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Artificial Intelligence Adoption and SMES Performance in Southwest, Nigeria: A Moderating Role of Management Support

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ABSTRACT: In an era of rapid digital transformation, Artificial Intelligence (AI) has emerged as a strategic enabler of efficiency, competitiveness, and innovation for Small and Medium-sized Enterprises (SMEs). Despite research on the adoption of AI, scanty studies isolate the moderating role of Management Support for the adoption of AI on the performance of business within Nigerian SME a gap the study seeks to explore. The specific objectives are to assess the effects of perceived relative advantage, AI complexity, employee capability, government regulations, and job roles on AI adoption within firms. Descriptive statistics and inferential statistics were adopted. Research design, with structured questionnaires, was administered on 220 respondents. Simple random, heterogeneous purposive, and convenience sampling techniques were deployed to select the respondents. The data was analysed using Structural Equation Modelling (SEM). Perceived relative advantage ($\beta = 0.496$, $p < 0.001$) improves SME performance, while AI complexity has a negative impact on employee capability ($\beta = -0.217$, $p = 0.038$) and management support ($\beta = -0.098$, $p = 0.041$). Employee capability has a positive impact on management support ($\beta = 0.461$, $p < 0.001$), while management support has a significant positive impact on performance ($\beta = 0.357$, $p = 0.002$). The study concludes that AI adoption improves SME performance when combined with strong managerial commitment and workforce capability. It suggests that SME leaders invest in AI literacy, employee training, and supportive leadership systems to drive long-term growth in Nigeria's evolving digital economy.

KEYWORDS: Artificial Intelligence, Management support, SMEs Performance

1.0 INTRODUCTION

In the era of accelerated digitization that is defining the global economy, artificial intelligence (AI) has been a strategic platform that has assisted organizations in improving performance and maintaining their competitive advantage. AI is the design and development of computational machines that mimic human cognitive functions, including machine learning, predictive analysis, and automation (Russell & Norvig, 2021). It has enormous transformative power for small and medium-sized enterprises (SMEs). In Nigeria, SMEs account for nearly 96% of total businesses, roughly 48% of national GDP, and more than 84% of labor-force employment (PwC, 2021; SMEDAN, 2021). Nigerian SMEs, despite their significant economic contribution, face systemic challenges such as a lack of capital, inadequate infrastructure, and a poorly developed digital ecosystem (World Bank, 2020). The use of AI provides a real solution to these barriers; however, effective integration is dependent on both technological availability and organizational factors, with a particular emphasis on the role of management support. The provision of managerial support, which includes leadership commitment, resource allocation, and an innovative culture, is a critical driver of successful AI integration in small and medium-sized businesses (SMEs). Thong and Yap's (1995) groundbreaking research identifies managerial traits such as technical competency, innovation inclination, and technological activism as critical to SMEs' ability to use AI for competitive success. Apart from the fact that SMEs face high implementation costs especially in Nigeria, a scarcity of AI skills, and inconsistent electricity supply was identified as clog in the wheel of the AI adoption (World Bank, 2023), Meanwhile, managerial support can alleviate these constraints by focusing on training, obtaining necessary capital, and ensuring AI initiatives align with strategic goals (Oke et al., 2024). AI adoption as an independent variable improves SME performance, as measured by proxies such as profitability, operational effectiveness, and market penetration, by automating processes and making evidence-based decisions (Brynjolfsson & McAfee, 2017). The small and medium-sized business (SME) industry in Nigeria is a key driver of economic development, enabling poverty reduction and industrialization advancements in a difficult business environment. According to the Nigerian Communications Commission (2023), internet penetration is at 51%, but there is a significant digital skill gap, with only 8% reporting adequate technological capacities. These trends are consistent with broader trends in Sub-Saharan Africa, where financial constraints and inadequate infrastructure limit the adoption of artificial intelligence (AI) (Mhlanga, 2021). However, there are significant opportunities for low-cost cloud-based AI and government plans such as the National Digital Economy Policy and

Strategy (NDEPS), which aims to accelerate digital transformation by 2030 (Federal Ministry of Communications and Digital Economy, 2020). Global studies have identified AI's transformative power: a McKinsey & Company study in 2023 found that companies that adopted AI with strong management support saw a 20% increase in productivity, while small and medium-sized businesses in India saw a 15% increase in revenue due to improved customer insight and responsiveness (Chui et al., 2023). However, in Nigeria, AI adoption has only recently begun, with qualitative studies indicating that manager awareness and community engagement are critical in overcoming adoption barriers (Opesemowo, 2024).

The operational landscape for Nigerian SMEs emphasizes the need for localized research. Post-pandemic economic stress and increased global competition have heightened demand for digital responses, but adoption is hampered by infrastructural gaps and a lack of empirical evidence on management's role in adoption (World Bank, 2020). Regional comparative studies provide insight in South Africa that leadership-driven adoption in mining increased operational effectiveness by up to 30% through strategic direction and investment in staff training (Stacey & Wesseloo, 2023), as well as a model that can be applied to Nigerian SMEs. A research gap in Nigeria exists due to a lack of studies on management support as a moderating influence on artificial intelligence adoption. This study addresses this gap by examining AI adoption's impact on Nigerian SMEs using the Technology-Organization-Environment (TOE) framework (Tornatzky & Fleischer, 1990) to assess performance in terms of financial (e.g., revenue increase), operational (e.g., cost reduction), and strategic (e.g., innovation capability) dimensions. In line with the United Nations Sustainable Development Goals (SDGs), specifically SDG 9 (Industry, Innovation, and Infrastructure), research into AI adoption's impact on Nigerian SMEs has two goals: to provide actionable insights to Nigerian SME leaders and policymakers, and to develop theory and practice in digital transformation. To this end, the study seeks to investigate artificial intelligence adoption via (perceived relative advantage of AI, complexity of AI technologies, employees' AI related capabilities, government regulations, job role in the firm) and smes performance. While management support serves as moderating variable between AI adoption and performance of smes.

2.1 AI ADOPTION DIMENSIONS

Perceived Relative Advantage

Perceived relative advantage refers to the extent to which AI is perceived by SME decision-makers as offering superior benefits such as cost savings, efficiency gains, or competitive positioning—compared to existing technologies or practices. (Merritt, 2023). This construct is foundational in innovation adoption theories and is a key driver of AI uptake in SMEs. Rogers (2003) originally defined it as "the degree to which an innovation is perceived as being better than the idea it supersedes" encompassing economic, operational, and social benefits. Davis (1989) extended this concept within the Technology Acceptance Model (TAM), linking it to perceived usefulness, or "the degree to which a person believes that using a particular system would enhance his or her job performance" a critical predictor of adoption intent. More recently, Alshubiri et al. (2021) found that SMEs perceive AI's relative advantage in terms of improved decision-making and market responsiveness, particularly in e-commerce settings. Similarly, Moeuf et al. (2020) highlight that AI's ability to optimize processes and reduce operational costs drives its adoption in SMEs, reinforcing its multidimensional nature. Chatterjee et al. (2021) further emphasize that relative advantage in AI adoption includes enhanced customer experiences and innovation potential, making it a strategic asset for SMEs in competitive markets. Badghish and Soomro (2024) add that for AI, it means benefits like reduced costs and quick decision-making, especially in Saudi SMEs. Rogers (2003) frames it as an innovation outperforming its predecessor, while Davis (1989) ties it to enhanced job performance. Alshubiri et al. (2021) highlight decision-making speed in e-commerce, Moeuf et al. (2020) emphasize process optimization, and Badghish and Soomro (2024) note forecasting benefits. This definition focuses on strategic benefits and ROI, key concerns for SME leaders. From the perspective of the current study, perceived relative advantage is the extent to which AI delivers a clear edge for SMEs whether through cost reductions, operational efficiencies, or a stronger market positionover existing tools or processes. It's the measurable value proposition that convinces business leaders AI is worth the investment, driving competitive differentiation and bottom-line impact.

