The Role of Artificial Intelligence in Enhancing Business Efficiency and Competitiveness of SMEs in Aba, Abia State, Nigeria

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ABSTRACT

The research design used quantitative methods to study how AI awareness and adoption practices affect business efficiency for SMEs operating in Aba's Abia State Nigerian community. The structured survey questionnaire reached 370 randomly chosen SME owners and managers through stratified random sampling procedures that included manufacturing, retail, and services sectors. Researchers evaluated how familiar businesses were with AI along with the degree of implementation and the business effects resulting from AI solutions in efficiency and market competitiveness. Researchers performed statistical analyses through the combination of descriptive elements alongside inferential methods which incorporated multiple regression ANOVA and correlation coefficient testing. AI awareness creates positive effects on individuals' AI adoption decisions which in turn produces significant enhancements both in business efficiency and competitiveness. The evaluation reveals that business efficiency variations of 26.2% ($R^2 = 0.262$, $p = 0.000$) stem from AI awareness and adoption rates. Extensive adoption of AI remains restricted because of elevated implementation expenses and inadequate technical capabilities along with privacy-related obstacles. CEO of Trello highlighted the necessity for specific government policies along with educational initiatives and financial programs that would support SMEs' AI adoption to obtain sustainable business advantages.

Keywords: Aba, AI Adoption, Artificial Intelligence, Business Efficiency, Competitiveness Nigeria, SMEs.

INTRODUCTION

Aba in Abia State represents a city where the continuous noise of industrial sewing machines and traders in Ariaria International Market gives space to a developing technological transformation. The commercial core of Aba Kick-starts its Small and Medium Enterprises (SMEs) to embrace Artificial Intelligence (AI) which has already revolutionized global industrial prospects (Iroka et al., 2021).

This city has maintained its position of innovation together with its capability to endure for the last fifty years. The trading community together with the manufacturing sector and artisan groups in Aba have secured a global brand for their high-quality leather footwear alongside complex fabrics despite operating with minimal resources and outmoded production methods (Chika & Wale, 2020). Traditional methods that have sustained the city no longer provide the foundation required for post-data business success because the city depends heavily on both creativity and hustle. Business organizations worldwide are experiencing an AI revolution which includes consumer behavior forecasting as well as automation of manufacturing processes personalized customer interactions and supply chain optimization. The fundamental question becomes whether AI technology can assist Aba's small and medium enterprises to break beyond their current boundaries for digital market competition.

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The promise of AI is vast. AI will drive up to fifteen trillion-dollar worth of value for the global economy by 2030 and emerging markets such as Nigeria will obtain substantial benefits according to PwC's 2017 global AI impact report (Banerjee et al., 2023). A local shoe producer in Aba would gain market trend prediction through the implementation of AI-powered demand forecasting software replacing their traditional instinct-based decision-making. The manufacturer can use their AI system to adjust production levels accurately according to specific customer needs thus reducing production waste and enhancing profitability. An AI chatbot introduced by textile traders enables them to manage online customer queries through automated responses that immediately address inquiries from Lagos, Accra, and London prospective clients while eliminating physical barriers. A small-scale food processor should implement AI-driven quality control systems to avoid product defects in consumer delivery which will protect their reputation and product quality standards. Industry leaders in various parts of the globe are already using these opportunities which surpass the realm of science fiction.

The potential of AI has gone largely untapped among Nigerian SMEs especially in the city of Aba because adoption rates remain very low. Multiple barriers exist to hinder its adoption process. First, awareness is limited. According to the National Information Technology Development Agency (NITDA) in 2020 only 32% of Nigerian SMEs demonstrated a basic understanding of Artificial Intelligence along with its practical applications (Ebuka et al., 2023). Most business operators look at artificial intelligence as an unapproachable high-tech technology designed for Silicon Valley enterprises instead of their small businesses. Affordability represents one of the main obstacles. The tight profit margins experienced by SMEs make the expensive cost of artificial intelligence adoption appear out of reach to them even though major companies can fund extensive AI research. The third stumbling block involves a limited understanding of the technology. The exceptional challenges with unstable electricity power alongside unreliable internet connectivity alongside restricted cloud computing services become major barriers that impede the adoption of AI solutions in Aba. The obstacles to AI adoption do not exceed what companies can manage. Worldwide small and medium enterprises (SMEs) implement artificial intelligence technologies in limited yet effective applications. Artificial intelligence through e-commerce tools supports Chinese small businesses to expand their international customer bases. AI-based credit scoring systems in India allow SMEs to obtain financing using mobile payment records as well as utility bill information instead of traditional measures. Kenyan businesses maximize their resources by allowing AI-powered chatbots to operate their customer service automation which creates space for strategic business activities. Nigeria should not overlook its opportunity to thrive since the country shows strong entrepreneurial activity (Ikpe, 2024).

