

ARTIFICIAL INTELLIGENCE AND MICRO SMALL AND MEDIUM ENTERPRISES PERFORMANCE IN KOGI STATE

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ABSTRACT

In the evolving global economic landscape, business strategy has emerged as a critical determinant of the competitiveness and sustainability of enterprises, especially Small and Medium-Sized Enterprises (SMEs). The broad objective of this study is to examine effective business strategy and the competitiveness of small and medium-size enterprises in Kogi State. Other specific objectives are to investigate whether marketing strategy, pricing strategy and innovation strategy affect competitiveness of small and medium-size enterprises in Kogi State. The study spanned for a period between 2022-2025. The population of the study comprises of 22,715 operators of small and medium enterprises (SMEs) which include all the three senatorial districts in Kogi State that are registered with Corporate Affairs Commission (CAC) as at 2020. The sample size was 393 which was determined using Taro Yamani sampling technique. Several tests ranging from descriptive statistics, correlational matrix, KMO sampling adequacy test, Model Summary and Anova was conducted. The hypotheses of the study were tested using Multiple regression analysis with the aid of Statistical Package for Social Science (SPSS) 22.0. The study found that marketing strategy has positive (4.349) and significant (.000) effect on competitiveness of small and medium-size enterprises in Kogi State. The study also found that pricing strategy has positive (14.311) and significant (.000) effect on competitiveness of small and medium-size enterprises in Kogi State. The study found that innovation strategy has positive (2.307) and insignificant (.022) effect on competitiveness of small and medium-size enterprises in Kogi State. The study concluded that business strategy impacts the competitiveness of small and medium enterprises in Kogi State. The study recommended among others SME owners should prioritize the development and implementation of robust marketing strategies tailored to their target audience. SMEs should adopt a dynamic and consumer-oriented pricing strategies that reflect the perceived value of their products or services while remaining affordable and competitive within the industry. Innovation must be embedded into the strategic operations of SMEs. This involves continuous investment in new product development, process improvement, and service delivery innovations.

Keywords: Artificial intelligence, MSMEs performance, Awareness and understanding, cultural and organizational, data privacy and security

INTRODUCTION

The diffusion of artificial intelligence (AI) across the global economy has generated intense scholarly interest because of AI's potential to restructure productive processes, reshape markets, and alter competitive dynamics. Proponents

argue that AI-enabled tools such as machine learning algorithms for demand forecasting to conversational agents for customer service yield measurable gains in efficiency, innovation, and firm-level performance through automation of routine tasks, enhanced decision support, and personalized customer engagement (Abdulhamid & Abubakar, 2024; Ayinaddis, 2025). Empirical and review literature from diverse geographic contexts link AI adoption to improvements in productivity, faster innovation cycles, and more responsive supply chains, while meta-analyses emphasize that the technology's returns are contingent on complementary assets such as data quality, human capital, and digital infrastructure (Ayinaddis, 2025; Abdulhamid & Abubakar, 2024). Yet observers also warn that these benefits are uneven: gains often accrue to firms that already possess managerial capacity, technical skills, and scale advantages, thereby risking widening intra- and inter-firm inequalities (Adediran, Sakpere, & Ogunyinka, 2024).

Small and medium-sized enterprises (SMEs) occupy a special place in debates about AI because their aggregate contribution to employment and GDP is large in most economies, but their resource base and absorptive capacity differ sharply from larger incumbents. At the same time, multi-country reviews point to persistent barriers for SMEs: limited access to affordable AI tools, weak digital infrastructure, and acute skill shortages, which together constrain the translation of AI investments into sustained performance improvements (AI adoption and sustainability reviews; Ayinaddis, 2025).

