

# Nexus between Factors Influencing the Adoption of Artificial Intelligence and Small Business Management Performance in Bayelsa State, Nigeria

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## Abstract

Despite AI being a major driver that fuels high performance in micro-enterprises, its adoption rate in Bayelsa State, Nigeria, is very low. The main objective of this research is to determine the factors that influence the adoption of AI and how it affects the management of micro-enterprises in Bayelsa State, Nigeria. Specifically, the study sought to examine the factors as stated by Okoye et al. (2024); they are perceived trust, perceived usefulness, perceived ease of use and willingness to use the system. The guiding theory was the Theory of Reasoned Action (TRA). A descriptive survey research design was adopted for this study, with stratified random sampling technique and a self-constructed questionnaire used to generate data for the study; both content and face validation were done on the instrument. Results of this study indicate that SMEs recorded a high mean score ( $M = 4.07$ ), representing that the integration of artificial intelligence tools and strategies is largely seen as a positive boost towards overall performance within sampled small businesses in the micro-enterprise sector. Of various AI constructs, consider Perceived Trust ( $M = 4.04$ ,  $SD = 0.801$ ) as an important element which leads us to the conclusion that trustworthiness concerning AI systems prevails as a requirement for proper digital transformation adoption within the context of small to medium business enterprises (SMBEs).

Perceived usefulness scored a slightly lower mean value ( $M = 3.84$ ) while having the highest deviation measure ( $SD = 0.965$ ), letting participants perceive variability in evaluation outcomes on this factor with a relatively higher credible measure. Pain-Free Buying The perception about usability is also relatively high with reference to AI technologies through participants' observation ( $M=3.94$ ); however, it doesn't indicate full agreement, yet there may be variations in levels of literacy skills or system intricacy. Among factors considered, willingness to change the organisation's direction/pathway receives a higher rating ( $M=3.99$ ;  $SD=0.876$ ), demonstrating most forms SME operations display great readiness for artificial intelligence-driven changes. more strategic planning implementation process Business owners' perceptions on AI-related constructs appeared to be good predictors, as concluded from the model summary with an R-value equalling 0.912, signifying a robust positive link between such perceptions and SME performance level. Whenever variables are included, observed  $R^2$  comes out at a level close to the figure following presentation. Closed-type questionnaires were distributed among SMEs consisting of managers/owners over a period of months in order to justifiably elicit the required response data. Technologies represented by the firm's managers/owners

enjoy relatively high positivity levels. Written discussion's highly user-friendly nature

**Keywords:** Artificial Intelligence, perceived trust, perceived usefulness, perceived ease of use, and perceived willingness.

### 1.1 Introduction

Currently, there is a growing realisation in the digital era that AI technologies are developing with huge strides, performing tasks that as the author points out used to be unimaginable (Liu, 2024). Hence, it can be inferred from common sense that artificial intelligence technology (AIT) will gradually and eventually take over certain responsibilities that are traditionally carried out by human beings. Such roles encompass, though are not exclusive to, behavioural forecasting, reasoning, teaching and also business growth. As such, AIT affects the SME sector, being one of the integral parts of the national economy. AIT usage in SMBs has a great impact on their operations. This without doubt offers them equal step with their expectation; hence, service delivery becomes faster and data collection easier with effective internal controls for informed decision-making taking precedence. It gives SMB managers current trends concerning monitoring competitors as well as any other related business activities. Machi Liu, who gave his opinion in 2024, pointed out that artificial intelligence is a division of computer science that, over decades, developed into an all-encompassing discipline which touches upon various fields of knowledge.

Liu further maintained that AI can be generally approached from two perspectives: weak AI and strong AI. The Weak AI, also known as intelligent machines (e.g., AlphaGo), has the ability to independently perform numerous anthropomorphic tasks within several scenarios. This involves tasks which were hitherto performed by human intelligence, like accounting and financial management systems. The Strong AI needs intelligent machines to perform thinking activities more or less similar to those done by human beings, i.e., judging, reasoning, proving things, and perception, among others. Recognising the critical nature of these two facets in the contemporary

business scenario at a global level, small business operators are required to have a sound knowledge of AI and use it for upkeep, maintenance and enhancement of their independent position within the fast-changing arena of managing their small and medium-sized enterprises.

Undeniably, the issue of financing small- and medium-scale business organisations has become more important considering the vibrant and complex nature of today's business environment, which can either make or break a business. According to Abdulhamid and Abubakar (2024), SMEs are now among the most important elements in modern economies, as recognised by many researchers and policymakers. This implies that from a global point of view, the activities and impacts of SMEs are pivotal to the growth or otherwise of the world economy. The significance of small and medium enterprises (SMEs) is evident from history, as is their huge role in society building on the economic sector as well as affecting many other sectors such as health care, education, etc. through generating employment opportunities for people who work within their establishments. Yonathan Muhand Atsin 2011; Yared Wolde, Gebiyaw Tadesse N 2013; Araya Zerihun Kiros 2015; Ibrahim Hussen Lancho & Demelash Getachew Ololo 2016).

Therefore, it is possible that when SMEs have found new ways for development and changeable market conditions, they are much faster as compared to large enterprises. This quality that they hold cannot be gotten away with by observing changes in technology, notably Information Communication Technology, for in time past due change according to Bala et al. (2024). These authors also stated further that this century witnessed artificial intelligence advancement system-wide along the entire timeline. While AI technology progresses by leaps and bounds, increasingly more SMBs are applying these technologies in their businesses to improve business productivity. Conversely, Madhavi (2021) observed that the development of technology, which also includes AI, is already in the process of transforming economies; this technology is tearing down what used to be the

solid structures of economy and business, making previously safe businesses out-of-date and causing social change and anxiety.