Complexity of AI

Complexity captures the perceived difficulty associated with understanding and implementing AI within SMEs, often acting as a barrier to adoption due to resource and expertise constraints.(Merritt, 2023) Rogers (2003) defines it as "the degree to which an innovation is perceived as relatively difficult to understand and use", noting its negative correlation with adoption rates. Venkatesh et al. (2012) integrate complexity into the Unified Theory of Acceptance and Use of Technology (UTAUT), inversely relating it to ease of use, a determinant of technology acceptance. Recent studies, such as those by Ghobakhloo and Ching (2020), argue that AI's complexity stemming from technical integration and skill requirements poses significant challenges for SMEs with limited IT infrastructure. Likewise, Qu et al. (2021) demonstrate that perceived complexity in AI tools reduces adoption intent among SMEs, particularly when training and support are inadequate. AlSheibani et al., (2020) further note that complexity not only delays adoption but also increases perceived risk, underscoring the need for simplified AI solutions tailored to SME capabilities. Venkatesh et al. (2003) link it to ease of use, noting it's harder when AI is complex, as seen in studies from Iran and China. Rogers (2003) defines

it as difficulty in understanding and use, and Venkatesh et al. (2003) link it to effort expectancy. Ghobakhloo and Ching (2020) point to integration issues in resource-limited SMEs, and Qu et al. (2021) stress training gaps. This version emphasizes operational friction and resource allocation, critical in a business mindset. From the view of the current study, complexity refers to the operational and technical challenges SMEs encounter when adopting AI, often perceived as a resource-intensive hurdle that complicates implementation. It is the barrier that arises when integration demands exceed current capabilities, slowing adoption and increasing risk for businesses that are already running lean.

Employee Capability

Employee capability refers to the workforce's skills, technical knowledge, and adaptability required to effectively adopt and utilize AI in SME operations. (Haidoura, 2020). This construct is rooted in the Resource-Based View (RBV) and absorptive capacity theories, emphasizing human capital as a competitive asset. Zahra and George (2002) define it within absorptive capacity as the ability to "recognize the value of new information, assimilate it, and apply it to commercial ends", critical for technology adoption. Li et al. (2020) argue that employee capability in SMEs, including AI literacy and problem-solving skills, directly influences the success of digital transformation initiatives. Similarly, Gaur et al. (2021) highlight that employees' prior experience with technology and willingness to upskill enhance AI implementation outcomes. Ghobakhloo et al. (2022) emphasize training as a key component, noting that SMEs with skilled employees are better positioned to leverage AI for operational gains. Moeuf et al. (2020) further link employee capability to the ability to integrate AI into existing workflows, a determinant of adoption success. Zahra and George (2002) define it as the ability to "recognize the value of new information, assimilate it, and apply it to commercial ends". Badghish and Soomro (2024) frame it as "sustainable human capital," involving training and upskilling.Zahra and George (2002) describe it as harnessing new knowledge, and Badghish and Soomro (2024) focus on upskilling. Li et al. (2020) tie AI literacy to transformation success, and Gaur et al. (2021) highlight tech experience. This definition positions employees as a strategic asset, a key business perspective.To the current study, **e**mployee capability is the workforce's capacity to effectively deploy and leverage AI, encompassing the skills, adaptability, and technical proficiency needed to maximize its business value. In this case, it's the human capital strength that determines whether AI becomes a productivity driver or an underutilized asset within the SME.

Management Support

Management support encompasses the strategic vision, resource commitment, and leadership provided by top management to drive AI adoption in SMEs. (Hussain et al., 2024).It is widely recognized as both a direct enabler and a moderating factor in technology adoption models. Zhu et al. (2006) define it as "the extent to which top management champions and supports the assimilation of technology" crucial for overcoming resistance. Chatterjee et al. (2021) argue that management support in SMEs fosters a culture of innovation, directly impacting AI adoption success by allocating resources and mitigating risks. Li et al. (2020) note that managerial commitment enhances employee readiness and aligns AI initiatives with business goals. Qu et al. (2021) demonstrate that management support moderates the relationship between perceived benefits and adoption intent, amplifying AI's positive effects. AlSheibani et al. (2020) further highlight that proactive leadership reduces organizational inertia, making management support a pivotal factor in SME contexts. Premkumar and Roberts (1999) see it as providing resources, with evidence from India and Australia highlighting its role. Zhu et al. (2006) see it as driving technology assimilation, and Premkumar and Roberts (1999) emphasize resource backing. Chatterjee et al. (2021) note its role in fostering innovation, and AlSheibani et al. (2020) highlight overcoming inertia. This frames it as a leadership priority, vital for business strategy. Current study sees management support as a leadership commitment to champion AI adoption through strategic direction, resource allocation, and organizational buy-in. It's the top-down push that aligns AI initiatives with business goals, mitigates resistance, and ensures the investment delivers tangible results.

Government Regulations

Government regulations refer to the legal frameworks, policies, and incentives that shape the external environment for AI adoption in SMEs, acting as either facilitators or barriers. (Oliveira & Martins, 2011). Zhu et al. (2006) describe them as "external pressures that influence the pace and nature of technology assimilation" including subsidies and compliance requirements. Kshetri (2021) argues that supportive regulations, such as tax incentives and data protection frameworks, accelerate AI adoption in SMEs by reducing financial and legal uncertainties. Conversely, Ghobakhloo *et al*. (2022) note that stringent regulations, like General Data Protection Reguation (GDPR) compliance, increase adoption costs and complexity for SMEs. Chatterjee et al. (2021) highlight the dual role of regulations, suggesting that while incentives encourage uptake, bureaucratic hurdles deter it. Qu et al. (2021) further emphasize that government policies providing technical support and funding significantly enhance SMEs' willingness to adopt AI.Oliveira and Martins (2011) note they impact innovation adoption, with studies showing varied effects. Zhu et al. (2006) call them external pressures, and Oliveira and Martins (2011) note their dual impact. Kshetri (2021) emphasizes incentives like tax breaks, while Ghobakhloo et al. (2022) point to compliance costs. This definition reflects a business view of regulations as a strategic factor.From the current study, government regulations are the external policies, legal requirements, and incentives that shape the

feasibility and cost of AI adoption for SMEs, either enabling progress through support or constraining it with compliance burdens. It's the regulatory landscape that businesses must navigate to unlock AI's potential or manage its risks.