Cultural and organizational factors encompassing managerial attitudes toward innovation, risk tolerance, hierarchical decision structures, and internal learning practices shape whether and how AI is integrated into operations. Data privacy and security concerns represent both a practical barrier and a reputational risk. In Nigeria, evidence points to limited cyber security capacity among SMEs and widespread apprehension about data breaches, which reduces willingness to share customer data with third-party AI vendors and constrains the construction of high-quality training datasets. Scholars arguing against uncritical AI expansion emphasize how privacy lapses and algorithmic opacity can damage customer trust, trigger compliance costs, and ultimately depress performance especially where regulatory protections and enforcement are weak (Okechukwu & Afolabi, 2024; Adediran et al., 2024).

The rapid diffusion of artificial intelligence (AI) technologies presents a marked opportunity for small and medium-sized enterprises (SMEs) in Nigeria to enhance productivity, market reach, and service innovation. Nonetheless, the translation of AI's theoretical promise into tangible firm-level performance is beset by a complex array of practical challenges that are both technical and socio-institutional in nature.

A primary and persistent barrier is inadequate digital infrastructure. High-quality internet connectivity, stable electricity supply, and accessible cloud services are preconditions for deploying many AI solutions; their absence raises the cost of running AI applications and increases downtime, thereby reducing potential productivity gains (Azaroual, 2024). Empirical assessments of African and Nigerian SMEs consistently identify infrastructural deficits intermittent power and variable broadband as fundamental impediments to scalable AI adoption (Azaroual, 2024; Agbo, 2024).

Related to infrastructure is the problem of financial constraints and the affordability of AI. Even off-the-shelf AI tools often require subscription fees, specialized hardware, or investment in data storage and security costs that are disproportionate for many SMEs with thin cash flows and limited access to credit (Azaroual, 2024). The combination of capital market imperfections and perceived investment risk leads to underinvestment in AI capabilities and constrains experimentation, which is necessary to identify viable AI business cases (Azaroual, 2024).

The effective use of AI requires not only basic digital literacy but also higher-order competencies in data curation, model selection, and interpretation of algorithmic outputs. Nigeria faces a documented digital skills gap, with many SME owners and employees lacking the training necessary to evaluate vendor claims, manage data pipelines, or detect model drift (Rufus, 2020). Training deficits produce heavy reliance on external vendors, which can create vendor lock-in and reduce SMEs' capacity to internalize AI value over time.

Closely related are problems of awareness, understanding, and realistic expectation-setting. Several studies find that SMEs often conflate AI with general automation or cloud computing and therefore misjudge its capabilities and limitations; such misunderstanding leads to inappropriate procurement decisions or abandonment of projects after initial setbacks (Agbo, 2024).

SMEs often lack baseline cybersecurity measures and incident response capacity, increasing vulnerability to breaches that can damage reputation and incur direct financial losses (Agbo, 2024). The reputational and legal risks associated with data incidents cause both SMEs and customers to withhold data, limiting the scope for accurate, personalized AI-driven interventions

Interoperability and technological fragmentation represent additional practical problems. Many SMEs use legacy systems and heterogeneous software stacks that do not integrate easily with modern AI services, creating costly customization needs and operational friction (Azaroual, 2024).

It is in the light of the above mentioned problems, this study investigated the effect of artificial intelligence on micro, small and medium enterprises performance in Kogi State.

This study revolved in providing answers to the following research questions that was raised from the statement of problem of this study.

- i. To what extent does level of awareness and understanding of AI have significant effect on MSMEs performance in Kogi State?
- ii. To what degree does cultural and organizational factors have significant effect on MSMEs performance in Kogi State?
- iii. To what extent does data privacy and security concerns have significant effect on MSMEs performance in Kogi State?

The broad objective of this study was to examined the effect of artificial intelligence on MSMEs performance in Kogi State. Other specific objectives are;

- i. To ascertain whether level of awareness and understanding of AI have significant effect on MSMEs performance in Kogi State.
- ii. To determine whether cultural and organizational factors have significant effect on MSMEs performance in Kogi State.
- iii. To access whether data privacy and security concerns have significant effect on MSMEs performance in Kogi State.