Moreover, the coming of AI is redefining or even substituting some basic concepts of organisational decision-making within certain areas, which in turn helps organisations function more effectively and lean while also changing general managers' roles. Bala et al. (2024) explain that AI, is one of the important technologies which can help solve complicated business problems should be considered as a top solution for a wide range of business issues. AI emerged as a technology spending by organisations with the promise of delivering long-term benefits to business. It is something that will provide many long-term benefits (Madhavi, 2021; Omoga, 2023). AI Given the mixed reactions above, the SME owners in Nigeria are still reluctant to use AI in their operations, especially with their businesses being small-scale. One place that all these questions are not for is Bayelsa State, where many opportunities are available for businesses to forge ahead.

Consequently, whatever decision is made would be taken from a perspective of what pushes or pulls business owners towards adoption of AI. Therefore, this paper will attempt to explore the establishment between demographical factors that influence the adoption of AI solutions and SMBs' performance in Bayelsa State. The above-cited works include, among other numerous works, Devkota et al. (2022), Chatterjee et al. (2022), and Omoga (2023). It also showed that a lone factor does not determine utilisation of AI worldwide. Since the place under study aligns with the area and fulfils (in general) the absence or coincidence of findings justifying the influenceability of these factors gathered from studies by Chatterjee et al., 2022, and Omoga, 2023, including usefulness, confidence and willingness to adopt as well as execute new technologies at strategic planning formation for successful deployment of AI and the Trust & Small Business Management System (Absm).

## 2.0 Theoretical Framework and Empirical Review

The TRA was developed and introduced by Fishbein and Ajzen in 1975 through the Theory of Reasoned Action (TRA). The TRA addressed three cardinal aspects. They are belief, attitude, and intention as presented earlier. In most cases, beliefs provide an account as to whether a person assumes that doing something will lead to a certain outcome. Attitudes revolve around positive or negative incentives, while intention describes the manner in which one intends to act in view of his or her attitudes and beliefs (<https://www.simplypsychology.org>). The TRA presupposes that volitional control is exercised over behaviour and that people are rational beings. Nevertheless, theory has its own limitations, like the fact that it is assumed that people make decisions rationally and on the basis of logical thinking and are conscious of their attitudes and subjective norms (<https://open.ncl.ac.uk/academic-theories/18/theory-of-reasoned-action/>). On the other hand, people might not realise their attitudes and subjective norms all the time. Therefore, some decisions are made on the basis of feelings over anything else. The theory does not account for the influence of external factors like societal pressures, cultural norms or behaviour. Hence, this theory results in complications as it oversimplifies while interpreting and predicting human behaviour in a wider context (Darton, R. C., & Azapagic, A., 2005). It also overlooks personality traits such as self-control and impulsiveness behaviours. The difficulty associated with the theory is its application to tests because what it uses are self-reported attitudes, beliefs and subjective norms, which can be easily affected by social desirability bias. It may not be applicable across cultures and societies since attitudes and subjective norms may differ with cultural context, among other things (<https://Open.ncl.ac.uk>). TRA proposes that antecedent determinants influence the predictability of behavioural intention to perform a given behaviour. Based on the above-mentioned different antecedent factors, they may have resulted in displayed behaviour by entrepreneurs in the business system.

There could be the above-mentioned reasons responsible for a person to act in the way he does. Thus, it is known that behind every action there are factors which prompted it. Therefore, based on the references and previous studies, one may infer famous determinants of business owners' behaviour with respect to AI stated in the studied conceptual framework, which justifies an application of TRA for the present case. In the course of their study carried out in 2024, Ojioy et al. examined ways through which fintech, artificial intelligence (AI) and cybersecurity systems can be applied in support of economic development in small and medium enterprises on the African continent. This study was a survey report type. The research found that there is a direct relationship between applying FinTech, AI and cybersecurity to interconnectivity for national economic growth and individual wealth generation.

It added further that African SMEs can be able to achieve it by applying the technology trinity, which eases them into the current business complexity and encourages innovation as well as makes a contribution to business development in terms of job creation as well as wealth generation. What has been presented so far shows how AI technology will play an important part when it comes to improving the ability of young entrepreneurs like Remy Okoye and Hakeem Okunade to make wise data-driven decisions, enhancing operational productivity, and giving consumers an amazing brand experience.

From that of Bala et al. (2024) AI for SMEs in Nigeria: Bringing the highlights on the main approaches, benefits and challenges. Chatbots and virtual assistants, robotic process automation, recommendation systems, learning machines, and computer vision were major applications studied. Besides, interviews and content analysis were used. The study highlighted some key benefits and challenges, like improved customer service delivery, cutting staff costs, and enhanced efficiency, though there were many more. Some of the challenges comprise inadequate specialised personnel and knowledge as well as data privacy and security concerns, among other issues.

In this regard, Abdulhamid et al. (2024) provided an overview of the effect of AI on the efficiency of SMEs in Nigeria; it was also observed that AI can be used in the following areas: observance of social distances, remote working and performing from a secluded place, for an old customer base, improved client service and thus attracting new clients for small and medium enterprises and giving them a competitive edge. Although such tech giants as Google, Facebook, TikTok, Netflix and Amazon already actively use AI, it is about time for small and medium firms to consider this tool for their activities system upgrade.