Performance of SMEs

Opinion generally showed that performance outcome that firm would get for using particular technology facilitate it adoptions process. Performance of SMEs is a multidimensional construct reflecting the outcomes of AI adoption, including financial profitability, operational efficiency, market competitiveness, and growth. (Li et al., 2020; Rashid & Khan, 2020). Zahra and George (2002) tie it to absorptive capacity, defining it as the "ability to leverage new knowledge for improved organizational outcomes". Ghobakhloo et al. (2022) argue that AI enhances SME performance through productivity gains, cost reductions, and innovation capacity, particularly in digitalized operations. Li et al. (2020) provide evidence that AI-driven process improvements lead to higher revenue and customer satisfaction in SMEs. Kshetri (2021) emphasizes that AI adoption boosts competitive advantage and market adaptability, key performance indicators for SMEs. Rashid and Khan (2020) further demonstrate that digital transformation, including AI, significantly improves financial and strategic performance in SMEs, especially in developing economies. Zahra and George (2002) link it to leveraging new knowledge for outcomes Zahra and George (2002) link it to leveraging knowledge, and Porter (1985) ties it to competitive advantage. Ghobakhloo et al. (2022) show productivity gains, Li et al. (2020) note revenue increases, and Rashid and Khan (2020) highlight financial growth. This focuses on core business KPI sprofit, efficiency, and market success. Stemming from the aforementioned authors, current study view performance of SMEs as the comprehensive outcome of AI adoption, reflected in enhanced profitability, streamlined operations, increased market share, and sustained growth. It's the ultimate business metric that validates AI as a driver of financial health, operational excellence, and long-term competitiveness.

2.2 EMPIRICAL REVIEW

Perceived Relative Advantage of AI and SMEs Performance

Alshubiri et al. (2021) in their work "Determinants of Artificial Intelligence Adoption in SMEs: Evidence from Oman work quantitatively surveyed 250 SMEs in Oman and concluded that relative advantage of AIie., better decision-making and responsiveness to the market has a positive relationship with adoption intention. This suggests that SMEs working in e-commerce-intensive contexts perceive tangible operational benefits, but the generalizability of results may be limited to high-tech contexts and requires testing in less digitalized contexts. Moeuf et al. (2020) in their work "Identification of critical success factors, risks and opportunities of Industry 4.0 in SMEs" examines identification of critical success factors, risks and opportunities of Industry 4.0 in SMEs in France. Authors utilized qualitative case approach to interview fifteen owners of SMEs who served as respondents. It was established that, and found out that AI's ability reduces cost and streamline processes drives adoption. Against France's developed infrastructure, these findings are plausible for efficiency-oriented SMEs but might not be applicable in less developed environments. Badghish and Soomro (2024) examined AIadoption by SMEs to achieve sustainable business performance: application of technology–organization–environment framework" employed a quantitative method with 220 Saudi Arabian SMEs, utilizing SmartPLS 3 for testing, and determined a significantly positive impact of relative advantage, strong especially in the case of medium-sized firms. This brings into play an unusual firm-size dynamic, where availability of resources will increase perception, which is possibly not the case in smaller SMEs. Analytically, these studies find that perceived relative advantage is a strong driver but its strength varies with technological maturity and firm capacity, and calls for context-based adjustments in existing research.

Khayer et al. (2020) in their work Cloud Computing Adoption Among SMEs: A Study on Perceived Benefits performed a quantitative research investigation involving 300 SME managers to examine the adoption of cloud computing technologies, which exhibit different adoption behaviors akin to artificial intelligence (AI). By applying the Diffusion of Innovation (DOI) theory, the investigation indicated that SMEs would have a high probability of adopting cloud computing when they perceived it as cost-saving, scalable, and supporting flexibility in operations. Although the study doesn't specifically examine AI adoption, what it reveals provides valuable insight into how SMEs evaluate perceived benefits when making the choice to adopt technology. The study also confirms that money and operational efficiency are the key determinants of adoption. AI adoption, however, has additional issues such as reliance on data, algorithm learning curves, and ethical issues that were not included in Khayer et al.'s study. Further, Khayer et al. (2020) did not consider industry differences, which means the benefits outlined as perceived might not be of equal significance to industries. Artificial intelligence, for instance, has particular benefits in the manufacturing (predictive maintenance), retail (personalized recommendations), and finance (fraud detection) industries which indicates that industry-level analysis is essential to determining the applicability of their findings. Premkumar & Roberts (1999): "Adoption of Emerging Technologies in Rural SMEs: A Diffusion Perspective studied technology adoption in rural SMEs and identified perceived benefit as one of the key determinants of adoption. Their study provides evidence that SMEs in limited environments adopt technology primarily where the benefits over the drawbacks, along with surmounting challenges in application, exist. Yet, AI adoption entails unique financial and technical demands not relevant to the technologies considered by Premkumar and Roberts. AI typically requires long-term commitment, expert personnel, and alignment with current digital infrastructures, and thus adoption is less straightforward than in past

technologies. Hence, while the general principle of perceived benefit holds, its actionable significance for AI uptake by SMEs must be considered in more detail.

Chatterjee et al. (2021) in their work Adoption of Artificial Intelligence in SMEs: Examining the Role of Management Support performed a quantitative investigation in India, applying path analysis to data obtained from 350 SMEs. The results show that management support enhances innovation, which has a direct influence on AI adoption. The research illustrates that firms with proactive leadership are more inclined to embrace AI-based solutions since management encourages the application of new technologies and allocates required resources for their adoption. However, the study also suggests that organizational and cultural factors play an important part in shaping how management support can influence AI adoption. The conventional or resistant leadership approaches of SMEs may fail to leverage perceived AI advantages despite pressure or market forces from outside. This presents a valid consideration for the current research investigating the influence of managerial attitudes in the local SME environment on perceived advantages of AI adoption. Thus, while Chatterjee et al.'s study emphasizes the necessity of management support, its applicability depends on the specific leadership culture of SMEs in the current study setting. AlSheibani et al. (2020). The Role of Leadership in Overcoming AI Adoption Barriers in Australian SMEs. employed a mixed-method approach through surveys and interviews of 25 Australian SMEs. Their work highlights that good management significantly reduces adoption barriers, particularly in terms of costs, obtaining skills, and opposition to change. Unlike Chatterjee et al. (2021), who placed their priority on innovation as a mediating factor, AlSheibani et al. (2020) highlight leadership vision and foresight as essential in provoking AI adoption. The findings align with the Australian setting as a developed market, in which leaders of SMEs leverage available resources to implement AI solutions more effectively. However, this is an assumed assumption that may fail to hold in situations where SMEs face financial resource constraints, digital infrastructure shortage, or regulatory ambiguity. Hence, the generalizability of the study to available research depends on whether these leadership dynamics are dominant in the intended SME setting.

