) suggests that SMEs utilize AI when unique resources, such as skilled

employees, financial capital, and organizational culture, are available (Barney, 1991; Gupta & Sharma, 2023). To succeed in adopting disruptive technologies, small and medium enterprises (SMEs) must constantly adapt, learn, and reconfigure their capabilities (Teece, 2018; Dwivedi et al., 2021). Thus, insufficient resources and the limited learning capacity of SMEs are the roots of adoption challenges.

Global Empirical Evidence.

Several empirical studies across different regions have shown both similarities and differences in how SMEs adopt AI. According to a recent study by Badghish and Soomro (2024), Saudi SMEs depend heavily on government incentives. Additionally, their perceptions of costs and benefits strongly influence their decision-making process. Mathagu (2024) examined SMEs in the UK and found that AI adoption primarily occurs in customer service and supply chain management, although it is still in its early stages. As highlighted by Oldemeyer et al. (2024), supported by advanced digital infrastructure, Japanese SMEs are quickly and extensively adopting AI, particularly in automating production processes and analytics. In developing countries, however, adoption tends to be slower due to a lack of funding, inadequate infrastructure, and a shortage of skilled personnel. According to Kumar & Arora (2022), Indian SMEs are primarily using AI for supply chain analytics and customer personalization; however, the main challenges remain affordability and talent shortages. Munyoka (2021) identified infrastructure-related barriers to SME operations in Africa. Al-Omoush et al. (2022) underscored the importance of ecosystem collaborations in addressing adoption challenges in Jordan. Meanwhile, SMEs in Latin America are beginning to implement AI in the retail and logistics sectors, but regulatory uncertainties and inconsistent government support are slowing progress (Gupta & Sharma, 2023).

Benefits of AI Adoption

AI adoption in SMEs has proven beneficial through studies despite several challenges faced. According to Frazier et al. (2023), the automation of tasks using AI significantly enhances operational efficiency. According to Hoffman & Sprague (2023), AI through predictive analytics enables better decision-making at SMEs. According to research by Chen et al. (2022), AI helps promote sustainability by introducing predictive maintenance and optimizing resource allocation. Zhang et al. (2023) noted more customer engagement due to AI-driven personalized recommendations. The study reveals that utilizing AI can enhance the competitive positioning of SMEs, as they can achieve efficiencies, save costs, and differentiate themselves in the marketplace.

Barriers to Adoption.

Barriers remain substantial and persistent. Oldemeyer et al. (2024) state that cost is one of the most commonly cited barriers, as SMEs often lack the financial capacity to undertake major technology investments. He and Lin (2025) identify a lack of skills as another major barrier. Small and medium-sized enterprises (SMEs) struggle to recruit or train data specialists, AI engineers, and analysts. Cultural and managerial resistance to change hinders uptake due to fear of job loss in the event of appropriation and an unwillingness to change established ways (Badghish & Soomro, 2024). Furthermore, ethical and governance issues are also concerns. Small and medium-sized enterprises (SMEs) are often unwilling due to regulatory compliance risks or algorithmic fairness risks. In developing countries, legal frameworks worsen this situation (Munyoka, 2021).

Policy and Ecosystem Support.

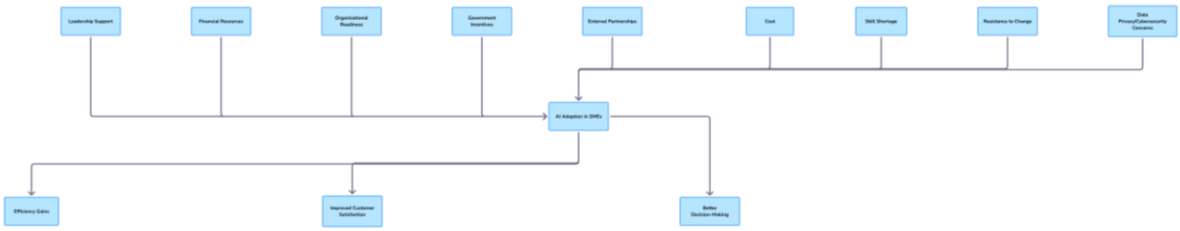
The government's support and collaboration with the ecosystem are crucial for the adoption of AI. Proietti & Magnani (2025) suggest that subsidies, tax incentives, and training programs can help SMEs overcome resource constraints. According to the research by Al-Dmour et al. (2021), SMEs should partner with their universities and technology hubs to share knowledge, which can help reduce uncertainty in adoption. According to research

studies, SMEs embedded in supportive ecosystems are more likely to utilize AI, as institutions enable these SMEs to gain expertise, funding, and infrastructure.