The Nigerian government utilizes the National Digital Economy Policy and Strategy (2020-2030) to drive forward technology-based economic growth. The Nigerian economy can fully harness AI when the technology moves past Lagos and Abuja tech hubs to enter commercial centers such as Aba. The Nigerian Startup Act (2022) established by the government offers tech adoption incentives as small and medium enterprises evolve into tomorrow's main commercial innovator force. The necessary environment for AI exploration by SMEs requires all stakeholders to build a framework that avoids high implementation costs alongside technical complexity (Adelodun & Daibu, 2023).

During the beginning of the 2000s, numerous individuals excluded mobile banking from their practices because they sustained a preference for cash-based transactions (Warchlewska, 2020). The market has adopted mobile money as a universally present service. The implementation of AI requires businesses to pursue it as a necessity for survival together with increased market competitiveness in modern industry. The study investigates how Artificial Intelligence supports SMEs in Aba Abia State to achieve better efficiency levels and business competitiveness. The study seeks to fulfill these several objectives:

1. The research investigates the diversity of artificial intelligence (AI) awareness along with its implementation among small and medium enterprises operating within Aba, Abia State.
2. To evaluate the effect of artificial intelligence (AI) on business efficiency and competitive advantages for SMEs.
3. To examine AI adoption challenges as well as opportunities that exist for SMEs operating in Aba.

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The following have been hypothesized by the researcher:

H_1: There is a significant relationship between AI awareness and its adoption among SMEs in Aba, Abia State.

H_2: AI adoption has a positive effect on business efficiency and competitive advantage among SMEs in Aba, Abia State.

H_3: The challenges associated with AI adoption significantly impact the willingness of SMEs in Aba to implement AI-driven solutions.

LITERATURE REVIEW

Theoretical Foundations of Artificial Intelligence in Business

Artificial Intelligence (AI) transforms global businesses through its introduction of automation together with data-driven decisions and its intelligence in customer management systems. The capacity of AI to analyze vast data while determining patterns along with generating predictions positions it as the essential force behind operational enhancement and business transformation. Previous business administration depended extensively on human choices and manual operations yet this model proved successful to some extent but introduced avoidable problems when adapting to market shifts (Bruno, 2024). The fundamental shift brought by AI allows companies to obtain specialized automation capabilities and market prediction technologies paired with resource management improvements which result in better operational results and competitive advantage.

The core foundation of AI applications in business originates from its capability to minimize prediction expenses. AI delivers its most valuable contribution to business by establishing precise data-based forecasts which substantially reduce the indecisiveness of organizational decisions according to Prasanth et al. (2023). The analysis conducted by their study indicates businesses that utilize AI for predictive analytics improve their operational efficiency by five to fifteen percent against organizations that do not employ AI. The observed result demonstrates how businesses benefit from AI because it sharpens their intelligence capabilities to predict market needs along with maximizing inventory control and tailoring individual customer interactions. AI delivers maximum value to organizations by integrating with business strategy instead of operating as an independent technology acquisition.

The study conducted by Rahman (2024) revealed that business operations that employ AI for process automation achieve a 25-30% cost reduction during their second year of AI implementation. Businesses implementing AI cognitive insights achieve a 12% rise in their revenue because they make superior market predictions and allocate resources effectively. The study demonstrates that customer engagement solutions driven by artificial intelligence produce varying results because these outcomes depend on both the sector of operation and the quality of AI system implementation. The successful high-speed responses of AI-driven chatbots in e-commerce fail to produce similar outcomes in healthcare and legal services particularly due to their human interaction requirements.

AI provides small and medium-sized enterprises (SMEs) the chance to enhance operations efficiency which enables them to achieve better market competition with larger corporations. Smaller businesses in Aba, Nigeria can effectively use AI to boost their operational efficiency since they are key economic drivers in the region. SMEs gain operational streamlining capabilities and cost reductions through their implementation of AI-powered customer tools predictive analytics systems and automated financial solutions (Andayani et al., 2024). AI delivers successful business outcomes based on the extent the system integrates into current business operational frameworks according to researchers Brynjolfsson and McAfee. Precise evaluation of specific needs and capabilities becomes essential for SMEs to make perceptible gains from AI solutions during their investment process.

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Challenges to AI Adoption in SMEs

The adoption rate of AI in small and medium enterprises stands at a much lower level than that exhibited by large corporations. Several obstacles maintain this difference between SMEs and big corporations since they face restrictions from finances along with technical limitations insufficient infrastructure and reluctance to transform.