AI Complexity and SMEs Performance

Kanbach et al. (2024) investigated The New Normal: The Status Quo of AI Adoption in SMEs." performed a systematic literature review, analyzing 106 peer-reviewed articles on AI adoption in SMEs, using the Technology-Organization-Environment (TOE) framework to categorize findings into eight clusters (e.g., compatibility, resources). They found that AI enhances SME performance through efficiency and competitiveness, but its adoption is hindered by complexities like limited knowledge and financial resources. Unlike simpler technologies, AI requires a strategic alignment of organizational culture and external support, complicating its uptake. Thus, while performance benefits are evident, SMEs need to tailored strategies to navigate these challenges. The current study could adopt Kanbach et al.'s TOE-based approach to assess local SME ecosystems comprehensively. Its broad review nature is highly applicable, though it may need contextual refinement for specific leadership cultures.

Peretz-Andersson & Hällgren (2024) examined AI Implementation in Manufacturing SMEs: A Resource Orchestration Approach" conducted a multiple case study with Swedish small and medium-sized enterprises (SMEs) into implementing artificial intelligence (AI), leveraging resource orchestration theory to analyze its integration to improve production performance. Peretz-Andersson and Hällgren's findings reveal that AI improves production quality and efficiency as long as SMEs manage resources like technology and specialist expertise; however, AI's complexity requiring data readiness and qualified staff overtakes those with traditional tools. The performance can thus improve with AI, but only if challenges related to resources are addressed. Meanwhile, considering the variance in the Peretz-Andersson and Hällgren's study focused and the current study necessitate further investigation.

Oldemeyer et al. (2024) carried out investigation of Artificial Intelligence in SMEs: A Systematic Review of the State of the Art and the Main Implementation Challenges" Oldemeyer et al. (2024) executed a systematic review based on the PRISMA protocol, analyzing 67 articles to assess AI's state in SMEs and identifying 27 implementation challenges (e.g., data availability, cost among others)found out that AI enhances decision-making and operational performance, but its complexity, unlike simpler technologies demands significant investment and expertise. Thus, while performance benefits are promising, SMEs must address these multifaceted challenges for successful adoption.This study can leverage this far-reaching challenge-focused approach to examine regional challenges and thus increase its relevance. The overall focus on small and medium-sized businesses guarantees great relevance; however, local cultural impacts may require greater investigation. Al-Hajri et al. (2024) examined Artificial Intelligence Adoption by SMEs to Achieve Sustainable Business Performance: Application of Technology–Organization–Environment Framework conducted a quantitative study in Saudi Arabia, where they surveyed 300 SME managers and used SmartPLS to analyze the data in the context of the Technology-Organization-Environment (TOE) framework. The findings show that AI adoption, driven by relative advantage and government support, improves sustainable performance, but barriers like regulatory uncertainty and skills shortages pose significant hurdles. Unlike traditional technologies, AI requires long-term commitment, which means while the benefits are high, SMEs need external support to realize these benefits fully. The approach currently used holds relevance to this study, particularly with regard to its TOE model and its focus on managerial viewpoints; still, adaptation may prove necessary to suit Saudi Arabian particular situations. Bhalerao et al. (2022) assessed a study of barriers and benefits of artificial intelligence adoption in small and medium enterprise" performed a qualitative review of literature and case studies on AI adoption in SMEs,

identifying benefits like improved decision-making and barriers such as technical competency gaps. They found that AI enhances SME performance in areas like inventory management, but its complexity requiring data quality and financial resources outstrips simpler tools. Thus, while performance gains are notable, SMEs must overcome these barriers for effective adoption. The investigation in question can apply this barrier-benefit analysis to test local SME perceptions, making it germane to the current research. Its qualitative nature supplements quantitative approaches, though it may need empirical grounding in this specific context.

Employee Capability of AI and SMEs Performance

From the viewed of Al-Khatib (2023) on the impact of big data analytics capabilities on organizational performance: the mediating role of artificial intelligence in smes conducted a quantitative study in Jordan, surveying 315 SME employees and managers, using structural equation modeling (SEM) to explore how big data analytics capabilities, supported by AI, affect performance. The findings show that employee capability in leveraging AI tools enhances organizational performance by improving decision-making and operational efficiency, provided employees are trained to handle AI's technical demands. However, the study notes that AI's complexity requiring data literacy and analytical skills exceeds that of traditional tools, and SMEs with low employee capability may struggle to realize these benefits despite technological availability. Thus, while Al-Khatib's study emphases the importance of employee capability, its applicability depends on the skill levels within the SMEs of the current study setting. For the current study, adopting this approach is applicable, as it directly ties employee capability to AI-driven performance, though it may need adjustment for SMEs with varying technical training access. Balakrishnan et al. (2024) in their recent work artificial intelligence capability and organizational performance: unraveling the mediating effects of employee satisfaction in smes. Balakrishnan performed a quantitative study in Malaysia, collecting data from 280 SME employees and using partial least squares (PLS)-SEM to assess AI capability's impact on performance, mediated by employee satisfaction. Their results indicate that employees with strong AI skills improve SME performance through enhanced productivity and innovation, but only when they feel confident and satisfied with AI tools. AI's complexity, including its learning curve and integration needs, poses challenges for employees lacking training, potentially undermining performance gains. Thus, while employee capability drives success, its effectiveness hinges on addressing these skill gaps. The current study could adopt this employee-centric approach to explore local skill levels and satisfaction, making it highly applicable, though cultural differences in employee attitudes may require consideration.

Drydakis (2022) viewed artificial intelligence and reduced smes' business risks: evidence from european markets" conducted an econometric analysis of 1,200 SMEs across European markets, examining how AI adoption, supported by employee capability, reduces business risks and boosts performance. The study found that employees skilled in AI applications (e.g., predictive analytics) enhance SME resilience and profitability, but AI's complexity requiring continuous learning and adaptability demands more than basic technical proficiency. SMEs with underprepared employees may fail to leverage AI's risk-reduction potential despite its availability. Thus, while Drydakis's study highlights employee capability's role, its applicability depends on the training infrastructure within the current study's SME context. This approach is applicable for the current study, particularly for its focus on risk and performance, but its European scope may need tailoring to local economic conditions. Kamboj et al. (2024) considered artificial intelligence and marketing performance of smes: the mediating role of customer relationship management capabilities carried out a quantitative study in India, surveying 350 SME employees and using SEM to investigate AI's impact on marketing performance via CRM capabilities. Their findings reveal that employees capable of using AI-driven CRM tools improve SME performance by enhancing customer engagement and sales, but AI's complexity such as data management and algorithmic understanding requires advanced skills not typical of traditional CRM systems. SMEs with limited employee capability may struggle to capitalize on these benefits despite pressure mount by the market. Thus, while Kamboj et al.'s study emphasizes employee capability, its relevance depends on the technical proficiency of employees in the current study's SMEs. For the current study, this approach is applicable, especially for marketing-focused SMEs, though its CRM. Emphasis may need broadening for other sectors. Moghavvemi and Yen (2024) examined Smes' performance and artificial intelligence: the role of knowledge management and employee creativity in Malaysia. The study adopted a mixed-method study surveys of 200 SME employees to know how AI, knowledge management, and employee creativity affect performance. They found that employees with AI skills and creative problem-solving abilities enhance SME performance through innovation and efficiency, but AI's complexity requiring data interpretation and system maintenance poses barriers for less capable staff. This suggests that while employee capability is critical, SMEs must invest in training to unlock AI's full potential. The current study could adopt this mixed-method approach to assess local employee creativity and AI skills, making it applicable, though resource constraints for training variability is not in doubt between Malaysia and Nigeria.Wamba-Taguimdje et al. (2020) assessed influence of artificial intelligence (ai) on firm performance: the business value of ai-based transformation projects in multiple countries. Both qualitative study and analyzing case studies Their results show that employee capability in implementing AI projects (e.g., automation, analytics) significantly boosts performance by improving processes and reducing costs, but AI's complexity unlike simpler technologies demands specialized skills and adaptability. SMEs with low employee capability may fail to achieve these gains despite AI investment. Thus, while Wamba-Taguimdje et al.'s study underscores employee capability's importance, its applicability depends on the skill development

opportunities within the current study's SMEs.The qualitative approach used in this study is appropriate when conducting analyses of worker-interoperability with artificial intelligence, but can perhaps gain greater overall validity through additional measurable data.

