

# Adopting Artificial Intelligence in Small And Medium Enterprises: Exploring Administrative Challenges and Strategic Pathways For Effective Implementation

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**Abstract.** Researchers increasingly recognise Artificial Intelligence (AI) as a transformative force in organisational management, yet Small and Medium Enterprises (SMEs) face unique challenges in adopting these technologies. This study examines the administrative challenges and strategic pathways involved in adopting AI in SMEs. The research team used a qualitative design and collected data through semi-structured interviews, focus group discussions, and document reviews with SME administrators across multiple sectors.

Findings reveal four significant administrative challenges: financial constraints, skills deficits, organisational resistance to change, and policy uncertainty. These barriers restrict SMEs' ability to integrate AI technologies effectively. However, SMEs demonstrate resilience through strategic pathways, including incremental adoption of AI solutions, staff training and capacity building, partnerships with technology providers and research institutions, and collective advocacy for policy support. The study highlights that AI adoption is not merely a technical process but a complex administrative and institutional phenomenon shaped by leadership readiness, organisational culture, and external policy environments.

The study concludes that effective AI adoption requires a dual approach: strengthening internal organisational strategies while ensuring supportive external institutional frameworks.

**Keywords:** Artificial Intelligence; SMEs, administrative challenges; strategic pathways; qualitative research; innovation adoption.

## INTRODUCTION

Nowadays, Artificial Intelligence (AI) is widely recognised as a driver of the Fourth Industrial Revolution, transforming industries and making them more innovative, efficient, and competitive on a global scale. It is the ability of machines and systems to undertake tasks that are usually performed by human intelligence, such as reasoning, learning, decision-making, and problem-solving. For most organisations, AI has emerged as a revolution, simplifying operations, improving customer experiences, and enabling new business opportunities. They can include voice assistants, chatbots, predictive analytics, robotics and intelligent process automation.

Google, Amazon, and Microsoft are examples of global giants that have embraced AI to dominate their markets, demonstrating how powerful technologies can be applied to drive continued growth and innovation. Nevertheless, AI does not apply only to large corporations worldwide. It has increased prominence among Small and Medium Enterprises (SMEs), which have proven to be the foundation of most economies, accounting for more than 90 per cent of businesses in the industry and playing a vital role in employment, income, and the diversification of the economy [2]. SMEs in developing countries play a crucial role in alleviating poverty and promoting inclusive growth; therefore, their digitalisation must be a priority for enhancing competitiveness.

Nevertheless, integrating AI into SMEs is not easy. The limitations of resources, including limited funding, a lack of technical expertise, and inadequate infrastructure, are common among SMEs, unlike large firms, which have the resources to support technology adoption. Other obstacles, including an unwillingness to change within an organisation, the lack of effective leaders, and the inability to understand the implementation costs and benefits of AI, make implementation even more difficult. Administrative issues, such as inadequate strategic planning and insufficient support for the policies, further exacerbate the challenge. These facts underscore the need to focus on the administrative side of AI adoption, which is often overlooked alongside the technological and financial aspects.

Nevertheless, several strategic avenues can be pursued by SMEs to adopt AI successfully. Most of them begin with lower-cost options, such as chatbots, automated billing, or basic data analysis software, and then progress to more sophisticat-

ed solutions. It is also possible to make the transition easier through partnerships with technology providers, cloud-based AI systems, and ongoing staff training programs. In addition, government-facilitating policies and institutional arrangements also play a significant role in creating an accommodating environment for digital innovation, especially in emerging economies where structural bottlenecks still prevail.

The use of AI can significantly enhance the performance and sustainability of SMEs. A business that successfully integrates AI can make data-driven decisions, operate more efficiently, reduce transaction costs, and build stronger personal relationships with customers. At a broader level, AI-driven innovation in the SME sector can increase national output, promote economic diversification, and enhance competitiveness within the global digital ecosystem.

However, studies indicate that many SMEs are still in the early stages of AI adoption. Although simple tools have been adopted by some, more sophisticated applications, such as predictive analytics, supply chain optimisation, and process automation, remain underutilised. This gap underscores the need for empirical studies to identify the challenges facing the administration and to develop an action plan for implementing AI.

*Statement of the Problem.* Despite the many benefits of the adoption of artificial intelligence, such as efficiency and cost-cutting, as well as increased competitiveness, small and medium-sized entrepreneurial businesses (SMEs) still face many challenges, among which are:

- Administrative and organisational resistance, which in many cases is associated with fear of change or a lack of digital leadership.
- Constrained resources, that is, in finance, technical skills and infrastructure.
- Issues in data management include privacy concerns, poor-quality data, and compliance issues.
- Insufficient implementation plans, since most SMEs do not have definitive strategies for integrating AI.