The hypotheses of this study was stated in null form as presented below;

H₀₁: Level of awareness and understanding of AI does not have significant effect on MSMEs performance in Kogi State.

H₀₂: Cultural and organizational factors does not have significant effect on MSMEs performance in Kogi State.

H₀₃: Data privacy and security concerns does not have significant effect on MSMEs performance in Kogi State.

REVIEW OF RELATED LITERATURE

Conceptual Review

Concept of Artificial Intelligence

Artificial intelligence (AI) has increasingly become a central theme in contemporary academic and business discourse due to its transformative potential across industries. At its core, AI refers to the ability of machines and computer systems to replicate human cognitive functions such as learning, reasoning, problem-solving, and decision-making. According to Russell and Norvig (2021), AI is the study of agents that receive percepts from the environment and perform actions that maximize the chances of achieving their goals, emphasizing its goal-directed and adaptive nature. Similarly, Haenlein and Kaplan (2019) define AI as a system's ability to correctly interpret external data, learn from such data, and use those learnings to achieve specific goals and tasks through flexible adaptation, highlighting its data-driven and dynamic characteristics. Brynjolfsson and McAfee (2017) further conceptualize AI as a general-purpose technology that augments human cognitive abilities and creates opportunities for economic transformation.

Level of Awareness and Understanding of AI

Awareness generally refers to the degree to which individuals or organizations are informed about the existence, potential applications, and benefits of AI, while understanding extends beyond basic knowledge to encompass the capacity to interpret, evaluate, and apply AI concepts in practical business contexts (Dwivedi et al., 2021). According to Ghobakhloo and Iranmanesh (2021), awareness involves the recognition of AI's relevance, while understanding denotes the cognitive ability to integrate such knowledge into strategic and operational decisions. Similarly, Ghosh and Sarkar (2022) conceptualize understanding as an organization's readiness to align its structures, culture, and human capital with AI-driven processes, emphasizing that low awareness and poor understanding remain significant barriers to AI adoption in emerging economies.

Cultural and Organizational Factors

Cultural and organizational factors constitute critical determinants of how enterprises adopt, implement, and utilize new technologies, thereby shaping performance outcomes. Scholars generally define cultural and organizational factors as the shared values, beliefs, norms, practices, structures, and internal systems that govern the behavior of employees and managers within an organization (Schein, 2017). These factors play an essential role in influencing decision-making, innovation capacity, and responsiveness to technological change.

Hofstede (2020) emphasizes cultural values as the underlying mental programming that shapes how individuals and organizations interact, particularly in relation to innovation and technology adoption. Similarly, Cameron and Quinn

(2019) define organizational culture as a system of shared meaning that distinguishes one organization from another and guides employees' attitudes and behaviors. Denison et al. (2021) extend this perspective by linking organizational culture to performance outcomes, stressing adaptability, mission clarity, and involvement as key indicators of success. These views underscore the importance of culture as both a supportive and constraining force in organizational development.

Data Privacy and Security Concerns

Data privacy and security concerns encompass the array of ethical, legal, technical, and managerial issues that arise from the collection, storage, processing, and sharing of digital information; they are central to understanding how data-driven technologies—notably artificial intelligence (AI) affect SMEs performance.

Tankard (2022) frames the concept in policy terms, highlighting data protection as the set of obligations, rights, and safeguards that govern how data may be used in AI applications. Ahmad, Mahmud, and Khan (2023) emphasise the technical and risk-management dimension, describing cybersecurity as the set of practices and controls designed to prevent, detect, and respond to cyber threats that jeopardise data assets. Shah and Bhatia (2023) extend these accounts by underscoring ethical questions consent, fairness, and surveillance that privacy and security concerns raise in data-intensive systems. Ghosh and Sarkar (2022) situate privacy and security within organizational readiness, arguing that technical capabilities alone are insufficient without corresponding governance, policies, and cultural norms. Together, these definitions portray data privacy and security concerns as a socio-technical construct that combines legal entitlements, ethical expectations, and technical safeguards.