The exorbitant expenses required to deploy AI systems represent a major obstacle for SMEs trying to implement this technology. Advanced machine learning models together with automation tools demand substantial expenses on hardware platforms and software systems and a trained workforce. A survey conducted by Govori and Sejdija (2023) examined 500 SMEs from emerging markets to determine whether financial limitations stood as the main obstacle to AI adoption by SMEs while influencing 64% of businesses. The tight operational budgets of SMEs make it complicated for these businesses to find sufficient funds for implementing Artificial Intelligence systems. The cost of installing AI infrastructure together with cloud-based services and data facilities makes this challenge even more intense. Small to medium-sized enterprises fail to obtain inexpensive funding sources needed to purchase advanced technologies because these options remain beyond their financial reach.

The main hurdle for SMEs rests in their limited digital competencies and technical capabilities. Small and medium-sized enterprises encounter difficulties with AI implementation because they lack skilled resources in data science and machine learning together with algorithm development expertise. According to Govori and Sejdija's research findings, sixty-eight percent of SMEs identified their insufficient internal expertise as their primary barrier to AI adoption.

The limitations of infrastructure networks become major obstacles to AI adoption by SMEs within developing economic regions. The necessary components for AI technologies including reliable internet access alongside robust data storage systems and high computing power often fail to exist in many parts of the world. The unstable electricity and sparse broadband capabilities across Nigeria confront SMEs with obstacles as they seek to incorporate AI solutions inside their business operations. Businesses working with insufficient infrastructure face delayed system speed and system shutdowns along with higher maintenance costs that reduce their AI implementation appeal (Mdladla et al., 2024).

Social resistance to AI adoption emerges primarily from wrong ideas about the technology because individuals fear computers will entirely replace workers instead of helping them in their work. According to Murire (2024), businesses need to implement organizational change management methods that train all stakeholders about AI benefits while developing flexible technology-adopting cultures.

A solution to overcome these difficulties needs to combine multiple strategies. SMEs can adopt AI through efforts made by governments and industry stakeholders who support the implementation with financial backing training programs and digital infrastructure development. Government-subsidized AI education programs for SME workers combined with AI project funding grants substantially minimize AI adoption roadblocks (Nurlia et al., 2023).

The adoption of affordable user-friendly AI solutions becomes feasible when technology providers establish partnerships with SMEs to provide small business-oriented solutions. The complete exploitation of AI in business by SMEs in Aba, Nigeria depends on their ability to manage these problems (Nnadozie, 2024).

METHODOLOGY

Population and Sample

The population of study is 2406 SMEs operators in Aba registered under Abia state corporate affairs commission (CAC). This study employed Cochran's formula to determine the 370-participant sample which achieved statistical representation between manufacturing and retail and services sector participants (Figure 2)

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within various local governments shown in Figure 1. (Ifraheem et al., 2024). The research used a stratified random sampling technique to increase the general validity of results through equal representation of participants across different business fields

Data and Sources of Data

Researchers utilized standardized survey questionnaires to gather data from SME owners and managers about their AI awareness statistics implementation rates and organizational performance effects. The Surveys were distributed online together with in-person methods to satisfy the accessibility requirements of respondents. The research instrument included a Likert-scale together with multiple-choice questions to collect standardized responses that could undergo quantitative analysis. Data were collected through primary sources using standardized survey questionnaires to gather data from SME owners and managers about their AI awareness statistics implementation rates and organizational performance effects

THEORETICAL FRAMEWORK

The Study comprises of independent variable namely AI Awareness, AI Adoption and AI challenges and dependent known as business efficiency and competitiveness. Their relationship illustrates how knowledge and implementation of artificial intelligence can influence SME performance. Increased AI Awareness among SMEs can lead to greater AI Adoption, enabling businesses to leverage technology for improved operational processes. However, AI Challenges, such as cost and technical barriers, can hinder adoption. When SMEs successfully adopt AI, they often experience enhanced business efficiency and competitive advantage, as streamlined operations and innovative solutions allow them to respond better to market demands and improve their overall positioning in the industry.