Management Support of AI Adoption and SMEs Performance

Alalwan et al. (2023) examined artificial intelligence adoption in smes: the role of management support and technological readiness. The study was conducted in Saudi Arabia using 290 SME managers. Methods adopted include quantitative via surveying and structural equation modeling (SEM) Their findings show that management support significantly drives AI adoption by fostering a culture of innovation and allocating resources, leading to enhanced SME performance in efficiency and competitiveness. However, the study highlights that AI's complexity requiring technical infrastructure and long-term investment poses challenges that simpler technologies do not, and resistant management may hinder adoption despite external opportunities. Thus, while Alalwan et al.'s study emphasizes the necessity of management support, its applicability depends on the proactive leadership culture within the SMEs of the current study setting. It relevance to the current study is that both studies considered the adoption of AI in smes however, management support served different purpose. Behl et al. (2022) examining the role of management support in AI adoption: evidence from Indian SMEs. Respondents consist of 310 SME managers while partial least squares (PLS)-SEM was adopted. Their results indicate that strong management support enhances SME performance by facilitating AI-driven process improvements and innovation, provided leaders champion the technology and mitigate risks. However, AI's complexity such as its need for skilled personnel and integration exceeds that of traditional systems, and SMEs with hesitant or resource-constrained management may fail to leverage these benefits. Thus, while Behl et al.'s study underscores management support's importance, its relevance depends on the leadership commitment in the current study's SMEs meanwhile, cultural variations in risk tolerance may require consideration. Dubey et al. (2023) assessed management support and artificial intelligence adoption in smes: a resource-based view in the UK. Respondents comprises 250 SME managers. A mixed-method, surveys and interviews were used. They found that management support, by providing strategic direction and resources, boosts SME performance through AI-enabled efficiency and decision-making, but AI's complexity requiring data readiness and expertise demands proactive leadership beyond basic support. SMEs with passive management may struggle to capitalize on AI's potential despite pressure from the market. Thus, while Dubey et al.'s study highlights management support's role, its applicability depends on the strategic vision of leaders in the current study's context. This mixed-method approach is applicable for the current study to assess both quantitative and qualitative aspects of management support, though its UK focus may need tailoring to local conditions. Gaur et al. (2024) evaluates the role of management support in leveraging artificial intelligence for sme performance: a multi-country analysis. Gaur et al. (2024) carried out a quantitative study across multiple countries, surveying 400 SME managers and SEM was adopted as a data analysis method. Their findings reveal that management support drives AI adoption by aligning organizational goals and resources, improving SME performance in areas like cost reduction and customer satisfaction. However, AI's complexity such as its financial and technical demands requires more than general support, and traditional or resistant leadership may fail to unlock these benefits. Thus, while Gaur et al.'s study emphasizes management support, its applicability depends on the specific leadership culture within the current study that need refinement for a single-region focus.

Ng et al. (2023) study management support and ai adoption in smes: a study of digital transformation in Southeast Asia. Adopted method are surveying and PLS-SEM while 320 SME managers were used as respondents. They found that management support enhances SME performance by promoting AI use for operational agility and innovation, but AI's complexity requiring system upgrades and training poses barriers that passive leadership may not overcome. SMEs with proactive management are better positioned to leverage AI's advantages. Thus, while Ng et al.'s study stresses management support's importance, its relevance depends on the digital readiness and leadership proactivity in the current study's SMEs. Tewari et al. (2022) researched management Support as a catalyst for AI adoption in smes: an empirical study. Respondents were 280 SME managers in Canada. Survey and regression analysis were used as adopted methods. Their results show that management support, by fostering a supportive environment and resource allocation, improves SME performance through AI-driven productivity and market responsiveness. However, AI's complexity, unlike simpler technologies demands strategic oversight and investment, and resistant leadership may limit adoption despite potential benefits. Thus, while Tewari et al.'s study underscores management support's catalytic role, its applicability depends on the leadership culture and resource availability in the current study's SMEs.

Government Regulations of AI Adoption and SMEs Performance

Kshetri (2021) conducted a qualitative review of policy documents with a global focus on Asia, finding that incentives like subsidies accelerate AI adoption. This broad perspective suggests a positive regulatory influence, but its applicability varies by local policy frameworks, necessitating a review of the current context's regulations. Ghobakhloo et al. (2022) used a quantitative survey in Malaysia with 150 SMEs, revealing that regulatory burdens, such as compliance costs, hinder adoption. This highlights a negative effect in a specific developing context, calling for context-specific investigation to determine relevance. Analytically, these studies show that government regulations can either facilitate or obstruct adoption, with policy design influencing outcomes, emphasizing

the importance of examining the current regulatory landscape. Ahmad et al. (2023) investigated Government regulation and AI adoption in smes: a study of policy impacts in Malaysia. Authors used a quantitative approach to survey 300 Malaysia-based SME managers which served as respondents. Structural equation modeling (SEM) was deployed to examine the nexus that exist between government regulations and AI adoption. The findings reveal facilitating regulations such as subsidies and guidelines enhance adoption of AI by reducing state of uncertainty to improve productivity and innovation performance of SMEs. The research, however, finds AI's nature compliance with data privacy and ethics conditions makes it more challenging compared to less sophisticated technologies, and overly restrictive regulations can prevent adoption regardless of its benefits. To this extent, although Ahmad et al.'s research stresses government regulation's necessity, its adequacy hinges on maintaining a balance between adaptation and freedom which vary from one country to another. Meanwhile, its relevance in the current study remains the fact both studies focus on government regulation as independent variable and AI adoption as dependent variable with potential need to adjust to changing policy contexts elsewhere.

Chen et al. (2022) assessed the role of government regulation in facilitating ai adoption among smes: evidence from China. Mixed methods were used for the study while respondents comprise 250 SME managers. They find regulations with incentives and facilitating infrastructure result in AI adoption, enhancing SME performance by reducing costs and enhancing competitiveness in markets. But AI sophistication such as meeting rigorous data security legislation requires more than backing by regulators, and resource-constrained SMEs can become bogged down by rigid policies. So, while Chen et al.'s study highlights government regulation's role, its applicability depends on ease of adaptation of policy environment in the current study hence necessitate for further investigation. Eze et al., (2023) examined Government Regulation and AI Adoption in SMEs: A TOE Framework Analysis in Nigeria. The study employed a quantitative methodology by conducting a survey among 280 business enterprise owners with Technology-Organization-Environment (TOE). PLS-SEM applied in framing government regulation's effect on AI adoption. Positive regulations, i.e., training programs and rebates, increased AI adoption, enhancing business performance in operational effectiveness as well as growth. Still, AI's complexity accommodation needs with changing ethical as well as legal requirements flexes under addressable by generalized regulations, where inconsistent policy may hamper progress. So, though government regulation's role is highlighted by Eze et al., viability of their study remains conditional to regulations'/policy's consistency as well as specificity in Nigeria's current study's SMEs. This TOE-based methodology holds for the present research to estimate regulatory impacts in a systematic manner, albeit Nigeria's nascent economy environment may need adaptation.