MSMEs Performance in Nigeria

Micro, small and medium enterprises (MSMEs) constitute the backbone of the Nigerian economy, accounting for a substantive share of firms, employment and domestic output; yet their performance remains uneven and constrained by structural, institutional and technological bottlenecks. Recent surveys and national statistics continue to portray a dual reality: MSMEs are numerous and central to livelihoods, but many operate at low productivity, with fragile revenue streams and limited capacity to scale (PwC Nigeria, 2024; Nigerian Bureau of Statistics [NBS], 2022). Performance shortfalls manifest in multiple ways which includes low survival rates, slow sales growth, restricted access to formal markets, weak value-chain linkages and poor integration into export networks all of which blunt the sector's capacity to contribute more robustly to inclusive growth and employment (PwC Nigeria, 2024).

A large body of empirical work and policy analysis attributes these weaknesses to enduring constraints in finance, infrastructure, human capital and regulatory environments.

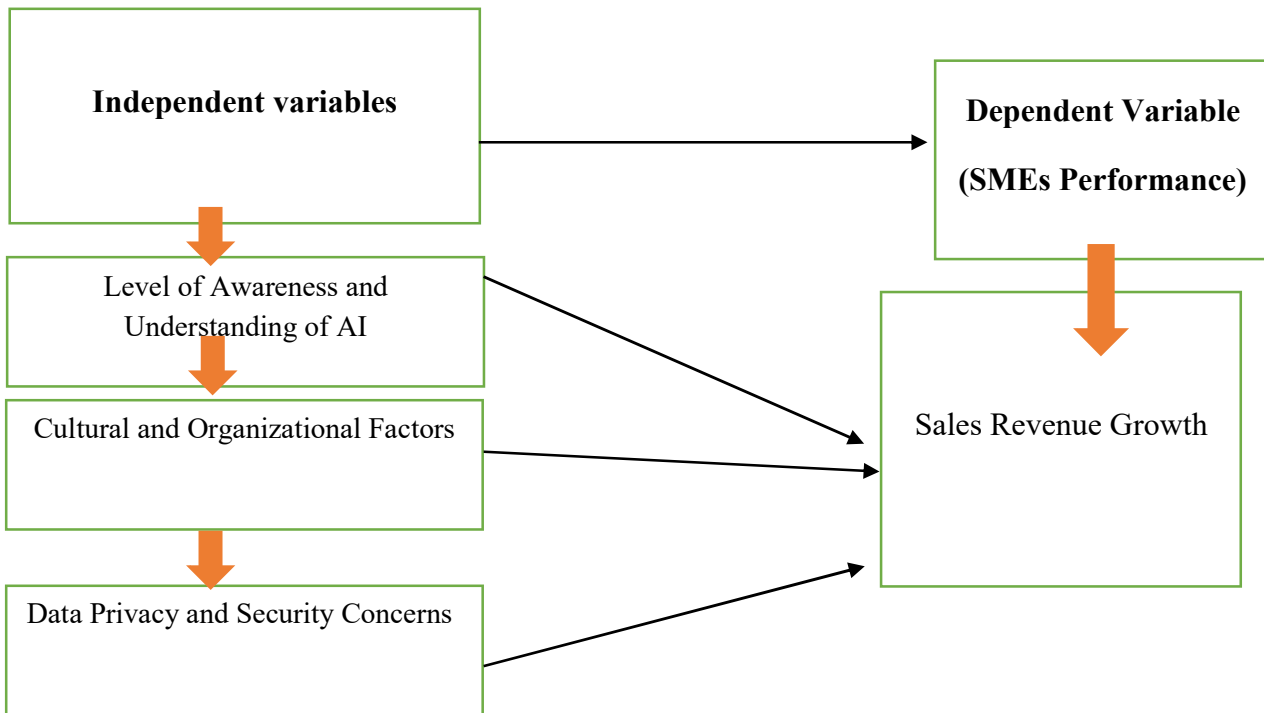
Sales Revenue Growth

Conceptually, sales revenue growth denotes the change in total income generated from the sale of goods and services over a specified period, usually expressed as a percentage increase or decrease relative to a prior period (Feng et al., 2020).