Also in their study, Schwaeke et al. (2024) sought to document where we are now with the AI adoption rates in small and medium-sized enterprises, which is the new normal. This information is appreciated by the authors and took on relevance; it was not in vain that today many researchers began to address problems related to the application of AI technologies in SMEs. However, they also observed that the literature surveyed, however, provides a very fragmented picture one would not be able to understand how SMEs use artificial intelligence (AI). Through a meticulous process of systematic reviewing, 106 articles were identified and then classified into eight groups for purposes of similarities and dissimilarities. One important aspect uncovered by the survey is that there are factors influencing AI adoption within the SME sector, such as compatibility, infrastructure knowledge, resources, culture, competitors, regulations and ecosystem.

Schwaeke et al., referring to existing works, have pointed out that amongst other things, trends should not be made as an excuse and legal matters should not be neglected. The study purportedly indicates that factors leading towards AI incorporation are more independent from each other's nature than those adopted by ongoing research from Chatterjee et al. (2022) or Omega (2023). This stage is not a defensive strategy but rather a way of informing about the topic in question. This current survey is also at risk since its dependent variables were derived from two existing studies (Chatterjee et al., 2015; Omega Systems & Business Systems,



Journal of Technology and Society) and aggregated. The aggregation of the data sources does not signify any flaw in the methodology, and it is an acknowledged part of the study design.

The case study being referred to aimed at studying the role artificial intelligence (AI) plays in sustainable business performance in small and medium enterprises. In this paper, the author employed the Technology–Organisation–Environment (TOE) model to describe AI adoption by SMEs and possibilities of improved business. The study was done in Jeddah, Saudi Arabia, and the research aimed at creating a theoretical framework that describes factors affecting AI integration according to TOE dimensions.

The methods employed were a survey with structured interviews, random sampling, and Partial Least Squares Structural Equation Modelling (PLS-SEM). Data was gathered from managers across six sector industries cross-classified based on organisational size. The classification into the two categories made it possible for firm size to moderate the effects of the variables contained in the tested model. Three hundred respondents consisting of executives, middle-level managers, senior-level managers, proprietors and entrepreneurs from all sectors, including construction, energy, logistics, manufacturing and services, were surveyed during March-May 2023 to seek their perceptions on issues pertaining to AI adoption by SMEs. Of these respondents, you correctly filled out two hundred twenty questionnaires which were returned for analysis.

However, from the study, it is evident that some of the key predictors of AI adoption by SMEs towards enhancing operational and economic performance include relative advantage, compatibility, sustainable human capital investment, market customer demand and government support. For instance, it is much stronger for medium-sized firms than small-sized ones in terms of the relationship between relative advantage and AI technology adoption. Accordingly, the previous studies concerning Badghish & Soomro are topical with current studies because they also considered such

factors as perspectives and the practical aspects of different cases with localisation checks.

Udeogu and Okoye (2024) and Okoye et al. (2024) observed how AI is applied and boosted the competitiveness of MSMEs in their articles. The adopted techniques, which include descriptive and correlation analyses, were detailed. It has been proven that by using AI to target online ads brings out high-quality leads. De facto, this implies that as long as data-driven, targeted ads are employed, it will be possible to generate high-quality leads who do not require much effort to convert into paying customers; hence, a competitive advantage will be obtained. Udeogu and Okoye, together with the present study, examine AI from different angles. Bruno (2024) explored the effects of AI on the business processes. In his research, the author carried out an in-depth analysis of the current state and development of AI as well as recent stories of success, problems, and future directions. He concludes that AI is not used in small business operations for purely technological reasons. It is a transformative process which requires ethical concerns, strategic foresight and shaping workforce skills required in the future. Bruno's study is very crucial and cannot be left out of this present study since it shows how AI could affect various areas of the business operations system. Agrawal et al. (2024) studied the AI technology adoption in the small- and medium-sized enterprise sector in India. The results show that some factors, particularly those that fall under Technological, Organisational, or Environmental (TOE) influence, impact SMEs when it comes to AI utilisation.

Consequently, deployment of AI technologies into SMEs' operations will be a tool for service delivery and other management activities. Such, if rightly harnessed, can give an economy a cutting edge over others. Hence, it also becomes very important to focus on how AI is adopted by different people. In order to ascertain this fact, a comprehensive literature review on relevant themes, along with e-business sources and Google Scholar as research methodology, was conducted. Though referencing the work of Agrawal et al. was done due to the earlier studies which investigated AI,

there is a need to probe both the factors influencing the adoption in their studies and the areas focused on by both studies.

Mathagu (2024), in his research work, showed the importance of AI in SMEs in this research paper, using a case of a key factor in the UK. The survey was initiated due to the high number of AI technology users in the business environment, the crucial role of SMEs in the economy and adoption challenges. Comparative case study is underpinned by the Technology, Organisation and Environment (TOE) Model. Instruments used for the purpose are questionnaires and structured interviews for primary data collection, statistics and Structural Equation Modelling (SEM). Results show that aside from complexity, regulations, perceived relative advantage, management support, technology infrastructure and resources, only these factors influenced business managers to consider AI for their SMEs.

Ebuka et al. (2023) brought to the forefront the role of AI in SMEs' sustainability, specifically in Nigeria, where he conducted his research. His study was chiefly on AI technology, its use cases, the challenges of deploying it and finally the AI tools that can be used in businesses, as well as how they can help business owners, especially those who own small and medium-sized businesses, as well as their managers or decision-makers and organisations, also checking if SMEs have adopted any forms of AI tools in running their day-to-day business activities. The paper is going to adopt a descriptive survey approach; a sample size of 379 respondents will be selected based on Krejcie and Morgan's (1970). The method for data collection includes interviews and the use of questionnaires and interview schedules issued to the study participants. In addition, a pilot test was conducted to ascertain the reliability and validity of the research instrument. It was noted from the findings that the majority of SMEs, amongst other things, are still manual in terms of operation; thus, this automation cannot arise, so these micro entities remain forever micro. Frequencies, percentages, mean scores and graphical representation were employed in data analysis in this study. Both

works on artificial intelligence by Ekundayo and Ebuka et al. were comparable.