Statistical Tools and Econometric Model

Descriptive Statistics

The study conducted its statistical data evaluation through descriptive and inferential methods which operated through SPSS software. The research used multiple regression analysis as part of inferential analysis to evaluate hypotheses about the relationships between AI awareness and adoption and business efficiency alongside organizational challenges. ANOVA tests determined the statistical relationships between the study variables

Econometric Model

The functional relationship between the dependent and independent variables is specified as illustrated in Figure 1, is derived as follows: Specifying econometrically, we have:

$BEC = \alpha o + \alpha 1\ AIAW + \alpha 2\ AIAD + AICH\ \mu t$ ----------(1)

Where: BEC= Business Efficiency and Competitiveness

αo = The Intercept

μt = Stochastic error margin

AIAW= AI Awareness

AIAD = AI Adoption

AICH= AI Challenges

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While α1, α2, … αn are the coefficients of the variables to be estimated. The a priori or expected signs of the coefficients are as follows: α1> 0, α2> 0 and α3> 0 or αi"s> 0. The functional equation (model of estimation) shows that Business Efficiency and Competitiveness (BEC) would depend on AI Awareness (AIAW), AI Adoption (AIAD) and AI Challenges (AICH)

RESULTS AND DISCUSSION

Demographic Representation of Respondents

The demography data were analyzed using bar and pie charts as indicated below:

Figure 1: Participant geographical local government distribution

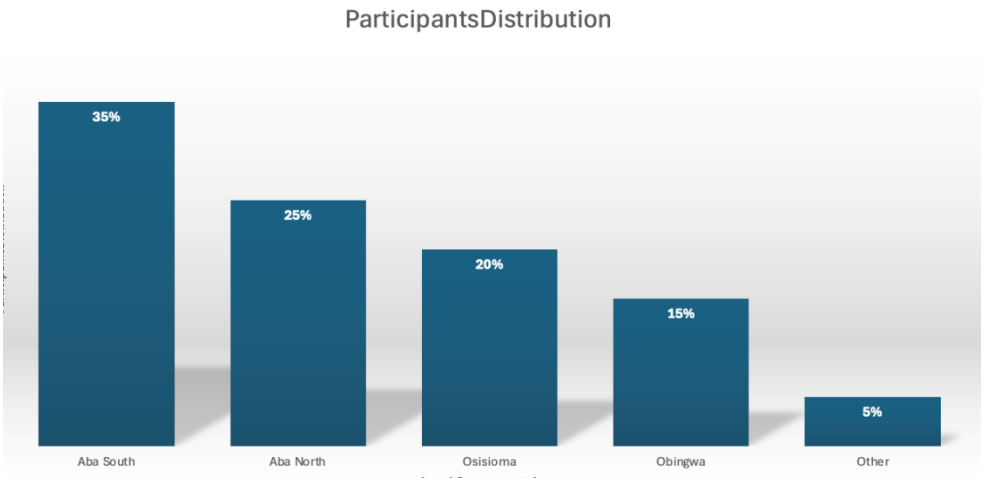

Figure 1 revealed that 60% of the participants are based in Aba while the remaining 40% are based in other local government areas surrounding Aba suburbs. This indicates that most of the businesses are based in Aba city compared to the few based outside the city.

Figure 2: Participant Industry Distribution on Sectors.

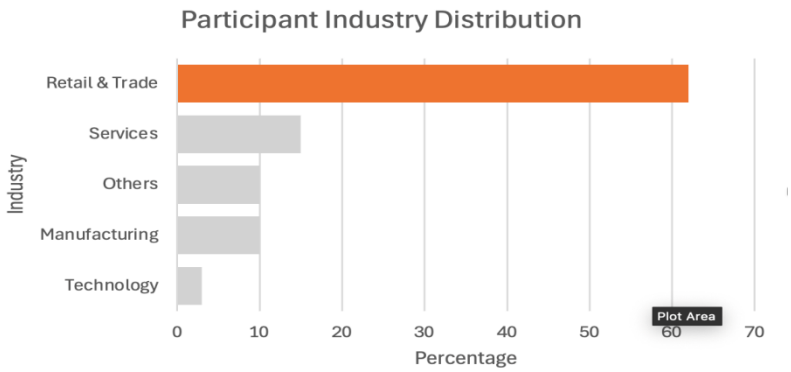

Figure 2 above showed that more SME businesses in Aba area are primarily focused on retail and trade. This indicates that the retail industry in Aba is fraught with increased competition while other industry sectors have less competition.