Sales revenue growth is often preferred because financial statements may be incomplete and because growth in sales frequently signals scalability potential and access to broader markets (Al-Mamun et al., 2019). Critics, however, caution

that sales growth should be interpreted alongside other indicators profitability, cost structure, and customer satisfaction because growth in revenue alone can mask low margins, unsustainable discounting strategies, or transient demand spikes (Santos & Brito, 2012; Nwachukwu et al. 2021).

Conceptual Framework



Source: Authors concept .2025.

Theoretical Review

Diffusion of Innovation Theory

For the purpose of this study, the underpinning theory for this study was Diffusion of Innovation (DOI). The adoption of the Diffusion of Innovation (DOI) theory is justified in this study because it provides a robust framework for explaining how new technologies, such as artificial intelligence (AI), are introduced, adopted, and integrated within organizations, particularly small and medium-sized enterprises (SMEs). The Diffusion of Innovation (DOI) Theory was first developed by Everett M. Rogers in 1962 and further refined in subsequent editions of his seminal book *Diffusion of Innovations* (Rogers, 2003). Rogers conceptualized diffusion as the process by which an innovation is communicated through certain channels over time among the members of a social system. His theory highlights that the adoption of innovations

is not instantaneous but occurs gradually as individuals or organizations evaluate and decide to embrace new practices or technologies.

At the heart of the theory are four key elements: the innovation itself, communication channels, time, and the social system. Innovations are perceived as new ideas, practices, or objects that individuals or organizations regard as novel. DOI provides an explanatory framework for how AI technologies penetrate the SME sector. Relative advantage is seen in how AI tools improve efficiency, reduce costs, and enhance decision-making in SMEs. Compatibility reflects the alignment of AI technologies with existing business practices and cultural norms within SMEs, while complexity often represents a barrier, as many SME owners perceive AI systems as technically difficult to implement without specialized expertise. Trialability and observability are equally important, as SMEs are more likely to adopt AI when they can experiment with affordable pilot projects and observe tangible benefits in competitor firms (Chatterjee et al., 2023).

The assumptions of the DOI theory further clarify its relevance. The theory assumes that innovation adoption is a social process influenced by communication within networks and not simply a matter of individual decision-making (Rogers, 2003). It assumes that adopters evaluate innovations based on perceived attributes rather than objective qualities; thus, SMEs may reject AI if they perceive it as too complex or misaligned with their operations, even if it is objectively beneficial. The theory assumes heterogeneity in adoption rates, meaning that different categories of SMEs adopt AI at varying times depending on resources, managerial openness, and environmental pressures.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was originally developed by Fred Davis in 1986 and further refined in 1989 as part of his doctoral work at the Massachusetts Institute of Technology (Davis, 1989). Built upon the theoretical foundations of the Theory of Reasoned Action (TRA) proposed by Fishbein and Ajzen (1975), TAM was designed specifically to explain and predict user acceptance of information technology by identifying the determinants of computer usage behavior.

TAM posits that two primary beliefs perceived usefulness (PU) and perceived ease of use (PEOU) influence users' attitudes toward adopting a technology, which in turn affects their behavioral intention to use it, and ultimately their actual system usage. Perceived usefulness refers to the degree to which a person believes that using a particular technology will enhance their job performance, while perceived ease of use denotes the degree to which an individual believes that using the technology will be free from effort (Venkatesh & Davis, 2000). The model assumes that when users find a technology both useful and easy to use, they are more likely to adopt it, integrate it into their work practices, and sustain its use over time.