According to Ulrich et al. (2023), many aspects of AI have been addressed in small and medium-sized family businesses: A gendered practice approach for Germany. It was found out that the family businesses used AI with a lower frequency, and they also were more cautious about technology than non-family-owned businesses. Ulrich et al. also observed that AI is still underused not just only in family businesses but mainly in decision-making, hence not rendering the owners irrelevant as decision-makers. Once again, they possess specific features which cause them to consider it less valuable, and they are more doubtful towards it. Based on socio-emotional wealth (SEW), this research contended that although the ethical entrepreneurs are aware of implementing new theories, they underestimate their potential quite often and remain doubtful. For data collection purposes, structural online questionnaires, Microsoft Excel columns, and linear regression formulae were used as research methods.

In a study conducted by Olan et al. (2022), he looked into the effect of artificial intelligence and knowledge sharing in improving organisation performance. His work was purely a literature review that concluded that using AI technologies on their own is limited in ameliorating the organisation's performance. Rather than just AI or just KS-adopted systems, there is a need to adopt an AI-KS integrated system because this combination offers the organisation's method to its operation in a society that keeps on digitising itself. In the case of Olan et al.'s studies, it was shown that organisations should not only use AI if they want to achieve a sustained optimal performance system.

In their study, Abrokwah and Awukul (2022) focused on the implications of AI use on the marketing performance of business organisations with cases from small and medium enterprises in Ghana's budding economy. A survey questionnaire was used to gather data from identified respondents who have affiliations with the Ghana Enterprise Agency in the Eastern Region of Ghana. The

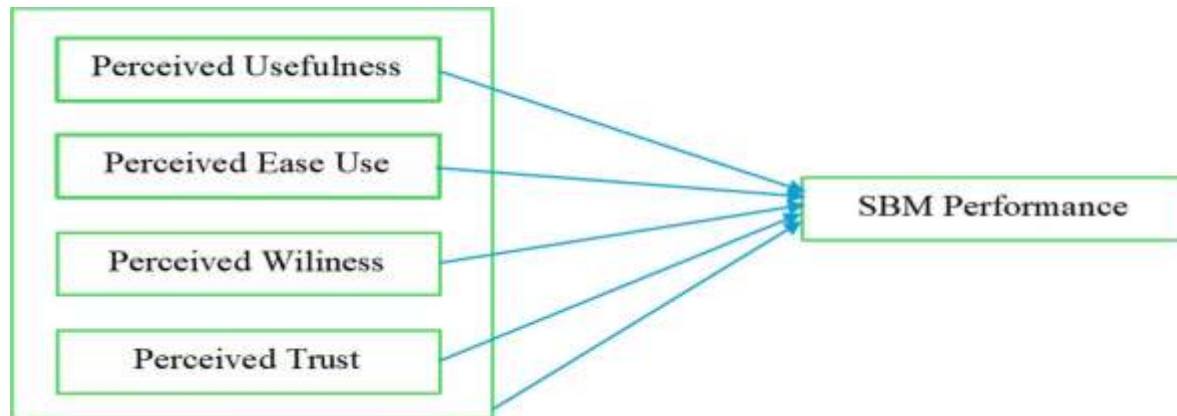
approach used to analyse data for this research was SEM-path analysis, which was used to measure the impact of AI on the performance of SMEs. Also, stratified random sampling and survey techniques were used as methods for assessing an appropriate sample size for the firms selected as a sample. AI predictive influence on SMEs' performance was through IoT, CDMS, and VAR, as well as personalisation. Abrokwah's work, together with that of Awukul, scrutinises AI organisation in SMEs from diverse angles that offer a good contrast for learning more about AI processes in such organisations than what is obtainable from each study alone.

In another strategic study, Rawashdeh et al. (2022) assessed the determinants of AI adoption in SMEs and the mediating role of accounting automation. From the results, four technological factors—compatibility, readiness for the challenge, efficiency improvement, and time savings—have both direct and indirect effects on AI adoption through accounting automation. However, SMEs' decision to adopt AI can be explained by the desire to automate accounting tasks and its consistency with the firm's current business practices. Meanwhile, the significant direct effects of efficiency-improving and time-saving on AI adoption reveal that accounting automation is not the only reason these two factors are essential to AI adoption. As such, accounting automation partially mediates the relationship between predictive variables and AI adoption. Although Rawashdeh et al. and the current study investigated factors influencing the adoption of AI in SMEs, they did so from different perspectives and using different indices of AI. Survey, convenience sampling and structural equation modelling were adopted as methods. Sharma et al. (2022) specifically examined the factors influencing the implementation of AI-based chatbots by small and medium-sized enterprises (SMEs). The study's conceptual model is grounded in the Technology, Organisation, and Environment (TOE) framework. The methods adopted are an online survey and convenience-based structural equation modelling (CB-SEM). The study shows that factors perceived to be important

like the ability of the employee, availability of financial support, top management backing, cost, complexity and relative advantage are the drivers of the SMEs' propensity to use chatbots based on AI technology. Sharma et al. and the present study investigated influence perceived by influential factors but from different perspectives.