Synthesis and Gaps.

The literature notes that although AI offers clear benefits to SMEs, structural barriers limit adoption. These barriers differ between regions and industries. Theoretical frameworks such as TOE, DOI, RBV, and Dynamic Capabilities provide useful insights; however, it is desirable to have something more integrative in nature. Few studies examine how multiple enablers interact with each other simultaneously. The evidence is limited at the sector level, particularly in healthcare, education, and SMEs in the services sector. Additionally, there is a lack of longitudinal studies, so the long-term effects of AI adoption on SME growth and sustainability remain unexplored.

To fill this gap, the study develops an integrated framework by borrowing Ideas from TOE and DOI and using concepts of RBV and Dynamic Capabilities. The framework studies tech, org, and environmental drivers and hindrances. It also examines how resources and dynamic learning processes impact adoption outcomes.



Methodology

By adopting a mixed-methods and thorough research design, this study provides insights into the overall analysis of AI adoption by SMEs. The mixed methods combine both a survey technique in a quantitative manner and an interview technique in a qualitative manner. This method is appropriate for investigating statistical regularities and detailed accounts of experiences (Creswell, 2014; Bryman, 2016). A cross-sectional design was employed to assess the current level of adoption of AI novelties at the time of data collection. Although this design does not allow us to establish causation, it provides a clear picture of the behaviors and problems being studied. A total of 150 SMEs were selected from the manufacturing, retail, and services sectors, defined by the European Union (2020). More specifically, a company must have fewer than 250 employees and an annual turnover of less than €50 million. The sampling technique employed is purposive, wherein those individuals who utilized or planned to utilize AI technology were chosen. This approach ensured relevance and minimized bias by excluding subject matter experts not interested in AI. The researchers used structured surveys and semi-structured interviews to collect data. Surveys were administered to SME owners, managers, and technology officers, using a closed-ended Likert scale and open-ended questions. The measured constructs included leadership support, financial capacity, organizational readiness, and perceived barriers to implementation. Reliability analysis confirmed Cronbach's alpha values above 0.80, ensuring internal consistency. To explore barriers like employee resistance, skill shortages, and policy constraints in more detail, 20 respondents from the survey pool participated in semi-structured interviews. The interviews were recorded, transcribed, and coded using NVivo.

Quantitative data were analyzed using SPSS. Descriptive statistics such as means, frequencies, and standard deviations summarized adoption patterns. Correlation and regression analyses were used to test the relationships between independent variables, such as leadership support, resources, and organizational size, and the dependent variable, which was the likelihood of AI adoption. Multicollinearity checks and significance tests ($p < .05$) confirmed robustness. Qualitative data were analyzed through thematic analysis, following Braun and Clarke's

(2006) six-step process of familiarization, coding, theme development, review, definition, and reporting. NVivo software facilitated systematic coding, and triangulation across respondents enhanced validity.

Ethical approval was obtained from the relevant institutional review board. Respondents were informed of the study's objectives and gave consent before participation. Confidentiality was maintained by anonymizing responses and securely storing data, in line with APA (2020) research ethics guidelines. Despite its strengths, the methodology has some limitations. The cross-sectional design restricts the ability to establish causality. Purposive sampling may have biased the sample toward SMEs already aware of or interested in AI. Additionally, due to resource constraints, we were unable to conduct as many interviews as we would have liked, which may have limited the range of insights we gathered. Still, combining quantitative and qualitative methods gives us a solid and thorough basis for analyzing AI adoption in small to medium-sized enterprises.