TAM provides a valuable framework for understanding how SMEs evaluate and adopt AI tools. Perceived usefulness may manifest in terms of AI's potential to improve decision-making, optimize supply chains, enhance customer relationships, and ultimately boost sales and profitability. Perceived ease of use, on the other hand, relates to the accessibility of AI tools, the availability of user-friendly interfaces, and the level of technical skills required for effective deployment.

Empirical Review

Sánchez et al. (2025) investigated AI adoption in SMEs through a TOE–DOI integrated framework. The study used a survey research design across several EU countries targeting SME managers, reported sample sizes in the hundreds, and employed PLS-SEM for estimation. The authors examined constructs including managerial knowledge/awareness, perceived complexity, compatibility and external pressures. They found that managerial awareness and perceived relative advantage significantly predicted AI adoption and that adoption positively influenced operational performance. The study concluded that raising managerial understanding and reducing perceived complexity are key levers. The study recommended demonstration projects, accessible training modules and policy measures to lower adoption costs.

Abdulhamid and Abubakar (2024) studied the role of artificial intelligence on the performance of small- and medium-scale enterprises in Nigeria. The study made use of a systematic literature review and evidence synthesis (qualitative, descriptive) of Nigerian empirical studies and practitioner reports; no single primary survey population was reported because the study aggregated national- and sector-level evidence. The estimation/analysis technique consisted of qualitative synthesis and thematic analysis of extant studies and secondary reports. The study found that awareness of AI among Nigerian SMEs is uneven: moderate interest but low hands-on use, with gaps in skills, data practices and cybersecurity that limit performance gains. The study concluded that AI has potential to improve operational efficiency and customer management in Nigerian SMEs but that limited awareness and weak organisational understanding are binding constraints. They recommended targeted capacity-building, university–industry partnerships, subsidized pilots, and clearer regulatory guidance to raise awareness and convert interest into performance improvements.

Badghish and Soomro (2024) investigated determinants of AI adoption by SMEs and the consequent effect on sustainable business performance in Saudi Arabia. The study made use of a cross-sectional survey research design of SME managers across six sectors in Jeddah; the population targeted manufacturing SMEs in the Jeddah industrial area and the final usable sample was 220 responses. The estimation technique was covariance-based structural equation modelling (SEM). The study found that relative advantage, compatibility and sustainable human capital significantly predicted AI adoption and that AI adoption positively affected operational and economic performance. The study concluded that managerial awareness/skills and environmental support matter for converting AI into performance gains and recommended capacity building, demonstration pilots and policies to strengthen human capital and government support for SME AI uptake.

Soomro et al. (2024) examined AI adoption and its effect on sustainable SME performance using a two-stage hybrid approach. The study made use of a cross-sectional survey design administered to SME owners/managers in Pakistan; the sample analysed was 305 respondents. The analysis combined Partial Least Squares SEM (PLS-SEM) and artificial neural networks (ANN) to detect linear and non-linear effects. Findings showed that employee capability/awareness, top management support and relative advantage significantly influenced AI adoption, and that AI adoption mediated the relationship between these antecedents and sustainable (economic, environmental, social) performance. The study concluded that awareness and internal capability are necessary preconditions for AI to enhance SME performance. The study recommended continuous training, vendor partnerships for skills transfer, and incentives for SMEs to run pilots.

Akanbi and Oduwole (2023) studied dynamic capabilities, digital transformation and SME performance in Nigeria, using a quantitative survey of Nigerian SMEs. The research design was cross-sectional; the sample comprised SME managers/owners and estimation used PLS-SEM and multiple regression techniques. The findings indicated that digital capabilities including managerial awareness and understanding of digital/AI tools positively influence SMEs' agility and

performance when combined with dynamic capabilities. The study concluded that awareness must be embedded within capability development. The study recommended public–private training partnerships and managerial development programs to raise AI literacy and integration.