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Figure 3: Age of Respondents

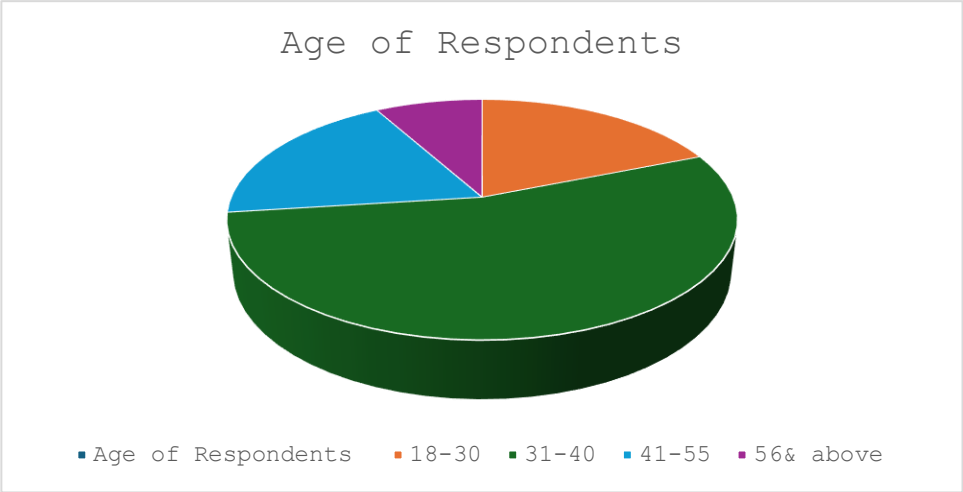

Figure 3 revealed that most SME owners in Aba area fall within the ages of 31 to 40 years which suggest that the young populace are actively involved in the business sectors of the city.

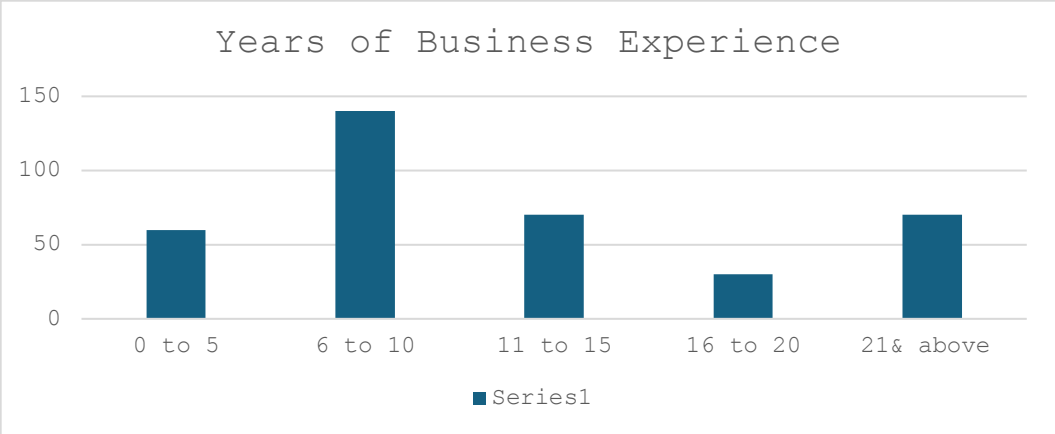

Figure 4: Years of Experience in Business

Figure 4 revealed that most of the SME owners in Aba area have been in business six to ten years since the inception of their businesses. This indicates that most SME businesses in Aba area have been active for the past ten years leading to the growth of the private sector and job creation in Aba area.

Results of Descriptive Statics of Study Variables

The research hypotheses were analyzed with multiple regression through SPSS software in this section of the study. The research method enables the evaluation of how AI awareness adoption and challenges affect business performance and competitive strength of SMEs operating in Aba, Abia State. A full statistical interpretation exists through the combination of Model Summary with ANOVA and Regression Coefficients.

Table 4.1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.512	0.262	0.254	0.318	1.891

Source: SPSS v25

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Table 4.1 indicates that AI awareness and adoption share a moderate 0.512 positive relationship with business efficiency. The 26.2% portion of business efficiency and competitiveness modification in SMEs stems from AI awareness and adoption while 73.8% comes from unexamined elements in this study. The AI-related variables explain 25.4% of SME performance changes, thus producing a slightly lower but stable model fit according to the Adjusted R^2 value of 0.254. The tested Durbin-Watson statistic valued at 1.891 meets the acceptable criteria of 1.5–2.5 which proves there is no significant autocorrelation in the model

Table 4.2: ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	12.143	3	4.048	27.311	
Residual	34.087	366	0.093		
Total	46.230	369			

Source: SPSS v25

An ANOVA test in Table 4.2 above demonstrated the statistical significance of the overall regression model. The ANOVA table establishes the statistical significance of the overall model through the F-statistic value of 27.311 together with the p-value of 0.000. Business efficiency and competitiveness among SMEs in Aba strongly relate to their AI awareness and adoption experiences and technical obstacles. The p-value below 0.05 leads to null hypothesis rejection thus proving the reliability of the constructed regression model.