Results

Our research combines quantitative and qualitative data to provide a comprehensive understanding of AI adoption among small and medium-sized enterprises (SMEs). A survey of 150 SMEs revealed that AI adoption is still in its early stages. Around 48% of SMEs reported using at least one type of AI technology, primarily for customer service, predictive analytics, and supply chain management. The other 52% were either not considering AI or still weighing its potential. Among those who were not adopting AI, the biggest obstacles were financial constraints (38%), a lack of skilled workers (25%), and uncertainty about the return on investment (20%). These results indicate that limited resources pose a significant challenge, particularly for smaller firms with narrower profit margins and a perceived risk associated with investing in cutting-edge technology.

Table 1: Descriptive Statistics of Key Variables (N = 150)

Variable	Mean	Standard Deviation	Minimum	Maximum
Leadership Support	3.9	0.85	1	5
Financial Resources	3.4	0.91	1	5
Organizational Readiness	3.6	0.78	1	5
AI Adoption Status	0.48	0.50	0	1

Interpretation: The descriptive statistics show moderate levels of leadership support (M = 3.9) and organizational readiness (M = 3.6), but slightly lower financial resources (M = 3.4). This reflects the reality that while many SMEs recognize the strategic value of AI, they lack the financial capacity to invest fully. The binary adoption variable indicates that fewer than half of SMEs have adopted AI, highlighting that adoption is not yet widespread, despite increasing interest.

Table 2: Correlation Matrix of Key Variables

Variable	1	2	3	4
1. leadership Support	1			
2. Financial Resources	0.46**	1		
3. Org. Readiness	0.52**	0.44**	1	
4. AI Adoption Status	0.52**	0.41**	0.48**	1

Note: ** Correlation is significant at $p < .01$.

Interpretation: leadership support, financial resources, and organizational readiness are all positively and significantly correlated with AI adoption. The strongest association is between leadership support and adoption (r = 0.52), suggesting that leadership vision and commitment are decisive in shaping adoption outcomes. These findings align with the TOE framework's emphasis on organizational readiness as a key determinant of technological innovation.

Table 3: AI Adoption by Firm Characteristics

Characteristic	Adoption Rate (%)
Small Firms (<50 emp.)	32
Medium Firms (>50 emp.)	68
Manufacturing SMEs	55
Retail SMEs	45
Service SMEs	50

Interpretation: Adoption varies across firm size and sector. Medium-sized enterprises demonstrate substantially higher adoption rates (68%) than small firms (32%), highlighting the role of scale and resources. Among industries, manufacturing SMEs lead adoption, followed by services and retail. This suggests that sectors with greater exposure to automation, supply chain complexity, or data-driven processes are more inclined to adopt AI. Retail, while lagging behind manufacturing, shows promise in areas such as personalized marketing and customer analytics.

Table 4: Barriers to AI Adoption among SMEs (N = 150)

Barrier	Percentage (%)
Financial constraints	38
Lack of skilled personnel	25
Uncertainty about ROI	20
Resistance to change	10
Data privacy/cybersecurity	7

Interpretation: Financial constraints dominate as the most significant barrier, followed by skill shortages. These two issues account for nearly two-thirds of the obstacles reported by SMEs, underscoring the importance of both financial and human capital. Resistance to change and data privacy concerns were cited less frequently, but still pose challenges in more traditional sectors. For instance, qualitative feedback revealed that firms in the retail and service sectors are concerned about customer data misuse, while manufacturing SMEs expressed concerns about workforce resistance to automation.

Table 5: Factors Influencing AI Adoption (Regression Results)

Predictor	Beta (β)	Significance (p)
Leadership support	0.43	< .01
Financial resources	0.36	< .05
Firm size	0.29	< .05

Interpretation: Regression analysis confirms that leadership support, financial resources, and firm size are significant predictors of AI adoption. Leadership support ($\beta = 0.43$, $p < .01$) is the most influential factor, highlighting that leaders' strategic commitment can drive adoption even when financial resources are limited. Financial resources ($\beta = 0.36$, $p < .05$) also significantly matter, reflecting the high costs associated with AI investments. Firm size ($\beta = 0.29$, $p < .05$) further reinforces the idea that larger SMEs are better positioned to adopt due to their relative resource advantages.