The AI adoption in small and medium-sized enterprises was studied by Dumbach et al. (2021), who made a comparison between Germany and China through healthcare systems. The study employed an exploratory case study strategy, utilised interviews as a principal data collection tool, and was yoked with descriptive methods. As such, the twelve SMEs were shortlisted for the research work, five being German and the other seven Chinese. This categorisation was informed by their response on if AI is important to improve their business and organisational capabilities or not and should be a priority in reference to implementing AI. A lot of value was provided to see how AI is described in China towards strong strategic direction for future research activities compared to other Asian countries. In Germany more efforts should be spent on improving AI transparency and interpretability. Instead, the relevance of Dumbach et al.'s work is similar to the present study, Rawashdeh et al. (2022) and Sharma et al. (2022).

Bunte et al. (2021) assessed the difficulties of AI application in SMEs on the basis of practitioners' surveys and presented how it could be advanced with an empirical review system. The conclusion was that AI applications in SMEs are limited, and AI expertise within SMEs remains low. Because the benefits of AI are often not measured, most people assume that AI is beneficial. To ease the use of AI, it can be supported through projects such as ManuBrain or KOARCH. According to the study, the slow adoption of AI in SMEs is mainly due to a lack of expertise in its application.

**Figure 2.1** Conceptual Framework: Showing Factors Influencing AI Adoption on SMEPerformance Independent variables  
Dependent variables

Source: Author's Conceptual Framework (2024)

Figure 2.1 below is a hypothetical illustration of the two key variables that are addressed in this research work (independent and dependent variables). The independent variable was explained through its explanatory variables, like perceived usefulness, perceived ease of use, perceived willingness, and perceived trust. On the other hand, business management for small businesses still stands as the dependent variable. Besides, Figure 2.1 depicts statically the predictive influence of each explanatory variable on the dependent variable. Also, it illustrates the combined effect of these independent variables on SBM performance.

### 3.0 Methodology

As of 2025, three hundred and ninety-three (393) businesses of various types were registered under the Ministry of Trade, Industry and Investment in Bayelsa State. The owners and managers of these businesses formed the study's population. Due to the nature of the study, the focus was on businesses with five (5) or more years in operation; thus, the study used three hundred and sixteen (316) as the population. For the determination of the sample size, Krejcie and Morgan's (1970) method was used, thus giving one hundred and seventy-five (175). According to Yamane (2013), this is considered the lowest acceptable level of confidence, with a 95% confidence level and a 5% error margin. To maintain the standard as

suggested by Israel (2013), 30% of 175 should be added to the original calculated sample size ( $53 + 175 = 228$ ). The study adopted a closed-ended questionnaire, and the research instrument was administered to the owners/managers by the researchers, with the help of five (5) well-trained research assistants. To ascertain the validity of research instruments, both content and face validity were applied. Test-retest and half-split methods were employed to ensure the reliability of the study's instrument. Both descriptive and linear regression analyses were used to explain the respondents' information and to test the hypotheses raised in the survey.

### 3.1 Research Hypothesis

**H01:** Performance of SBM could not be influenced by AI adoption through perceived usefulness, perceived ease of use, perceived willingness to change in strategic planning for the successful application of AI, and perceived trust.

## Results

**Table 1. Descriptive Statistics**

Variable	Mean	Standard Deviation	N
Performance of SBM	4.07	0.776	220
Perceived Trust	4.04	0.801	220
Perceived Usefulness	3.84	0.965	220
Perceived Ease of Use	3.94	0.917	220



Perceived Willingness to Change	3.99	0.876	220
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Source: Author's computation 2025.

Table 1 is descriptive statistics for the variables examined in this study: Performance of Small Business Management, Perceived Trust, Perceived Usefulness, Perceived Ease of Use, and Perceived Willingness to Change.

The survey results showed that AI is favourably perceived by the respondents with regard to its potential benefits and effect on business performance. More particularly, AI performance obtained the highest mean rating ( $M = 4.07$ ), implying that the use of AI tools and strategies is integrated into the performance of small business management sampled herein. Of all AI adoption beliefs, Perceived Trust ( $M = 4.04$ ,  $SD = 0.801$ ) is a statistically significant factor, further recognising that trust in AI contributes to successful transformation in SBM. Respondents possess a high level of confidence over cyber security and reliability of artificial intelligence-enabled solutions, which are prerequisites for continual good-conduct business practice. Perceived usefulness had a mean slightly lower than other factors at  $M = 3.84$  and recorded the highest standard deviation among the variables ( $SD = 0.965$ ), signifying respondents have varying opinions in their evaluations regarding it more so than any other issue.

As a consequence, some managers of SMEs consider AI as beneficial, while others are not convinced about its direct contribution towards productivity and policymaking of organisations. This divergence calls for emphasis on clear communication and demonstration as to how AI could be practically beneficial in the context of SMEs. Perceived ease in use ( $M = 3.94$ ,  $SD = 0.917$ ) points out that users tend to agree with the applicability of AI technologies to work within a moderate overall range; however, moderate spread may suggest different levels of digital literacy or complexity regarding technology usage. Therefore, there is still much room for improvement when it comes to designing user interfaces as well as appropriate

training programmes tailored to the needs and potential skills of users so that these can be enhanced.

On the other hand, Perceived Willingness to Change had a mean of 3.99 and an SD of 0.876, indicating that SMEs are quite ready to embrace AI as a new development in their strategic planning and operations. This openness harbours an optimistic cue for organisational agility, which is one of the crucial factors for successful technology adoption and integration. The trend in the distribution of the descriptive statistics seems to suggest that start-ups are not just inclined to use AI, but they also see the technology as a performance booster only if its application is credible, straightforward, user-friendly, and goal-driven. Therefore, it is no surprise that these findings underscore the significance of investing strategically in a people-centred AI design approach and trust-building initiatives, as well as implementing successful change management strategies so as to fully integrate AI's advantages into the small- and medium-sized business context system.