Table 4.3: Regression Coefficients

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.
(Constant)	2.114	0.203		10.412	0.000
AI Awareness	0.376	0.058	0.491	6.482	0.000
AI Adoption	0.241	0.065	0.278	3.708	0.000
AI Challenges	-0.194	0.071	-0.226	-2.732	0.007

Source: SPSS v25

According to Table 4.3, a 0.376 increase in business efficiency and competitiveness results from every unit increase in AI awareness ($p = 0.000$). SMEs achieve better business efficiency and competitiveness levels through increased adoption of AI as indicated by the regression coefficient ($B = 0.241$) with $p = 0.000$. The statistical relationship between AI Challenges and SME efficiency and competitiveness reveals a negative correlation based on the coefficient value ($B = -0.194$, $p = 0.007$).

Research findings are strengthened by t-values which confirm the positive effects of AI Awareness ($t = 6.482$, $p = 0{,}000$) and AI Adoption ($t = 3{,}708$, $p = 0{,}000$) on SMEs. The analysis shows AI Challenges as an element that negatively impacts business efficiency because their statistical significance reaches $p = 0.007$ ($t = -2.732$).

DISCUSSION

H_1: There is a significant relationship between AI awareness and its adoption among SMEs in Aba, Abia State.

The regression analysis demonstrates that SMEs in Aba adopt AI more frequently when managers show awareness about AI through their significant relationship leading to a 0.376 coefficient value with zero statistical probability. Business managers who gather more information about AI develop an increased likelihood to adopt AI-driven solution implementations. Brynjolfsson and McAfee (2018) confirm the same

finding through their research that shows more awareness about AI leads to higher adoption rates if businesses can correctly identify practical applications of AI. The study results verify that AI awareness measures account for a substantial portion of AI acceptance through their moderate R-value of 0.512 which correlates with an R^2 value of 0.262. According to Almashawreh et al, (2024). SMEs possess rapid technology adoption capabilities when they have a stronger understanding of AI concepts. The investigation asserts that SMEs in Aba will benefit from higher AI adoption rates when they receive targeted training and education about AI.

H_2: AI adoption has a positive effect on business efficiency and competitive advantage among SMEs in Aba, Abia State.

The analysis shows that AI adoption creates positive statistically significant effects on efficiency and competitive advantage because the coefficient stands at 0.241 and the p-value equals 0.000. By integrating AI into their systems SMEs achieve better operational efficiency together with cost efficiency and enhanced market position. Businesses applying AI systems can run repetitive workloads uninterrupted while enhancing decision systems and resource usage as reported by Hızarcı et al. (2024). The analysis of data through ANOVA shows that AI-driven solutions lead to better business outcomes since $F = 27.311$ and $p = 0.000$. Quispe et al, (2023). along with other researchers found that small businesses using AI for data analytics along with customer engagement develop substantial market advantages. Phase One of the Aba region has experienced operational improvements through AI-based automation systems within retail and manufacturing facilities. Research results show that businesses achieve greater operational efficiency and market competitiveness when they adopt AI technologies at higher levels thus establishing conditions for long-term business expansion.

H_3: The challenges associated with AI adoption significantly impact the willingness of SMEs in Aba to implement AI-driven solutions.

The research findings demonstrate that the extent of AI adoption challenges decreases SMEs' propensity for AI solution implementation through a statistically significant factor of -0.194 with a $p=0.007$. The increase in AI adoption challenges among SMEs produces a direct negative impact on their likelihood of implementing AI technologies. Paunov et al. (2019) support these findings because they determined that financial and technological barriers block AI adoption primarily among small businesses operating in developing economies. A Durbin-Watson statistic value of 1.891 indicates that severe autocorrelation does not affect the validity of the results. SMEs face additional barriers because of their insufficient IT technology infrastructure and complicated regulations which reduces their interest in AI adoption. Technical limitations and affordability restrictions prevent SMEs in Aba from adopting new solutions. Wider adoption of AI requires government support together with professional training and easy access to AI solutions to overcome identified challenges.

CONCLUSION

The research conducts quantitative analysis on the relationship between AI awareness and adoption as well as business efficiency among small businesses in Aba's Abia State Nigerian market. Businesses that increase awareness about AI technology tend to adopt AI solutions quickly and these AI adoption programs lead to improved business performance and market competitiveness. The willingness of SMEs to implement AI-based solutions faces hurdles due to exorbitant implementation costs together with limited technological skills and privacy fears affecting their willingness to adopt AI. The study results demonstrate that awareness of AI together with its implementation helps explain 26.2% of business efficiency changes in SME operations. Policymakers need to establish strategic actions with financial support staff training and regulatory controls to improve and safeguard AI adoption among organizations. The sustainable implementation of AI capabilities by SMEs requires successful solutions to these challenges to achieve maximum benefits of innovation and decision-making accuracy alongside competitive market advantages within evolving digital markets.