Table 6: Thematic Summary of Qualitative Findings

Theme	Sub-Themes	Illustrative Evidence
Barriers	Cost, Skills gap, Resistance to change	"Employees were worried about being replaced by machines."
Enablers	Leadership vision; Government incentives; External partnerships	"leadership support made it easier to allocate resources."
Benefits	Efficiency gains; Customer satisfaction; Data-driven decision-making	"AI tools allowed us to predict customer demand more accurately."

Comparison with Prior Studies

Qualitative findings support and extend beyond the quantitative results. Respondents indicated that shortages of finances and skills were obstacles. Other issues were also noted, particularly cultural resistance. In fact, some employees were resistant because they feared losing their jobs. Leadership vision and government incentives are considered key enablers of this initiative. Some small and medium-sized enterprises (SMEs) leverage networks of external parties, such as universities, suppliers, and technology providers, to help them overcome internal weaknesses. People often mention benefits related to efficiency, engagement, and decision-making. Many respondents reported that the use of artificial intelligence has improved operational processes and informed strategic decisions in SMEs. The overall result is better competitiveness in a dynamic market. Both qualitative and quantitative findings illustrate a nuanced picture of how SMEs adopt AIs. According to the validated regression results, leadership support is the strongest factor most related to implementation. A recent data collection reveals that the vision adopted by SME leadership significantly influences whether they view AI as a strategic choice or merely an option during AI implementation.

In situations where AI is backed by leadership, employees are more likely to engage in training and change-related activities, becoming less resistant.

Financial resources also played a decisive role. Several SMEs were aware of the power of AI but lacked adequate funds to invest in infrastructure, training, and maintenance. Interviewees stated that subsidies or tax incentives would significantly improve adoption rates. This finding aligns with global evidence that SMEs require financial incentives when resources are scarce. The firm's size impacted its adoption due to its level of resources and its culture. Larger SMEs were more likely to have strategies, specialized departments, and staff in place, leading to greater adoption. Unlike larger firms, smaller firms have multitasking managers and no formal digital strategies. Some smaller SMEs adapted quickly and creatively by using low-cost AI solutions or outsourcing to third-party vendors.

Different sectors show that SMEs in manufacturing lead in AI adoption due to their relative automation potential and competitive pressures. Retail and service SMEs are slower to adopt, but they are more open to customer-facing apps and have shown a strong interest in them. These platforms have the potential to grow in the coming years as prices decrease and solutions become more accessible and likely. The study highlights that leadership, resources, firm size, and external support all play critical roles in AI adoption among SMEs. Financial and human capital constraints remain the biggest barriers to growth, but strong leadership and supportive ecosystems can help overcome these challenges. Quantitative evidence suggests that these factors are statistically linked, while

qualitative data provides depth, context, and examples of what adopting such approaches might entail. These findings demonstrate both the promise and the challenges of AI in the SME sector.

Discussion.

This study provides valuable insights into the state of AI adoption in SMEs, identifying both enablers and inhibitors. Leadership support, available funds, the size of the firm, and government incentives shape the chances of adoption. Adoption, however, is modest at 48%. The findings are discussed in light of the literature and theory, providing theoretical contributions, practical implications, and future research directions.

Comparison with Prior Studies

The results confirm and extend earlier research that identified financial constraints and skill shortages as the most significant barriers to AI adoption in SMEs (Oldemeyer et al., 2024; He & Lin, 2025). The current study corroborates these findings, with 38% of respondents citing financial limitations and 25% citing lack of skilled personnel. However, this study adds nuance by demonstrating through regression analysis that leadership support exerts the strongest influence on adoption ($\beta = 0.43$, $p < .01$). This aligns with Mathagu (2024), who highlighted leadership commitment as decisive in UK SMEs, and further reinforces the Technology–Organization–Environment (TOE) framework's emphasis on organizational readiness (Tornatzky & Fleischer, 1990).