METHODOLOGY

The researcher employed survey research designs for the purpose of this study. The population of this study comprises of 22,715 SMEs owners in Kogi State, Nigeria which was sourced from Small and Medium Enterprises Development Agency of Nigeria (SMEDAN, 2020). The purposive and judgmental Sampling technique was adopted for this study because it allows the researcher to identify various owners of SMEs in Kogi State. Thus, all the SMEs in the three senatorial districts in Kogi State .

In arriving at the sample size of this study, the more the elements involved, the more adequate, quantitative and precise would be put into consideration. For the purpose of this study, Taro Yamani formula was used to determine the sample size of this study.

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = Sample Size

N = Population Size

e = Margin of errors (0.05)

$$\frac{22,715}{1+22,715 (0.05)^2}$$

$$\frac{22,715}{1+22,715 (0.0025)}$$

$$\frac{22,715}{57.79}$$

$$n = 393.06$$

The primary data was generated through the administration of questionnaire. A total of 393 questionnaires were distributed to SME owners in Kogi state.

Statistical Package for Social Sciences (SPSS) version 22.0 was used to analyze the data while multiple regression was employed to estimate the model and test the null hypotheses formulated by the study. The responses that relates to the objectives of the study was coded into SPSS version 22.0 statistical software.

Model Specification

The dependent variable is MSMEs Performance (MSMEP), while the independent variables are Level of Awareness and Understanding of AI (LAUAI), Cultural and Organizational Factors (COF) and Data Privacy and Security Concerns (DPSC). To achieve all the hypotheses, multiple regression was used to estimate the model. The model is presented thus:

$$MSMEP = f(LAUAI, COF, DPSC)$$

$$MSMEP_i = \beta_0 + \beta_1 LAUAI_i + \beta_2 COF_i + \beta_3 DPSC_i + \mu_i \text{----- (1)}$$

Where: SMEP= Micro, Small and Medium Enterprises Performance (Dependent Variable);

β_0 = a constant and β_{1-3} = coefficients of independent variables;

LAUAI = Level of Awareness and Understanding of AI (Independent Variable)

COF= Cultural and Organizational Factors (Independent Variable)

DPSC= Data Privacy and Security Concerns (Independent Variable)

μ = Stochastic error term;

i = Cross sectional; and

f = Functional relationship

DATA ANALYSIS AND DISCUSSION OF FINDINGS

Three hundred and ninety-three (393) copies of the questionnaire were administered to selected SMEs owners in Kogi State, two hundred and eighty-three (283) copies of the questionnaires were correctly filled and returned while one hundred ten (110) copies of the questionnaire were not returned. The conclusion was drawn on the hypotheses based on the two hundred and eighty-three (283) copies of the questionnaire that were returned.

Model Summary

Table 1 **Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.778 ^a	.605	.599	.42213

a. Predictors: (Constant), LAUAI, COF, DPSC

The R-Square value of .605 as shown in table 1 indicates that the components of the independent variable (level of awareness and understanding of AI, cultural and organizational factors and data privacy and security concerns) have a combined effect of 60.5% on the dependent variable (MSMEs performance in Kogi State while the adjusted R-square value of .599 showed the accurate influence of the combined effect of level of awareness and understanding of AI,

cultural and organizational factors and data privacy and security concerns of 59.9% on MSMEs performance in Kogi State. The remaining 40.1% was not captured by variables in this present model.

ANOVA Result

Table 2 ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	75.925	3	18.981	106.520	.000 ^b
Residual	49.538	278	.178		
Total	125.463	282			

a. Dependent Variable: MSMEP

b. Predictors: (Constant), LAUAI, COF, DPSC

The F-Statistics value of 106.520 and the sig. level of .000 as shown in table 2 implies that the model is good, fit and significant at 5% level. This shows that the result is good and admissible for decision making purpose.

Test of Hypotheses

Table 3 Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.639	.079		8.131	.000
LAUAI	.452	0.44	.526	10.354	.000
COF	.470	.048	.507	9.863	.000
DPSC	.497	.027	.737	18.299	.000

a. Dependent Variable: MSMEP

The Coefficient table above would be used to interpret the hypotheses of this study as presented below;

H₀₁: Level of awareness and understanding of AI does not have significant effect on MSMEs performance in Kogi State.