Kim and Lee (2024) evaluates the nexus between Government Regulation and AI Adoption in SMEs: A Cross-National Study of Policy Effectiveness in South Korea, Japan, and Singapore. A cross-country quantitative survey of was used and the analysis of the data was done through SEM. Respondents consist of 450 SME managers. As argued by their study, transparent, supportive regulations funding and compliance guidelines, for example foster greater AI adoption, and this contributes positively to greater innovation and revenue performance in SMEs. AI's complexity requiring international standardization and data governance requires more than minimalist policy promotion, however, and restrictive regulations may cause lagging even among opportunities, and thus, while government regulation constitutes the concern of Kim and Lee's study, its relevance hinges on the clarity of regulations and international harmonization contained in the present study's SMEs. For this study, this cross-country model holds in its general extent of regulations, albeit perhaps with a necessity to emphasize a single region's regulations. Patel et al. (2023) examined Government Regulation as a Driver of AI Adoption in SMEs: A Study in the UK Through survey the study used 30 SME leaders to know how government regulation drives AI adoption. As per their study, regulations issuing grants and ethical guidelines facilitate AI adoption, improving SME performance through automation of processes and customer experience. But AI complexity i.e., GDPR regulations and new legislation on AI requires proactive regulation guidance, and risk-averse leadership in SMEs may reject adoption under vague policies. Therefore, government regulation's facilitating role AI adoption emphasizes its role, its suitability which depend on what regulations are supported and what leadership employed. This qualitative approach can be utilized in this present study to achieve qualitative regulatory insights,. but the British context may not vividly the same in the current study’s location. Singh et al. (2022) conducted study on Government Regulation and AI Adoption in SMEs: An Empirical Analysis in India. 350 SME managers were interviewed while regression analysis was deployed to evaluate how government regulation impacts AI adoption. They conclude that encouragement and incentives of digital infrastructure by regulations trigger AI adoption, promoting scalability and profitability of SMEs. Nonetheless, AI's technicality requiring compliance with data security as well as industry-specific regulations leads to challenges generic policy may not fully address, and bureaucratic lag may limit its full potential. Hence, while Singh et al.'s study finds government regulation to be significant, its applicability depends on regulators' effectiveness and specificity in this present study's SMEs.

Job Roles in AI Adoption and SMEs Performance

The position of a person working at a small or medium-sized organization (SME) has a large impact on whether new technology like artificial intelligence (AI) is viewed favorably, accepted, and successfully utilized. The Unified Theory to Acceptance and Use of Technology (UTAUT) stresses that "performance expectancy" and "effort expectancy," theoretical constructs vital to behavioral

intention determination, are greatly shaped by a person's job demands and organizational position (Venkatesh et al., 2003). Executive and ownership-level individuals with chief responsibility for strategic planning and decision-making are prone to appreciate artificial intelligence's relative advantage with respect to competitive advantage and sustainable development. Case studies regarding AI-enabled customer relationship management (CRM) for business-to-business (B2B) contexts show implementing AI-related technology can enhance organizational performance substantially and provide a source of competitiveness when led by strategic-level executives (Chatterjee et al., 2021). Managerial-level employees are likely to judge AI based mainly upon its intricacy and its short-term implications upon everyday work and task effectiveness. Moreover, Resource-Based View (RBV) considers job positions as manifestations of human capital. The skills, expertise, and decision-making power embedded in a position are strategic resources to enable or disable AI adoption through organizational structures (Barney, 1991). Hence, a job position is more than a demographic variable and is an organizational element crucially influencing technology adoption processes.

Multidimensional Approach towards SME Performance

The performance of small and medium-sized enterprises (SMEs) is most effectively conceptualized as a multidimensional entity, encompassing not only financial indicators but also the comprehensive effects of strategic measures, including the integration of artificial intelligence (AI). The Balanced Scorecard framework highlights the importance of assessing performance from various perspectives rather than depending exclusively on fiscal results (Kaplan & Norton, 1996). In a similar vein, Absorptive Capacity theory posits that organizations attain sustainable performance advantages through their capacity to identify, absorb, and implement new knowledge such as insights derived from AI into their operational frameworks (Zahra & George, 2002).

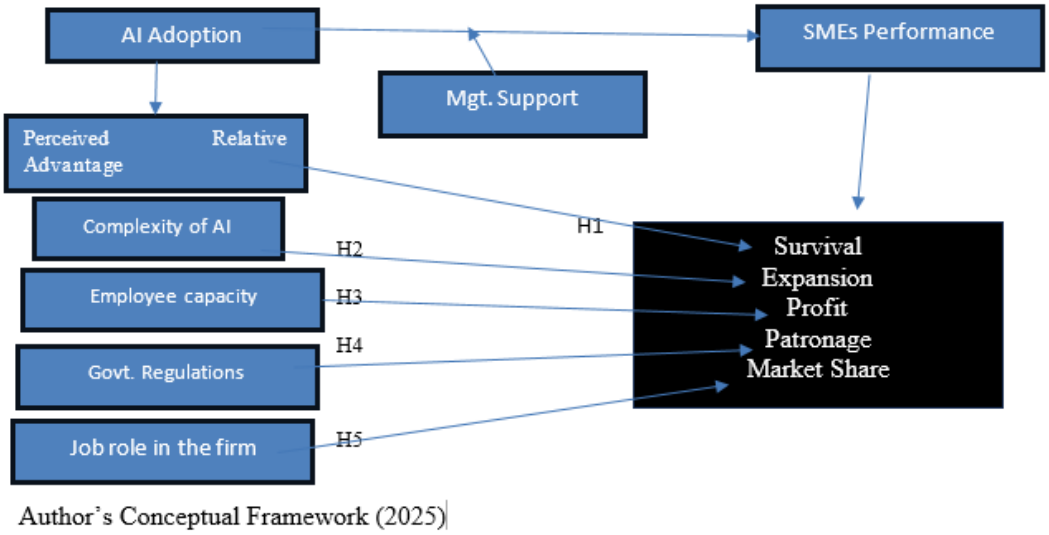

Figure 2.1 Artificial Intelligence Adoption and SMEs Performance: A Moderating Role of Management Support in Nigeria

Figure 2.1 depict information about the relationship between two major observable variables of (AI Adoption and Smes performance). The diagram showed perceived relative advantage, complexity of AI, employee capacity, Government regulations and job role3 in the firm as a measure of independent variable. On the other hand, survival, expansion, profit, patronage, and market share were used as a measure of Smes performance). Management support served as a moderating variable between the AI adoption and Smes performance to know whether or not it could affect the direction and strength relationship between predictor indices and dependent variable.