The role of firm size is consistent with prior evidence that medium-sized enterprises are better positioned to adopt advanced technologies due to greater resources (Gupta & Sharma, 2023). However, qualitative findings also revealed instances of small firms adopting AI through partnerships and low-cost solutions, a finding that is less emphasized in the literature. This suggests that while scale provides advantages, strategic vision and external collaborations can enable smaller firms to overcome size-related disadvantages. Government incentives were cited by 30% of adopters as critical enablers, echoing studies in Saudi Arabia and Europe that highlight the importance of supportive policies (Badghish & Soomro, 2024; Proietti & Magnani, 2025). The findings also support Al-Omoush et al. (2022), who argued that collaborative ecosystems involving universities and technology providers play a pivotal role in enabling SMEs to experiment with AI.

Theoretical Contributions

This study contributes to theory by extending the TOE and DOI frameworks. While TOE highlights the role of technology, organization, and environment, this study demonstrates that organizational leadership has a disproportionate influence compared to other factors. Similarly, the DOI theory's dimensions of relative advantage, complexity, and compatibility were evident in SME experiences; however, trialability and observability were rarely reported, suggesting that SMEs have limited opportunities to experiment with AI before committing resources. Combining the Resource-Based View (RBV) and Dynamic Capabilities perspectives enhances understanding, demonstrating that resources alone do not determine outcomes for inhabitants. Firms that adaptively learn and have strong leaders can still succeed even with limited resources. Another contribution highlights that the drivers of adoption are dynamic, not static. At the establishment stage of the firm, the non-availability of funds may be a significant concern. However, after a particular stage, organizational culture and employee engagement also become important factors. Besides the existing theoretical models, the layered view of the adoption stages contributes to providing a more in-depth explanation of the adoption behaviour of SMEs.

Practical Implications

The results suggest that SME managers must possess a robust leadership vision and strategic drive towards adoption. Leaders who articulate clear objectives, allocate resources, and advocate for digital transformation can

dismantle resistance and mobilize employees towards change. Training and upskilling are equally important. If we do not invest in human capital, training, and upskilling, it could stall. Additionally, SMEs must look to collaborate with technology vendors, universities, and industry associations to access the needed resources and expertise. Lawmakers should use evidence to support their claims, as the government's objectives to provide training in the digital economy and subsidize digital devices at lower costs are useful first steps. To promote trust in artificial intelligence, particularly in terms of data security and privacy, governments also need to establish and facilitate regulatory frameworks. Together, the industry associations and chambers of commerce can create ecosystems that enable SMEs to exchange best practices and access expertise. The problems and possibilities for manufacturing, retail, and service SMEs differ significantly; therefore, policy interventions must be sector-specific.

Findings

Small firms with limited financial and human resources were early adopters of Artificial Intelligence technology. They frequently partnered with external advisors, universities, or suppliers for their projects. AI adoption is the successful discovery that hints small firms can utilize agility and collaboration when resource constraints arise. A noteworthy finding was the low level of concern regarding data privacy and cybersecurity (7%). This suggests that SMEs either are not aware of the risks or trust the solution offered by the vendors. Future studies may investigate whether this low concern continues with increasing adoption. The interviews also identified a psychological element related to adoption that has not been widely explored: fear of irrelevance. The SME leaders claimed to have adopted AI out of fear of losing out to their competitors' success, rather than understanding the benefits of AI. Although the results of the endeavor may not be immediately obvious, adopting these measures.