*Research Objectives.* The primary objective of this research is to explore the managerial issues and developmental directions for implementing AI in small and medium-sized enterprises. To be more precise, the study aims at:

- Determining the main administrative barriers to adopting AI technologies by SMEs.

- Discuss strategic options that SMEs can use to implement AI.
- Suggest policy recommendations and administrative interventions that will facilitate sustainable adoption of AI in the SME sector.

### *Research Questions*

- 1) What are the main administrative barriers to the use of AI in SMEs?
- 2) What are the strategic solutions that can support SMEs to overcome these problems?
- 3) What can policymakers and other stakeholders do to help the SMEs embrace AI?

### **Literature Review**

*Conceptual Review.* Artificial Intelligence (AI) is the field of computer systems that can execute tasks typically performed by the human brain, such as learning, reasoning, problem-solving, and decision-making [3]. Nowadays, AI applications can be found in various fields, including customer service (chatbots), predictive analytics, fraud detection, supply chain management, and human resource management [4].

The implementation of AI can bring the benefits of efficiency, productivity, and competitiveness to the Small and Medium Enterprises (SMEs). However, unlike large companies, which often have well-established infrastructure and financial support, SMEs face administrative, fiscal, and structural challenges that hinder the implementation of AI [5]. It is therefore essential to understand these two challenges and how to overcome them.

### *Theoretical Frameworks*

1) Technology Acceptance Model (TAM) [6]. The Technology Acceptance Model (TAM) explains that two key perceptions strongly influence a person's desire to adopt new technology: perceived usefulness, which reflects whether the technology can enhance job performance, and perceived ease of use, which reflects how easy the technology is to use. In SMEs, administrators' perceptions play a significant role in shaping attitudes towards Artificial Intelligence. The adoption of AI would be more probable when it is perceived as an opportunity to become more efficient, effective, and competitive. On the other hand, when managers perceive AI as complex or expensive, opposition is likely to increase. Managers can change employees' perceptions by

providing encouragement, offering formal training, and designing awareness programmes that sensitise staff to adopt these views.

2) Diffusion of Innovation Theory (DOI) [7]. The Diffusion of Innovation Theory, as described by the author [7], explains the spread of new ideas and technologies over time through five stages: knowledge, persuasion, decision, implementation, and confirmation. According to the factors influencing the adoption rate and success, leadership preparedness, organisational culture, and accessible resources are the determinants. The process for SMEs to pass through these stages may take longer than for large firms due to limited financial resources, limited technical expertise, and a reluctance to take on risk. Owners or top administrators often centralise decision-making, so their attitudes play a critical role in whether innovation succeeds. This highlights the importance of dedicated leadership, a positive culture, and capacity-building initiatives in promoting the adoption of AI and similar technologies among SMEs.

3) Resource-Based View (RBV) [8]. The Resource-Based View (RBV) suggests that firms can attain sustainable competitive advantage by utilising resources that are valuable, rare, inimitable and non-substitutable. These can include both tangible capital and infrastructure, as well as intangible capital such as knowledge, skills, and culture. As an SME, success with AI implementation depends on how effectively they mobilise and align internal resources. AI systems, their use, and implementation require qualified personnel, and adequate funding will facilitate the acquisition and maintenance of technology. Administrative systems and leadership, as well as water innovation, training, and openness to new technologies, are no less important. Without these enablers, SMEs may not realise the performance benefits of AI adoption.

### *Empirical Review*

According to authors [9] and colleagues, the technical aspects are significantly smaller than the use of AI in SMEs. Their study found that institutional preparedness and leadership vision are the key determinants of AI initiative success. Without strategic management and decisive managerial leadership, the digital transformation process derails.

Author [10] found that not every SME has the in-house knowledge to implement AI projects and

must rely on external consultants. This dependency increases operational costs and lowers innovation rates, which is why internal capabilities necessary for integrating AI sustainably are essential.

Researchers [5] identified financial constraints as one of the most persistent challenges to implementing AI. SMEs also have limited budgets, making it challenging to invest in infrastructure or hire qualified employees. The authors propose more robust policy support and funding programs to help smaller businesses embark on the Road to digital change.

Authors [11] found that inadequate funding and a weak digital infrastructure, particularly in bandwidth, led to a cycle of technological underdevelopment. Possible effects of this state include limited innovation, reduced competitiveness, and a widening digital divide between SMEs and larger businesses.

## METHOD

*Research Design.* This paper employs a qualitative research design, as it enables the author to delve deeper into the administrative issues and strategic orientations that inform the adoption of Artificial Intelligence (AI) in Small and Medium Enterprises (SMEs). The qualitative design focuses on the situation, meaning, and subjectivity of participants, unlike quantitative methods, which rely on metrics and generalisation [12]. Under this school of thought, the research will examine SME leaders' reactions and interpretations of the opportunities and challenges associated with adopting AI in their day-to-day operations.