REFERENCES

1. Adelodun, Y., & Daibu, A. A. 2023. Nigeria Start-up Act 2022 as a Catalyst for technological

2. development and economic growth in Nigeria. Strathmore Law Journal, 7(1), 101–128. https://doi.org/10.52907/slj.v7i1.245
3. Almashawreh, R., Talukder, M., Charath, S. K., & Khan, M. I. 2024. AI adoption in Jordanian SMEs: the influence of technological and organizational orientations. Global Business Review. https://doi.org/10.1177/09721509241250273
4. Andayani, D., Indiyati, D., Sari, M. M., Yao, G., & Williams, J. 2024. Leveraging AI-powered automation for enhanced operational efficiency in small and medium enterprises (SMEs). Aptisi Transactions on Management (ATM), 8(3). https://doi.org/10.33050/atm.v8i3.2363
5. Banerjee, A., Kabadi, S., & Karimov, D. 2023b. The Transformative Power of AI: Projected impacts on the global economy by 2030. Review of Artificial Intelligence in Education, 4(00), e020. https://doi.org/10.37497/rev.artif.intell.educ.v4i00.20
6. Bruno, Z. 2024. The impact of artificial intelligence on business operations. Global Journal of Management and Business Research, 1–8. https://doi.org/10.34257/gjmbrdvol24is1pg1
7. Chika, N. N., & Wale, N. R., I. 2020b. Influence of information and communication technology in secondary school administration in Abia State. GSC Advanced Research and Reviews, 3(1), 026–035. https://doi.org/10.30574/gscarr.2020.3.1.0025
8. Ebuka, A. A., Emmanuel, D., & Idigo, P. 2023. Artificial Intelligence as a Catalyst for the Sustainability of Small and Medium Scale Businesses (SMEs) in Nigeria. Annals of Management and Organization Research, 5(1), 1–11. https://doi.org/10.35912/amor.v5i1.1719
9. Govori, A., & Sejdija, Q. 2023. Prospects and challenges of integrating artificial intelligence within the business practices of small and medium enterprises. Journal of Governance and Regulation, 12(2), 176–183. https://doi.org/10.22495/jgrv12i2art16
10. Hızarcı, A. K., Tarier, A., Özgen, Ö., & Gümüş, G. K. 2024. Understanding the role of artificial intelligence in the context of SMEs. Uluslararası Anadolu Sosyal Bilimler Dergisi. https:// doi.org/10.47525/ulasbid.1572700
11. Ifraheem, S., Rasheed, M., & Siddiqui, A. 2024. Transforming education through artificial intelligence: personalization, engagement, and predictive analytics. Deleted Journal, 13(2), 250–266. https://doi.org/10.62345/jads.2024.13.2.22
12. Ikpe, E. O. 2024. Adoption and implementation of artificial intelligence in small businesses in selected developing countries. Journal of Health Applied Sciences and Management, 8(1). https://doi.org/10.4314/johasam.v8i1.3
13. Iroka, O. R., Nwosu, C. P., Idowu, B. M., & Nwankwo, F. M. 2021. The city of Aba and Goal 11 of the United Nations Sustainable Development Goals (SDGs): an examination. International Journal of Scientific and Research Publications, 11(9), 175–180. https://doi.org/10.29322/ijsrp.11.09.2021.p11723
14. Mdladla, L. T. S., Wider, W., Thanathanchuchot, T., & Hossain, S. F. A. 2024. Navigating the AI revolution: A review of the transformative strategies for economic development in Africa's emerging economies. Journal of Infrastructure Policy and Development, 8(9), 5436. https://doi.org/10.24294/jipd.v8i9.5436
15. Murire, O. T. 2024. Artificial intelligence and its role in shaping organizational work practices and culture. Administrative Sciences, 14(12), 316. https://doi.org/10.3390/admsci14120316
16. Nasheeda, A., Abdullah, H. B., Krauss, S. E., & Ahmed, N. B. 2019. Transforming Transcripts into Stories: A multimethod approach to Narrative analysis. International Journal of Qualitative Methods, 18. https://doi.org/10.1177/1609406919856797
17. Nnadozie, C. E. 2024. The challenges of artificial intelligence adoption by business organizations. International Journal of Science and Research (IJSR), 13(2), 1153–1157. https://doi.org/10.21275/mr24206175858
18. Nurlia, N., Daud, I., & Rosadi, M. E. 2023. AI Implementation impact on workforce productivity : The role of AI training and Organizational adaptation. Escalate Economics and Business Journal, 1(01), 01–13. https://doi.org/10.61536/escalate.v1i01.6
19. Paunov, C., Planes-Satorra, S., & Ravelli, G. 2019. Review of national policy initiatives in support of digital and AI-driven innovation. OECD Science, Technology and Industry Policy Papers. https://doi.org/10.1787/15491174-en