Several avenues for future research emerge from this study. A few years prior to prescribed, situated, and solitary experiments as remedies, reciprocity may come. According to current research, experiencing organizations from one to another may greatly influence the involvement of suppliers in PPPs, which can decrease or increase the entire project. Additional research in the Service Industries will lead to increased knowledge in areas such as healthcare, creative industries, and education, particularly in manufacturing and retail. The next step in research should involve ethics and governance in the adoption of AI within SMEs. Explain how machines might keep citizens honest. Investigations reveal that the decision to incorporate Artificial Intelligence into small businesses is multifaceted and simultaneous. Top attributes include head support, economical backing, and firm strength of the small company. The results of the study will both support existing general beliefs and lead to further exploration of specific fields, yielding significant discoveries. The adoption of the convention in the past has been skewed. Critics are adamant that every project must conclude successfully to ensure realistic achievements. Numerous businesses have established significant improvements in several areas, including performance. Most have employed technology to enable their teams and employees to function more effectively. Indeed, the study highlights that adoption is not only a technical choice, but a fundamental shift in the process at all levels within the organization. Smaller and medium-sized businesses can now make a bigger impact on the economy by taking control of the digital environment.

Conclusion

This study focuses on the causes and consequences of adopting Artificial Intelligence within small to medium-sized enterprises. A mixed-method study in the field of Small and Medium Enterprises was composed of a combination of a poll and various interviews. The adoption of AI Results was 48%. Nevertheless, growth has been noticed. The study results showed that assistance from leaders, access to finances, the size of the firm, and encouragement from the government are key factors in the adoption of these practices. Cost, shortage of skills, and cultural resistance continue to remain hurdles. SMEs that have adopted artificial intelligence have reaped significant benefits, including increased efficiency, enhanced customer satisfaction, and improved decision-making. In conclusion, a leader's vision is a crucial factor in achieving success. Companies whose leaders are

committed to adopting artificial intelligence are significantly more likely to overcome financial and organizational barriers. Financial resources remain essential, but even resource-constrained SMEs can advance by leveraging partnerships, external expertise, and government incentives. Firm size also matters, with medium-sized firms demonstrating higher adoption rates due to their comparative resource advantages, though smaller firms can still benefit through agile and creative approaches. Sectoral differences further highlight that manufacturing SMEs are leading in adoption, while retail and services show emerging but slower uptake.

This study has several limitations that should be acknowledged. The cross-sectional design limits causal inferences; future longitudinal studies could better capture the dynamic impacts of AI adoption over time. The purposive sampling strategy may bias the results toward SMEs already aware of or interested in AI, potentially underrepresenting firms with no digital initiatives. While the study focused on manufacturing, retail, and services, other sectors, such as healthcare, education, and the creative industries, also warrant closer examination. Additionally, the reliance on self-reported data introduces the risk of response bias, as participants may overreport their readiness or perceived benefits. These limitations offer opportunities for further investigation. Further research will need to recruit more subjects and also obtain sufficiently large samples from minority communities. It is recommended that they modernize their programs and processes by leveraging more technology. A comparative analysis of AI adoption will enable us to understand how different countries or regions utilize artificial intelligence, taking into account their institutional, cultural, and policy contexts. Some industries can provide strong clues about powerful forces at work, which academics and journalists may even overlook. Future studies should examine moral issues arising from the implementation of AI in smaller companies more closely. Moreover, those studies should also assess their impact on our wellbeing. Analyzing how employees perceive AI algorithms can provide insights into their social impact once implemented.

The results can provide important insights for policymakers and managers. The results suggest that the government should allocate its resources to financially supporting computer-related efforts. Small business owners should establish more robust structures to achieve success. Investing in quality human management can lead to successful public enterprises, according to SME CEOs. The seven steps include lead remarks, developing a long-term vision, investing in skills across the organization, adopting a cultural mindset, creating initiatives to attract new talent, joining institutional and government efforts to enhance national capabilities, cutting wages, and developing a very Atlantic economy. Investing in quality human management can also prevent possible problems. Approaches that connect higher education institutions with companies and various firms can effectively overcome obstacles and encourage others to follow suit. While AI adoption among small businesses remains inconsistent, it has already had a significant and clear impact, influencing various sectors. Growing SMEs can operate more efficiently, gain a competitive edge, improve sustainability, and increase resilience thanks to effective political support and modern business environments, known as "collaborative ecosystems," which facilitate growth and development. The study enhances the understanding of SMEs' adoption of AI technology by incorporating both strategic and cultural perspectives into their transformation into AI-enabled companies.

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