*Population of the Study.* The respondents in this study will be SME administrators, owners, managers, and key decision-makers who are actively involved in technology-related strategies within their organisations. The said people must provide valuable input on administrative, financial, and policy concerns that can influence the implementation of AI. To give a balanced analysis of AI's role across industries, the research will sample SMEs from the service, manufacturing, retail, and technology sectors.

*Sampling Technique and Sample Size.* Purposive sampling will be used to select people with direct experience of AI adoption or general digital transformation efforts. This method enables the recruitment of participants who are information-

rich and can provide detailed, meaningful insights on the subject matter [13].

We will conduct 15 to 25 interviews until we reach data saturation, which is the point at which no new information emerges and no new themes can be identified [14]. The sample will include participants from different industries and organisations of varying sizes to capture a wide range of experiences and perspectives.

*Data Collection Methods.* Data will be gathered using numerous qualitative approaches to make the results deep and reliable:

a) *Semi-Structured Interviews.* Semi-structured interviews are among the main approaches to data collection. This method will provide participants with the freedom to share their experiences in their own words, with the researcher free to explore the issues that emerge more deeply. It is especially well-suited to examining individual viewpoints on administrative decision-making, leadership style, and the particular issues and solutions related to AI implementation in SMEs.

b) *Focus Group Discussions (FGDs).* FGDs will involve small groups of SME administrators and staff to generate interactive discussions. This method enables the exploration of shared organisational perceptions and highlights areas of consensus and divergence regarding AI adoption.

c) *Document Review.* The researcher will review organisational reports, strategic plans, and policy documents to complement the primary data and provide additional evidence of administrative practices and strategies.

*Research Instrument.* The main instrument will be an interview guide with open-ended questions designed to capture administrators' perceptions and experiences. The guide will cover three broad themes:

- 1) Understanding of AI and perceived relevance to SMEs.
- 2) Administrative and organisational challenges in adoption.
- 3) Strategic pathways and coping mechanisms for implementation.

Illustrative sample questions include:

- 1) How do you perceive the potential benefits and risks of AI in your organisation?

2) What administrative or organisational challenges have you encountered (or anticipate) in adopting AI?

3) What strategies or pathways are being considered to support successful AI adoption?

*Data Analysis*

a) Familiarisation – Transcribing interviews and reading transcripts repeatedly to gain deep immersion in the data.

b) Theme Development – Grouping related codes into broader categories such as “leadership and decision-making,” “resource constraints,” “organisational resistance,” and “strategic adaptation.”  
Reviewing Themes – Refining and consolidating themes to ensure coherence and alignment with research objectives.

c) Defining and Naming Themes – Articulating clear definitions for each theme.

d) Reporting – Presenting findings with illustrative participant quotations to capture authentic voices.

**RESULTS AND DISCUSSION**

***Administrative Challenges in AI Adoption***

1) Limited Financial Resources. Most SMEs struggle to secure sufficient capital to procure AI systems, citing the costs of infrastructure, licensing, and maintenance as barriers.

*“Even though we recognise AI’s potential, our financial resources are simply too limited to justify such a large investment.”*

This finding confirms that financial constraints are structural barriers that limit SMEs’ ability to compete with larger firms.

2) Skills Gap and Knowledge Deficit. AI adoption requires specialised expertise, which is scarce within SMEs. Many administrators lack familiarity with AI concepts, while employees require extensive retraining.

*“We don’t have staff who understand AI. Hiring external experts is costly, so we often delay adoption.”*

This reveals a dependency on external support and the risk of inefficient or failed implementations.

3) Organisational Resistance to Change. Cultural resistance emerged as a strong theme. Staff feared job displacement, while leadership often preferred maintaining traditional processes.

*“Every time AI comes up, some employees panic about losing their jobs. That fear slows progress.”*

This demonstrates how psychological and organisational readiness significantly impact AI adoption outcomes.

4) Policy and Regulatory Uncertainty. Participants expressed concern over the lack of government support, weak institutional incentives, and unclear data policies.

*“Without strong policy backing or incentives, investing in AI feels risky.”*

Table 1 – Strategic Pathways for Effective AI Implementation

Strategy	Description	Illustrative Evidence / Example
Incremental Adoption and Pilot Projects	SMEs mitigate risks by starting with small-scale, low-cost AI solutions before scaling up to more complex applications.	“We first introduced automated chatbots for customer service, then expanded slowly into analytics.”
Capacity Building and Staff Training	Investment in workshops, training, and mentorship enhances employees’ technical and adaptive skills, reducing fear and building confidence.	“Once staff understood AI’s supportive role, resistance reduced drastically.”
Strategic Partnerships and Collaboration	Collaborations with tech startups, universities, and industry associations provide SMEs with access to expertise, innovation, and affordable AI tools.	“Our partnership with a local tech hub allowed us to use AI tools at lower costs.”
Advocacy for Policy Support	SMEs engage in collective action through associations to advocate for tax incentives, grants, and supportive government policies.	“Collectively, we can influence government to introduce tax incentives and grants for AI adoption.”