Based on the combination of the effect of perceived usefulness, perceived ease of use, perceived willingness to change and perceived trust, you will find, as presented in table 2, this can be used as a reference when doing an assessment of how APT impacts the small enterprise performance system.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.912	0.832	0.829	0.321

Predictors: Perceived Usefulness, Ease of Use, Willingness to Change, Trust

Dependent Variable: SME Performance

The model demonstrated exceptional predictive power, with an R-value of 0.912, indicating a strong positive relationship between AI-related perceptions and SME performance. The R-squared value of 0.832 suggests that approximately 83.2% of the variance in SME performance is explained by the variables captured (Perceived Usefulness, Ease of Use, Willingness to Change, Trust). Meanwhile, the

low standard error (0.321) suggests that the model's predictions are aligned with the observed performance values.

These results affirm that AI adoption in SMEs is not just about accepting technological shifts but a strategic investment in performance that can drive business sustainability in today's business landscape.

**Table 3: ANOVA**

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	109.808	4	27.452	266.239	.000
Residual	22.1695	21	0.103		
Total	131.977	21			

Dependent Variable: SME Performance

Predictors: Perceived Usefulness, Ease of Use, Willingness to Change, Trust

The ANOVA results confirm that the regression model is statistically significant ( $F(4, 215) = 266.239$ ,  $p < .001$ ), indicating that the combined predictors reliably explain variation in small business performance.

**Table 4: Coefficients Summary**

Predictor	B	Std. Error	Beta	T	Sig.
(Constant)	0.583	0.124	—	4.690	.000
Perceived Trust	0.248	0.035	0.256	7.005	.000
Perceived Usefulness	-0.178	0.030	-0.222	-6.028	.020
Perceived Ease of Use	0.219	0.038	0.259	5.762	.000
Perceived Willingness	0.578	0.039	0.652	14.810	.000

Dependent Variable: Performance of SBM.

In Table 4, these are presented as the beta coefficients for the independent variables, meaning they have weight in explaining the dependent variable (over small business results or performance). Perceived willingness to change is the best and most direct predictor of

this increase effect ( $B = 0.578$ ,  $\beta = 0.652$ ,  $p < .001$ ). This indicates that the strategic pervasiveness of SMEs towards AI deployment change is a factor which leads to increased productivity much more than any other variable. A higher value in willingness awakens performance dramatically. The absence of trust within an organisation ( $B = 0.248$ ,  $\beta = 0.256$ ,  $p < .001$ ) is another predictor of low organisational performance which can also be measured among staff members dealing with technology applications in the workplace. This gives clear light about trust in AI, particularly in terms of their reliability and transparency or even ethical alignment for better outcomes. Perceived ease of use shows a positive impact on performance gain as AI usability is improved for SMEs ( $B = 0.219$ ,  $\beta = 0.259$ ,  $p < .001$ ). However, what was more surprising was the fact that when perceived usefulness was being assessed, it gave a negative coefficient but still a significant value (Beta = -0.1, Domain = .020).

The results of the study hint that the factors such as perceived trust, perceived usefulness, perceived ease of use and also willingness to change all can impact the position of small and medium enterprises in a market quite significantly. Further perception has been statistically confirmed at a very high R-square value (0.832), which means that among small business performance predictors, almost 83% can be found, and very importantly, perceived willingness to change comes up as the most influential factor, which shows that AI systems' benefits are realisable only if an organisation becomes open and flexible enough. Perceived trust and ease of use also demonstrated strong positive effects. This conclusion supports Schwaeke et al. (2024) and Ulrich et al. (2023). Perceived usefulness on its part exhibited a positive yet noteworthy correlation, which would mean that even though AI is being generally accepted, there may be some SMEs who do not see the applicability of implementing advanced technologies in their businesses; hence, those may not be appreciated in this kind of an environment. It also brings to perspective the issue of complexity which characterises AI perception

among SMEs, thus calling for specific targeted interventions which minimise the perceptual gap between expected utility from technology application and real utility on the ground (Bulusan et al., 2025).

Concerning the confidence and anxiety dimensions displayed by graduate students when conducting empirical studies in the 21st century, Bulusan, F., Bautista, T., Pascual, S. B., Respicio-Pascual, V., & García, P. A. (2025) conducted a convergent-parallel exploration. *Journal of Lifestyle and SDGs Review*.

<https://doi.org/10.47172/2965-730x.sdgsreview.v5.n02.pe05799>

### **Recommendations**

The study permits us to assume that SMEs are more than ready to embrace the technologies of AI and have a high level of trust in these systems. AI technologies are also very user-friendly; however, there is still a debate about whether they are actually useful or not since the efficiency of AI tools may be hard for some businesses to correlate with performance. The study confirmed that change readiness is the most crucial factor affecting business performance, which is closely followed by trust and ease of use, so that it can be inferred that psychological and operational readiness take precedence over mere perceived value. Therefore, it is recommended that:

1. It is of great essence that SME owners and other important players in the field identify the need for change not only in the priority they assign to digital readiness but also in their overall organisational agility.
2. Policymakers and technology providers should/must be putting their efforts into the education of the public through the different ways from the workshops to the sector-specific case studies. That is required to dispel myths around AI applications and make people clearly see and appreciate their value.