3.0 RESEARCH HYPOTHESIS

H_0: Management support does not significantly affect the direction and strength relationship between AI adoption on Performance of SMES in Southwest, Nigeria.

3.1 METHODOLOGY

The study employed both descriptive and inferential statistics. Descriptive is done through survey designed with the aid of structured questionnaire inorder to elicit information from the respondents. Three hundred (300) service providers' firms from the six states capital that constituted southwest, Nigeria were randomly chosen to form the population of the study. This becomes imperative because these firms were digitalised in nature and the state capitals were considered because they formed the business nerve of the states. Employees and business owners of the firm formed respondents for the study. These employees were selected using

heterogeneous purposive sampling technique while the owners were selected via convenience sampling technique. The sampling becomes necessary due to the variances in employees' position, sex, job experienced among others. Krejcie and Morgan's (1970) was employed to determine the study's sample size of one hundred and sixty-nine (169). Yamane (in Iseral, 2013) sees this figure (169) as the lowest acceptable level confidence of 95% and 5% error levels. Thus, suggested by Isreal (2013) that to maintain the standard, 30% of 169 should be added to the original calculated sample size (i.e 51 +169= 220). Both content and face were used to ascertain the validity instrument while test re-test and half-split methods were employed for the reliability of the instrument. The analyses of the data collected was via Structural Equation Model (SEM). Using SEM gives room to assess ccausal relationships among variables besides, understand how each contributes to overall performance.

Where;

JRC = Job Role in the Company
PRA = Perceived Relative Advantage of AI
CAI = Complexity of AI
EMC = Employee Capability
GOR = Government Regulations
MAS = Management Support
SBP = Small Business Management Performance

4.0 RESULTS AND FINDINGS

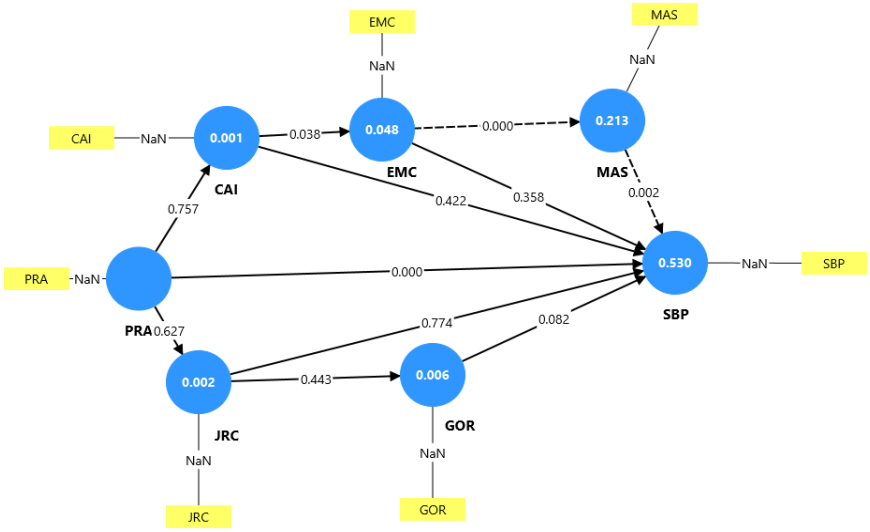

Figure 1: Structural Model

The graphical analysis of the study on Artificial Intelligence Adoption and SMEs Performance in Southwest Nigeria: A Moderating Role of Management Support reveals important patterns linking the adoption factors Job Role in the Company (JRC), Perceived Relative Advantage of AI (PRA), Complexity of AI (CAI), Employee Capability (EMC), and Government Regulations (GOR)—to Small Business Management Performance (SBP), while highlighting the critical moderating influence of Management Support (MAS).The trends indicate that an individual's job role within the SME affects both their perception of AI and the extent to which it contributes to business performance. In line with the findings of Derin and Gökçe (2020), which showed that AI complements employee operations in Nigeria's banking sector, senior managers are more likely to translate AI adoption into strategic performance gains than operational-level staff. This is largely due to greater authority over decision-making and resource allocation.

The perceived relative advantage of AI demonstrates a strong positive relationship with business performance, consistent with findings by Akpan et al. (2023) that Nigerian manufacturing firms using AI experience measurable operational efficiency gains. SMEs that recognise AI's capacity to improve efficiency, decision-making, and competitiveness tend to perform better, particularly when this perception is reinforced by active management support. In contrast, the perceived complexity of AI is generally associated with lower performance outcomes, a trend supported by studies such as Olatunji and Akinola (2024), which note that high technical barriers and lack of expertise limit AI adoption among SMEs. However, strong management support can significantly reduce this negative effect by providing targeted training, simplifying processes, and introducing AI in gradual, manageable phases, a strategy recommended by Kamarulzaman et al. (2024) in their SME technology adoption framework. Employee capability shows a clear positive link to business performance, reflecting the conclusions of Sadiku et al. (2023) that workforce skills and adaptability are

critical to unlocking AI's benefits. Management plays a pivotal role here by funding professional development programmes, offering continuous learning opportunities, and fostering a culture that encourages innovation.

Government regulations present a more nuanced picture. While compliance costs and regulatory uncertainty can pose challenges (ResearchGate, 2024), clear policies on data protection, cybersecurity, and ethical AI use can also guide SMEs toward safer and more effective adoption. Proactive management teams are able to align company policies with regulatory requirements, turning potential obstacles into frameworks that support sustainable AI integration. The graph reinforces the view that technical factors, employee skills, and regulatory environments alone do not determine whether AI adoption leads to improved SME performance. Instead, management support emerges as the decisive element that amplifies positive drivers such as PRA and EMC, while mitigating barriers such as CAI and regulatory complexity. This conclusion echoes the work of Alshammari et al. (2024), who found that top management support significantly influences technology adoption outcomes across diverse SME contexts. In the specific case of Southwest Nigerian SMEs, MAS not only enhances the direct impact of AI adoption on performance but also fosters an organisational environment capable of sustaining long-term innovation and competitiveness.

Table 1: Total Effect

Items	Sample mean	Standard deviation	T statistics	P values
CAI -> EMC	-0.217	0.105	2.079	0.038
CAI -> MAS	-0.098	0.049	2.044	0.041
CAI -> SBP	-0.067	0.059	1.199	0.23
EMC -> MAS	0.461	0.092	4.994	0.000
EMC -> SBP	0.079	0.102	0.718	0.473
GOR -> SBP	0.13	0.078	1.74	0.082
JRC -> GOR	-0.077	0.099	0.767	0.443
JRC -> SBP	-0.03	0.07	0.432	0.666
MAS -> SBP	0.357	0.114	3.13	0.002
PRA -> CAI	0.028	0.093	0.31	0.757
PRA -> EMC	-0.001	0.023	0.276	0.783
PRA -> GOR	0.003	0.013	0.273	0.785
PRA -> JRC	-0.046	0.094	0.486	0.627
PRA -> MAS	0	0.011	0.277	0.782
PRA -> SBP	0.496	0.118	4.234	0.000

Source: Author's computation (2025)

Findings of this study highlighted several important dynamics in the AI adoption performance relationship in Southwest Nigerian SMEs. The negative impact of perceived AI complexity (CAI) on employee capability (EMC) ($\beta = –0.217$, $p = 0.038$) and on management support (MAS) ($\beta = –0.098$, $p = 0.041$) aligns with classic innovation diffusion and technology adoption theories. In Rogers's (2003) Diffusion of Innovations, complexity is the most significant barrier to adoption, while in the Technology Acceptance Model (TAM), perceived ease of use is fundamental to uptake its absence compromises both user capability and managerial willingness to invest (Davis, 1989). This suggests that SMEs' perceptions of AI as intimidating or technically cumbersome actively suppress both technical adoption and leadership endorsement.