The coefficient table 3 above reveal that result of t-statistic value of (10.354) and the corresponding sig. level of (.000) which is significant at 5% level of significance revealing that level of awareness and understanding of AI has positive

and significant effect on MSMEs performance in Kogi State, Nigeria. Based on this, the null hypothesis one which state that level of awareness and understanding of AI do not have significant effect on MSMEs performance in Kogi State, Nigeria was rejected while the alternate hypothesis which state that level of awareness and understanding of AI have significant effect on MSMEs performance in Kogi State, Nigeria was accepted. The result is in consistent with the findings of Abdulhamid and Abubakar (2024) : Akanbi and Oduwole (2023).

H₀₂: Cultural and organizational factors does not have significant effect on MSMEs performance in Kogi State.

The coefficient table 3 above reveal that result of t-statistic value of (9.863) and the corresponding sig. level of (.000) which is significant at 5% level of significance revealing that cultural and organizational factors has positive and significant effect on MSMEs performance in Kogi State, Nigeria. Based on this, the null hypothesis two which state that cultural and organizational factors do not have significant effect on MSMEs performance in Kogi State, Nigeria was rejected while the alternate hypothesis which state that cultural and organizational factors have significant effect on MSMEs performance in Kogi State, Nigeria was accepted. This outcome aligns closely with several empirical studies highlighted earlier. Sánchez et al. (2025) emphasized that organizational readiness and cultural openness significantly influence AI adoption among SMEs, which in turn improves operational and financial performance. Likewise, Soomro et al. (2024) found that organizational culture plays a central role in determining the extent to which employees are willing to engage with new technologies, noting that firms with innovative and supportive cultures experience higher levels of sustainable performance.

H₀₃: Data privacy and security concerns does not have significant effect on MSMEs performance in Kogi State.

The coefficient table 3 above also shows that result of t-statistic value of (18.299) and the corresponding sig. level of (.000) which is significant at 5% level of significance revealing that data privacy and security concerns has positive and significant effect on MSMEs performance in Kogi State, Nigeria. Based on this, the null hypothesis three which state that data privacy and security concerns do not have significant effect on MSMEs performance in Kogi State, Nigeria was rejected while the alternate hypothesis which state that data privacy and security concerns have significant effect on MSMEs performance in Kogi State, Nigeria was accepted. This finding aligns with several empirical studies previously reviewed. For instance, Olusola et al. (2024) established that cybersecurity practices significantly influence AI adoption among Nigerian SMEs, noting that firms with strong data protection protocols are more likely to integrate AI tools into their operations.

CONCLUSION AND RECOMMENDATIONS

In conclusion, the study provides clear evidence that artificial intelligence (AI) adoption has become a strategic necessity for enhancing the performance of MSMEs in Kogi State, Nigeria. The findings demonstrate that three critical factors awareness and understanding of AI, supportive organizational culture, and strong data privacy and security practices significantly and positively influence MSME performance. MSMEs that invest in AI literacy are better positioned to innovate, optimize operations, and respond effectively to market demands. Likewise, firms with flexible, technology-friendly cultures are more capable of integrating new digital tools and sustaining competitive advantage. Furthermore, enterprises that prioritize data privacy and security create the trust and stability required for confident AI adoption, thereby reducing risk and improving operational efficiency.

Based on the findings and conclusion of the study, the study recommends the following;

- i. Government agencies, business development service providers and technology firms should collaborate to organize workshops, seminars and capacity-building initiatives that improve AI knowledge.
- ii. MSMEs should cultivate a supportive and innovation-driven culture that encourages openness to new technologies.
- iii. MSMEs should invest in secure digital infrastructure, including encryption tools, firewalls, data backup systems and access-control mechanisms.

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