Global Journal of Scientific Research Publications
Published by: Sangotra Publishing House *ISSN (Online): 3139-5821*

Artificial Intelligence Adoption and Business Growth Among Entrepreneurial Ventures in Uyo, Akwa Ibom State

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Abstract— *This study examined the effect of Artificial Intelligence (AI) adoption on business growth among entrepreneurial ventures in Uyo, Akwa Ibom State, Nigeria. A quantitative cross-sectional survey research design was employed, with data collected from 318 business owners and managers using a structured questionnaire. Simple linear regression analysis was conducted to test the hypothesis. The findings revealed that AI adoption levels among businesses ranged from 65.1% to 78.3%, with full integration into business processes recording the highest adoption and regular system updates the lowest. Business growth outcomes ranged from 66.7% to 76.5%, with new product introduction recording the highest and market share/profitability the lowest. The regression analysis revealed a very strong positive correlation (R = 0.864), with AI adoption explaining 74.6% of the variation in business growth. The effect was statistically significant (β = 0.789, p = 0.000), leading to the rejection of the null hypothesis. The study concludes that AI adoption positively and significantly drives business growth. Recommendations include deepening AI integration, government provision of financial incentives and digital infrastructure, and future longitudinal research.*

Keywords— *Artificial Intelligence, AI Adoption, Business Growth, Entrepreneurial Ventures, Uyo.*

I. INTRODUCTION

The relevance of Artificial Intelligence (AI) in the growth of business and development of businesses especially in emerging economies like Nigeria cannot be under-estimated. There no gainsaying that, the adoption of Artificial Intelligence (AI) in business development and management enhanced by the fourth industrial revolution has played an integral role in transforming and reshaping how businesses operate and strategize around the globe. *In developing economies, the adoption of AI in businesses has made the entrepreneur's dream a reality by boosting efficiency, improving customer interactions, and supporting strategic decision-making for growth and success (Dwivedi et al., 2021; Huang & Rust, 2021).* Evidently, about 91% of small and medium enterprises (SMEs) around the world that have embraced the adoption of artificial intelligence (AI) have attributed direct revenue increases in their businesses resulting from the artificial intelligence adoption (Osinubi, 2026). Though a lot of businesses especially large corporations have embraced artificial intelligence (AI), many small and medium enterprises (SMEs) as well as emerging entrepreneurs which are seen as engine rooms of most emerging economies due to infrastructural challenges are still in the infantry stages of this adoption. However, there are enormous untapped opportunities in Africa for adoption of artificial intelligence (AI) in businesses that can be enhanced by knowledge and information sharing. The continent's AI market is on the rise and has a promising future (McKinsey & Company, cited in BusinessDay, 2026a).

According to World Bank survey Sub-Saharan Africa are still lagging behind in the effective adoption of artificial intelligence in business growth as compared with its global counterparts in the developed economies. This slow pace of adoption is not due to a lack of interest or awareness; but attributed to a large extent poor infrastructure and lack of will power for execution (BusinessDay, 2026a). For example, Nigeria one of the sub-saharan African countries with largest economy and population with over 39 million Micro, Small, and Medium Enterprises (MSMEs) operating within its borders is yet to effectively embrace the adoption of artificial intelligence in businesses as a result of complex factors (eTranzact, 2025; BusinessDay, 2025). Though a few Nigerian entrepreneurs have attempted to effectively adopt artificial intelligence in their local businesses, many are still faced with significant challenges such as lack of awareness, limited access to affordable tools, and shortage of solutions tailored to local needs of their businesses (BusinessDay, 2025; eTranzact, 2025). Studies show that while embracing artificial intelligence (AI) in business can improve business performance, this positive and lasting impact greatly depends on putting effective solid digital infrastructure in place. However, this is consistent with (Adekunle, 2025) who posited by that poor digital infrastructure can hamper effective adoption of artificial intelligence.

Furthermore, (Mohammed, Kutar, & Albakri, 2025) found that a number of socio-technical factors including; scarcity of necessary skills, change resistance, and regulatory impediments discourage the uptake of AI in Nigeria's SME sector. In this context, Akwa Ibom State emerged as a dominant stakeholder, fostering entrepreneurial expansion through government-backed incentives and the enhancement of native entrepreneurial abilities. Through grants and meticulously curated development programs, such as those run by the Ibom Leadership and Entrepreneurial Development Centre (Ibom-LED), the state's authorities fosters the growth of entrepreneurs (BusinessDay, 2026b). Due to the commendable initiatives from the state authorities, the state

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capital of Uyo is now home to a substantial community of legally formed SMEs (Nwachukwu et al., 2026). Despite this progress, however, earlier research has identified numerous hurdles faced by entrepreneurs and SMEs in Uyo: lack of access to capital, underdeveloped infrastructure, and insufficient entrepreneurial skill sets (Thomas et al., 2024). Although many studies have investigated the influence of AI on the success of SMEs within Akwa Ibom State, according to Aniediabasi & Joshua (2025), there is an empirical void concerning the way AI impacts the expansion of entrepreneurs in Uyo.