### **Policy Implications of the Recommendations**

#### **1. Institutionalisation of Change Management and Digital Transformation Policies**

##### **Policy Implications:**

To assist SMEs in Bayelsa State, and more broadly all over the world, the governments

have to promote change among their senior personnel by integrating the change management frameworks into general frameworks of SME development. This involves the development of a forward policy environment for facilitating the transition from traditional to digital business models. The policies which may be undertaken are:

i. Mandating Digital Readiness Audits: Let there be policies created that either strongly advise or compel Small to Medium Enterprises (SMEs) to engage in regular digital readiness audits as part of the requirements for state-supported aid programmes, like grants or business development services provision access. In this regard the following are recommendations for consideration:

ii. Incentives for agility in organisations: Tax holidays, grants or capacity development vouchers should be provided to the SMEs who invest in modernising their organisational structure and introducing AI technologies into their business operations.

iii. Development of a Digital Transformation Strategy for SMEs within the State: The Ministry of Commerce and Industry of Bayelsa State should draft a roadmap that institutionalises digital transformation for SMEs. This roadmap should include timelines, key performance indicators (KPIs), and the roles of stakeholders to promote digital readiness and encourage an agile business culture.

iv. Embedding Digital Change Management in the National SME Policy: At the federal level, it is expected that there should be a formal integration of change management into the National Policy on Micro, Small and Medium Enterprises, to ensure that the capacity for digital transformation among SMEs becomes one of their basics in their competitiveness in the digital economy sector.

#### **2. Comprehensive AI Literacy and Advocacy Campaigns**

##### **Policy Implications:**

Because AI technologies are new and complex, there is a need for a lucid policy mandate to promote literacy, awareness, and contextual understanding of AI in small business owners

and the broader entrepreneurial ecosystem. In order to move forward with the following policy actions:

i. **AI Public Awareness Programs:** It is recommended that the Bayelsa State Government partner with the National Information Technology Development Agency (NITDA) to organise public awareness programmes which will be conducted through mass media, social platforms and community outreach in order to disseminate information regarding different benefits and usage of AI in business applications (e.g., customer service, inventory management, fraud detection).

ii. **AI Demonstration Projects Targeting Specific Sectors:** Public policy needs to recommend initiation of pilot programmes within vital sectors on a regional level (e.g., farming, fishery, and oil servicing SMEs) to demonstrate utilities of AI in reality. These demonstrations are to be taken as examples in imparting skills and knowledge for businesses.

iii. **Policy-Supported AI Training Subsidies:** Offer training programmes at a subsidised rate through government-accredited centres or partnerships with universities and tech hubs. These should involve practical empowerment that uses low-code/no-code AI tools that are SME function specific.

iv. **Use of AI in the inclusion of curricula nationwide with a focus on business education:** The Federal Ministry of Education, with the help of the National Board for Technical Education, should, among other things, see that AI applications are integrated as key subjects in entrepreneurship and management in the polytechnics.

v. **Policy Guidelines for Technology Providers:** The government of the federation is hereby proposing that, in all public contracts or tax incentives awarded to technology solution providers, the firms should be required to demonstrate their commitment towards SME engagement through training/education and after-sales support. This will, among other issues, ensure that technology vendors embrace

integration into routine use of technologies rather than just deploying the technologies.

### Synthesis and Strategic Relevance

The recommendations' policy implications from these do not just call for better and more good strategies; they are a wake-up call for public institutions to deal with a changed relationship between technology and business development. Indeed, the new primary focus area has to be transitioned from technology access in comparison to organisational adaptability and digital trust. AI implementation is neither just technical nor purely socio-organisational innovation but also: Visionary leadership, which presupposes that the actors at the state and federal levels are capable of foreseeing the future digital economy.

ii. These are the targeted interventions that are more localised and sectoral or even regional that should be adopted by Bayelsa and other such states.

The above-mentioned partnerships help to maintain the pace of AI usage by cooperative ecosystems made up of governments, academic institutions, SMEs and technology companies.

### Conclusion

In conclusion, it is recommended that the suggestions made above be used as a guide for decision-making or policy formulation at all levels of government. This should not only confine itself to the provision of infrastructures but also include qualitative education, value systems and behaviour change, which are preconditions for development successes. Therefore, through the implementation of these policies, Bayelsa State and Nigeria as a whole can develop a more resilient and innovative SME sector that could make use of artificial intelligence in order to increase productivity, competitiveness or even sustainable economic growth.

### References

Abdulhamid, F., & Abubakar, A. R. (2024). An Overview of the Role of Artificial Intelligence on the Performance of Small and Medium-Scale Enterprises in Nigeria. *Austin Journal of*



*Business Administration and Management*, 8(1), 1–4.

Abrokwah-Larbi, K., & Awuku-Larbi, Y. (2022). The impact of artificial intelligence in marketing on the performance of business organisations: evidence from the impact of artificial intelligence on SMEs in an emerging economy. *Journal of Entrepreneurship in Emerging Economies*, 11, 2053-4604 DOI 10.1108/JEEE-07-2022-0207

Agrawal, P., Ahmad, K., Kumar, A., & Pandey, A. (2024). Adoption of Artificial Intelligence Technologies in the SME Sector. *J. Mountain Res.*, 19(1), 407–416. DOI: <https://doi.org/10.51220/jmr.v19-i1.40>

Albarracin, D., Johnson, B. T., Fishbein, M., & Muellerleile, P.A. (2001). Theories of Reasoned Action and Planned Behaviour as Models of Condom Use: A Meta-Analysis. *Psychological Bulletin*, 127(1), 142–161. DOI: 10.1037/0033-2909.127.1.142

Badghish, S., & Soomro, Y. A. (2024). Artificial Intelligence Adoption by SMEs to Achieve Sustainable Business Performance: Application of the Technology–Organisation Environment Framework. *Sustainability*, 16(1864), 1–24. <https://doi.org/10.3390/su16051864>

Bala, U., Hamza, A., & Lawal, A.M. (2024). Artificial Intelligence for Small and Medium-Scale Enterprises (SMEs) In Nigeria: Highlighting Key Applications (APPs), Benefits and Challenges. *International Journal of Business & Law Research*, 12(3), 100–104 DOI: 10.5281/zenodo.13760877

Bauer, M., Dinther, C.V., & Kiefer, D. (2020). Machine Learning in SME: An Empirical Study on Enablers and Success Factors. *Americas Conference on Information Systems*, 1–11. AMCIS 2020 Proceedings.