20. Prasanth, A., Vadakkan, D. J., Surendran, P., & Thomas, B. 2023. Role of artificial intelligence and business decision making. International Journal of Advanced Computer Science and Applications, 14(6). https://doi.org/10.14569/ijacsa.2023.01406103
21. Quispe, J. F. P., Huamantumba, C. F. G., Huamantumba, E. G., Huamantumba, A. G., Serquen, E. E. P., Carbajal, L. V. R., León, A. L. C., Flores, L. C., Diaz, D. Z., & Paredes, C. E. G. 2023. Quantitative evaluation of the impact of artificial intelligence on the automation of processes. Data & Metadata, 2, 101. https://doi.org/10.56294/dm2023101
22. Rahman, A. 2024. AI and Machine learning in business process automation: innovating ways ai can enhance operational efficiencies or customer experiences in U.S. Enterprises. Non-Human Journal., 1(01), 41–62. https://doi.org/10.70008/jmldeds.v1i01.41
23. Rawashdeh, A., Bakhit, M., & Abaalkhail, L. 2022. Determinants of artificial intelligence adoption in SMEs: The mediating role of accounting automation. International Journal of Data and Network Science, 7(1), 25–34. https://doi.org/10.5267/j.ijdns.2022.12.010
24. Srivastava, R. 2021. Iterative minimum viable product approach to implementing AI, RPA, and BI solutions. Westcliff International Journal of Applied Research, 5(1), 44–50. https://doi.org/ 10.47670/wuwijar202151rs
25. Warchlewska, A. 2020. Will the development of cashless payment technologies increase the financial exclusion of senior citizens? Acta Scientiarum Polonorum - Oeconomia, 19(2), 87–96. https://doi.org/ 10.22630/ aspe.2020.19.2.21

Appendix

Section A: Respondents' Biodata

For your responses, please tick the appropriate boxes.

1. Age of Respondents
☐ 18-30
☐ 31-40
☐ 41-55
☐ 56 & Above

2. Years of Business Experience
☐ 0-5
☐ 6-10
☐ 11-15
☐ 16-20
☐ 21 & Above

3. Business Sector
☐ Manufacturing
☐ Retail & Trade
☐ Services
☐ Technology
☐ Other (please specify) _____

4. Location (State/LGA)
☐ Aba North
☐ Aba South
☐ Osisioma
☐ Obingwa
☐ Other (please specify) _____

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Section B Research Questionnaire

Please indicate your level of agreement with the following statements using the key below:
Key:
SA – Strongly Agree
A – Agree
N - Neutral
D – Disagree
SD – Strongly Disagree

S/N	ITEMS	SA	A	N	D	SD
RQ1	**Awareness and Adoption of AI Technologies Among SMEs**					
1	I am aware of artificial intelligence (AI) and its applications in business.	☐	☐	☐	☐	☐
2	My business has adopted at least one AI-driven tool or solution.	☐	☐	☐	☐	☐
3	The use of AI in business operations is increasing in Aba.	☐	☐	☐	☐	☐
4	I have attended training or workshops on AI and its business applications.	☐	☐	☐	☐	☐
5	AI adoption in SMEs is mostly driven by competition and technological trends.	☐	☐	☐	☐	☐
RQ2	**Impact of AI on Business Efficiency and Competitiveness**					
6	AI has improved the efficiency of my business operations.	☐	☐	☐	☐	☐
7	AI-driven automation has helped reduce operational costs in my business.	☐	☐	☐	☐	☐
8	AI tools have enhanced customer engagement and satisfaction.	☐	☐	☐	☐	☐
9	The use of AI gives businesses in Aba a competitive advantage.	☐	☐	☐	☐	☐
10	AI-based decision-making has improved productivity and profitability.	☐	☐	☐	☐	☐
RQ3	**Challenges and Opportunities in AI Adoption for SMEs**					
11	The high cost of AI implementation is a barrier for SMEs.	☐	☐	☐	☐	☐
12	Lack of technical expertise hinders AI adoption in SMEs.	☐	☐	☐	☐	☐
13	Data privacy and security concerns discourage the use of AI.	☐	☐	☐	☐	☐
14	Government policies and support can enhance AI adoption among SMEs.	☐	☐	☐	☐	☐
15	AI adoption will create more opportunities for SMEs in the future.	☐	☐	☐	☐	☐

Thank you for participating.sss