Employee capability (EMC) exhibits a strong, positive effect on MAS ($\beta = 0.461$, $p < 0.001$), indicating that when SME employees feel competent in AI skills, managers are more willing to provide institutional support. This is consistent with Organizational Support Theory: perceived employee readiness encourages manager confidence and backing (Eisenberger et al., 1986). It also supports insight from the TOE (Technology–Organization–Environment) framework that technical readiness within firms plays a critical role in securing organizational commitment to new technologies (Tornatzky & Fleischer, 1990). Interestingly, EMC does not directly enhance SME performance (SBP) ($\beta = 0.079$, $p = 0.473$). This suggests that while skills are necessary, they are insufficient without managerial orchestration consistent with the dynamic capabilities view. According to Teece *et al* (1997), operational capabilities must be integrated, reconfigured, and leveraged through strategic support to generate performance benefits. Here, EMC's impact on SBP is mediated through MAS, which is essential for translating technical skills into organizational outcomes.

The positive effect of MAS on SBP ($\beta = 0.357$, $p = 0.002$) underscores the central role of management support in driving effective AI adoption outcomes. This resonates with SME adoption research, which repeatedly emphasises top management championing, resource allocation, and change management as pivotal for digital transformation success (Faiz et al., 2024). Perceived relative advantage (PRA) exerts a strong and statistically significant direct effect on SBP ($\beta = 0.496$, $p < 0.001$). This finding reinforces Rogers's notion that innovations are most likely to be adopted and to deliver performance when potential adopters perceive clear benefits (Rogers, 2003). Empirically, rigorous studies of AI in SMEs confirm that when business leaders believe AI will, for

example, improve productivity, reduce costs, or enhance customer service, performance improves distinctly (Soomro et al., 2025). By contrast, PRA has no significant effect on CAI, EMC, MAS, JRC (job role), or GOR (government regulation). This suggests that benefit perception alone does not reduce perceived complexity, improve skills, or marshal managerial support unless it is operationalised via strategy and capability building.

Government regulations (GOR) show a positive but not statistically significant relationship with SBP ($\beta = 0.13$, $p = 0.082$). This resonates with mixed findings in the literature: supportive policy environments can drive technology uptake in some contexts but show weak or inconsistent links to firm-level performance when implementation or enforcement are limited (Sagala et al., 2024). Job Role in the Company (JRC) does not significantly influence either GOR or SBP. In SMEs, this is plausible: organizational roles are often flat and fluid, and strategic decisions tend to rest with owners or managers regardless of formal position. Thus, role differentiation may not materially affect AI-related performance. While EMC is a necessary technical condition, it is MAS that functions as the critical leverage point converting AI readiness and perceived benefit into performance. In model terms, management support is likely a moderator and/or mediator dampening the negative effects of complexity while enabling capability to translate into results. Testing explicit interaction terms (e.g., CAI × MAS or EMC × MAS) in structural models would clarify these moderating dynamics (Tornatzky & Fleischer, 1990; Eisenberger et al., 1986).

Hypothesis Testing

H0: Management support does not significantly affect the direction and straighten relationship between AI adoption on Performance of SMES in Southwest, Nigeria.

Items	Sample mean	Standard deviation	T statistics	P values
JRC -> SBP	-0.021	0.069	0.287	0.774
MAS -> SBP	0.357	0.114	3.13	0.002
PRA -> CAI	0.028	0.093	0.31	0.757

Source: Researcher's computation (2025)

Finding of this study revealed that, Management Support (MAS) and Small Business Performance (SBP) exhibited a sample mean of 0.357, a standard deviation of 0.114, a t-statistic of 3.13, and a p-value of 0.002. This is a statistically significant and positive relationship ($p < 0.01$), indicating that higher management support significantly enhances small business performance. The relatively high coefficient suggests a strong effect size. This aligns with empirical literature showing that management support is a critical success factor in technology adoption and performance improvement, particularly in resource-constrained SME environments (Ajzen, 2020; Ifinedo, 2017). Management support influences the allocation of resources, reduces resistance to change, and fosters an enabling environment for innovative practices such as AI adoption (Tornatzky & Fleischer, 1990). Perceived Relative Advantage (PRA) and Complexity of AI (CAI) produced a sample mean of 0.028, a standard deviation of 0.093, a t-statistic of 0.31, and a p-value of 0.757. The result is statistically insignificant ($p > 0.05$), suggesting that the perception of AI's relative advantage does not significantly influence the perceived complexity of AI adoption among the sampled SMEs. This may indicate that even when SMEs acknowledge AI's potential benefits, they may still perceive its implementation as complex due to technological, financial, or human capital constraints (Venkatesh et al., 2003). The hypothesis testing results confirm that management support plays a statistically significant role in improving SME performance, whereas job role and perceived relative advantage do not show significant direct effects on the tested dependent variables in this study. These findings underscore the importance of leadership and managerial commitment in facilitating technological change in SMEs.

CONCLUSION

It was concluded that the adoption of AI has significant relationship with the small business performance. However, the moderating effect of management support gives mixed findings on how the adoption of AI related with performance of small business. The study concludes that AI adoption significantly enhances SME performance in Southwest Nigeria, but this impact is weakened when AI is perceived as highly complex and when employees lack the capability to use it effectively. Management support emerged as the most critical factor, as it enables SMEs to translate AI adoption into real performance gains by providing strategic direction, resources, and an enabling environment.

RECOMMENDATIONS AND POLICY IMPLICATIONS

Findings showed that the adoption of AI indices indicate strong relationship with dependent variable while moderating effect of management support gives mixed reactions. Therefore, recommended that there should be consistent training of staff to see the need to embrace new technology. Besides, management should be committed in facilitating technological change in the organisation and create enabling environment. Considering the aforementioned recommendation, Productivity will increase, efficiency and

effectiveness will improve drastically. Additionally, it will position the organisation for healthy competition to capture a larger market share.

It is recommended that SME leaders actively champion AI initiatives, invest in continuous employee training, and adopt AI gradually to reduce complexity. Government should complement these efforts by offering training support, incentives, and clear AI guidelines. These recommendations imply that policymakers must strengthen national digital skills programmes, provide leadership development for SME managers, and promote access to affordable, easy-to-use AI tools. Clear regulatory frameworks and targeted incentives will further reduce uncertainty and support SMEs in achieving productivity, competitiveness, and long-term growth through effective AI adoption.

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