Bruno, Z. (2024). The Impact of Artificial Intelligence on Business Operations. *Global Journal of Management and Business Research: D Accounting and Auditing*, 24(1), 1–9.

Bunte, A., Richter, F., Diovisalvi, R. (2021). Why It is Hard to Find AI in SMEs: A Survey from Practice and How to Promote It. In *Proceedings of the 13th International Conference on Agents and Artificial*

*Intelligence (ICAART)*, 2, 614–620. DOI: 10.5220/0010204106140620

Devkota, N., Paudel, R., Parajuli, S., Paudel, U. R., & Bhandari, U. (2022). Artificial Intelligence Adoption among Nepalese Industries: Industrial Readiness, Challenges, and Way Forward. In J. R. Saura & F. Debasia (Eds.), *Handbook of research on artificial intelligence in government practices and processes*. 210–225. IGI Global.

Dumbach, P., Liu, R., Jalowski, M., & Eskofier, B.M. (2021). The Adoption of Artificial Intelligence In SMEs- A Cross-National Comparison In German And Chinese Healthcare. 84–98.

Ebuka, A.A., Emmanuel, D., & Idigo, P. (202). Artificial intelligence as a catalyst for the Sustainability of Small and Medium-Scale Businesses (SMEs) in Nigeria. *Annals of Management and Organisation Research (AMOR)*, 5(1), 1-11.

Krejcie, R.V., & Morgan, D.W., (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*.

Israel, G.D. (2013). *Determining Sample Size*. Florida: University of Florida.

Liu, C. (2024). Research on the Influence of Artificial Intelligence on Enterprise Management Decision-making. *Academic Journal of Business & Management*, 6(1), 108–112. DOI: 10.25236/AJBM.2024.060115

Madhavi, V. (2021). Role of AI in business. *Open Access International Journal of Science & Engineering*, 6(6), 28–33. DOI 10.51397/OAIJSE06.2021.0005

Mathagu, S.W. (2024). Artificial Intelligence in Small and Medium Enterprises An Empirical Analysis of Critical Factors. *Premier Journal of Science*, 1-9. DOI: X | PJS X.

Okoye, C.C., Nwankwo, E.E., Usman, F.O., Mhlongo, N.Z., Odeyemi, O., & Ike, C.U. (2024). Accelerating SME growth in the African context: Harnessing FinTech, AI, and cybersecurity for economic prosperity, *International Journal of Science and Research Archive*, 11(01), 2477–2486. <https://doi.org/10.30574/ijrsra.2024.11.1.0231>

Olan, F., Arakpogun, E.O., Suklan, J., Nakpodia, F., Damij, N., & Jayawickrama, U.

(2022). Artificial intelligence and knowledge sharing: Contributing factors to organisational performance. *Journal of Business Research*, 145(2022),

<https://doi.org/10.1016/j.jbusres.2022.03.008>.

Omoga, C.O. (2023). Perceived Benefits of Artificial Intelligence Integration within Management Information Systems for Decision-Making Processes in the Context of County Governments in Kenya. *International Advanced Research Journal in Science, Engineering and Technology*, 10(11), 1–8.

Rawashdeh, A., Bakhit, M., & Abaalkhail. (2022). Determinants of artificial intelligence adoption in SMEs: The mediating role of accounting automation. *International Journal of Data and Network Science*, 7(2023) 25–34. doi: 0.5267/j.ijdns.2022.12.010

Schwaeke, J., Peters, A., Kanbach, D. K., Kraus, S., & Jones, J. (2024). The new normal: The status quo of AI adoption in SMEs. *Journal of Small Business Management*, 10, 1–35. <https://doi.org/10.1080/00472778.2024.2379999>

Sánchez, E., & Herrera, F. (2025). Artificial Intelligence Adoption in SMEs: Survey Based on TOE–DOI Framework, Primary Methodology and Challenges. *Applied Sciences*, 15(12), 6465.

Sharma, S., Singh, G., Islam, N., & Dhir, A. (2022). Why do SMEs adopt artificial intelligence-based chatbots? *IEEE Transactions on Engineering Management*, 8, 1–41.

Oksman, V., & Lahdelma, R. (2021). Enabling Small and Medium Enterprises (SMEs) to Become Leaders in Energy Efficiency Using a Continuous Maturity Matrix. *Sustainability*, 13(18), 10108.

Udeogu, A.C., & Okoye, I.E. (2024). Artificial Intelligence and Competitive Advantage of Micro, Small and Medium Enterprises (MSMEs) in Anambra State. *Cross Current International Journal of Economics, Management and Media Studies*, 6(1), 1–9. DOI: 10.36344/ccijemms. 2024.v06i01.001

Ulrich, P., Frank, V., & Buettner, R. (2023). Artificial intelligence in small and medium-sized family firms: an empirical study on the impact of family influence. *Corporate*

*Governance and Organisational Behaviour Review*, 7(1), 72–80.

<https://doi.org/10.22495/cgobrv7i1p7>.

<https://www.simplypsychology.org>

(<https://Open.ncl.ac.uk>)