**Cross-Cutting Insights.** Three significant insights emerge:

- 1) AI adoption is an administrative and organisational challenge, not just a technical issue.
- 2) SMEs employ pragmatic and adaptive strategies, such as incremental adoption and partnerships.
- 3) Institutional support is crucial, as weak policies and incentives discourage risk-taking.

Table 2 – Administrative Challenges vs. Strategic Pathways in AI Adoption

Challenges	Strategic Pathways
Limited financial resources	Incremental adoption, pilot projects, phased investment
Skills gap and knowledge deficit	Capacity building, training programs, and partnerships with tech experts
Organisational resistance to change	Awareness campaigns, employee retraining, participatory decision-making

### Discussion of Findings

1) Administrative issues on AI Adoption. The research revealed that financial constraints remain one of the most significant obstacles to AI adoption among SMEs. The given result can be explained by previous conclusions by authors [15, 16], who noted that smaller firms tend to have tight budgets and that investing in advanced technologies is risky or even impossible. The continued existence of this phenomenon implies that innovative financial instruments, such as public-private partnerships or subsidised innovation loans, are necessary to support the digitalisation of SMEs.

Likewise, the identified knowledge and skills gap among participants aligns with the authors' findings [4]. Many SME leaders lack technical competence in AI, which often slows decision-making and delays implementation. The results of the present research indicate that readiness to lead and digital literacy are equally important as technological infrastructure in the implementation of innovations.

Organisational resistance to change was also noted in the research, consistent with the author's [7] Diffusion of Innovation Theory. The fear of losing their jobs and administrators' unwillingness to disrupt the status quo of workers

indicate that culture is a significant factor in achieving results. A change in culture, technical training, and processes is therefore necessary to effectively integrate AI.

Lastly, policy and regulatory uncertainty would also be another significant challenge. It can be compared to the experience of other emerging markets, including African markets [17, 18]. The lack of consistent policy frameworks and institutional incentives leads SMEs to believe that adopting AI is a risky venture. Understanding and conducive policies are then very key to reducing uncertainty and fostering innovation.

2) Strategic Direction of a successful implementation. The results indicate that many SMEs opt for incremental or pilot strategies, starting small and expanding as their capacity increases. This tendency aligns with the gradual adoption of innovations to minimise the perceived risks identified by authors [5] and to allow firms to learn from experience.

Moreover, the study also found that partnerships and collaborations are essential. In line with authors [19], SMEs tend to rely on external networks, including alliances with technology providers, consultants, or even peer firms, to supplement internal resource constraints. Such collaborative ecosystems are potentially crucial in the African context for disseminating knowledge, reducing costs, and diffusing innovation.

Another theme that has emerged is the increasing demand for policy support. There was strong demand among SME administrators for greater government involvement and institutional support; this observation is consistent with the source [2], which notes that the sustainable integration of AI requires robust policy frameworks. Notably, SMEs are not just sitting around waiting to be rescued; they are also becoming policy-makers, demanding more balanced policies for digital transformation and inclusive innovation environments.

### CONCLUSIONS

This paper examined the administrative issues and strategic directions that determine AI adoption in Small and Medium Enterprises. The results confirm that SMEs face significant challenges, including a lack of funding and technical know-how, organisational resistance, and a poor policy environment. Despite such challenges,

SMEs have remained resilient and innovative through incremental strategies, investment in human capital, partnering with other entities, and participation in policy-making.

Finally, the research highlights that implementing AI in SMEs is not only a technological activity but also a multidimensional process that requires administrative, institutional, and cultural changes. Sustainable success is based on firms' internal resources and the power of external support systems that promote digital innovation.

Recommendations:

1) Improve Finance Support Systems: Governments and other financial organisations should introduce credit schemes and innovation funds that SMEs can afford when investing in AI technologies.

2) Invest in Human Capital Development: SMEs should focus on ongoing staff training, leadership development, and capacity-building programs to close the knowledge gaps within their organisations.

3) Encourage Incremental Adoption Models: To reduce risk, build experience, and drive incremental adoption, companies should launch small, low-cost AI applications.

4) Develop Collaborative Ecosystems: SMEs, technology vendors, universities, and industry associations should collaborate to gain knowledge and reduce implementation costs.

5) Enhance Policy and Regulatory Structures: Policymakers should develop coherent guidelines for AI integration, harmonise data protection and privacy laws, and provide incentives to increase the adoption and innovation of sustainable technologies.

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