Despite government support and financial contributions in boosting the capacity for business development and entrepreneurship, Small and Medium Enterprises and business startups in Uyo, Akwa Ibom State, are plagued by numerous difficulties. Integration of AI technologies in today's rapidly digitalizing and information-centric global economy promises SMEs a new dimension to move beyond typical obstacles of growth, overhaul procedures, and gain a competitive edge (Nwosu, 2026). In studies conducted in other regions of Nigeria, it has been proven that AI adoption greatly affects business performance (Adekunle, 2025; Nwosu, 2026; Njeri, Wekesa, & Hassan, 2026). Abaikpa and his colleagues have contributed extensively to understanding business growth dynamics in this context, examining factors such as performance management systems, the role of vocational education in startup promotion, and the broader organizational environment affecting enterprises in Uyo (Abaikpa, 2025; Abaikpa & Essiet, 2025; Abaikpa, Enang, Essien, & Udom, 2026; Thomas, Abaikpa, Daniel, & Akpan, 2024). Yet, the relationship that can be obtained between the acceptance of AI and the growth of businesses within Uyo remains entirely unknown, especially regarding startup businesses and SMEs. This void is significant since the acceptance and effectiveness of AI vary across locations depending on a variety of circumstances, including infrastructure, digitally savvy workers, and accessibility to useful support systems (Mohammed, Kutar, & Albakri, 2025; Adekunle, 2025). Specifically, without firm evidence of how companies in Uyo implement AI, business advancement facilitators and entrepreneurs will not be inclined to establish effective and supportive methods for its uptake. Consequently, the intention of this study is to fill such a vacuum by exploring the influence of artificial intelligence adoption on business expansion within SMEs and business startup organizations in Uyo, Akwa Ibom State.

A. Objective of the Study

The objective of this study is to examine the effect of artificial intelligence adoption on business growth among entrepreneurial ventures in Uyo, Akwa Ibom State.

B. Research Questions

To what extent does the adoption of artificial intelligence (AI) significantly influence the business growth of entrepreneurial ventures in Uyo, Akwa Ibom State?

C. Hypothesis

There is no statistically significant effect of artificial intelligence adoption on the business growth of entrepreneurial ventures in Uyo, Akwa Ibom State.

II. Review of Related Literature

A. The Concept of Artificial Intelligence Adoption

AI Adoption may be considered as an intentional act where a firm or entrepreneur seeks to identify, implement and routinely use AI technologies including but not limited to machine learning, natural language processing and robotic process automation to execute the activities that once depended on human mental intelligence (Adegbuyi et al. 2024:14). The level of an adoption can occur from not at all to a certain extent to entirely to wholly institutionalised across an organisational processes. In the Nigerian context the dual level adoption process may occur with bottom up at the individual level (for example in the usage of chat-bots for marketing research) but slow at the firm level (Google & Ipsos 2026:22-23; in Punch, 2026). AI Adoption may therefore have three broad channels of mechanism whereby growth can occur; improved operational efficiencies, the ability to scale without incurring corresponding increases in costs and data-drive decision-making (Obiya, 2025:5). Given limited resources, AI Adoption acts as a multiplicator within developing economies like Nigerian as it permits SMEs to automate standard operational procedures and in so doing release employees from the drudgery of mundane processes to engage in higher value-added strategic process (Adekunle, 2025:3-4). The resulting proposition in the study is; the more the rate of adoption of AI in a firm, the faster its revenue will grow and its profitability margin improve (assuming all other factors are held constant).

However, the concept must incorporate moderating variables. Empirical research from Southwest Nigeria shows that digital infrastructure quality significantly moderates the AI–growth relationship; poor internet connectivity and lack of cloud computing access can nullify the expected growth benefits (Adekunle, 2025). Thus, the concept of AI adoption for business growth in Nigeria cannot be separated from the country's infrastructural realities. For entrepreneurial ventures, AI adoption is conceptually distinct from corporate adoption. Entrepreneurs face extreme resource limitations, so AI adoption is often opportunity-driven rather than efficiency-driven. The concept of AI as an enabler of entrepreneurial opportunity recognition is particularly salient: prospective entrepreneurs use AI tools to identify market gaps, test product ideas, and analyse customer sentiment at near-zero marginal cost (University of Nigeria, Nsukka, 2025, p. 11). Furthermore, AI adoption lowers the liability of newness—a classic entrepreneurship concept referring to the disadvantages young firms face due to lack of established routines and legitimacy. By adopting AI-driven accounting, marketing, and logistics tools, Nigerian startups can mimic established firms' operational sophistication almost immediately (Obiya, 2025, p. 8). Conversely, the concept also includes a dark side: over-reliance on AI without local contextual tuning can lead to algorithmic bias (e.g., failing to recognise Nigerian Pidgin English or local payment norms), which can harm customer trust (NITDA, 2025, lines 12-14).

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The dominant conceptual models of AI adoption (e.g., Technology Acceptance Model, TOE Framework) assume stable electricity, affordable bandwidth, and a digitally literate workforce—assumptions that do not hold widely in Nigeria. Therefore, a contextualised concept of AI adoption is necessary. It is propose that AI adoption in Nigeria must be understood as adaptive, modular, and infrastructure-aware:

- Adaptive: AI tools must work with intermittent connectivity (e.g., offline-first AI models).
- Modular: Small businesses adopt discrete AI functions (e.g., a WhatsApp chatbot) rather than enterprise-wide AI suites.
- Infrastructure-aware: Adoption decisions include anticipated costs of backup power, data latency, and local hosting.

Without these refinements, the concept risks being an imported ideal with little explanatory or predictive power for Nigerian business growth and entrepreneurship. The concept of Artificial Intelligence adoption in relation to business growth and entrepreneurial ventures in Nigeria is a theoretically sound but contextually contingent construct. It promises efficiency, scalability, and opportunity recognition, but those promises are realized only when adoption strategies account for Nigeria's unique infrastructural, financial, and skills-related constraints. Future conceptual work should integrate local moderators—digital infrastructure, energy costs, and informal sector practices—into the core definition of AI adoption for emerging economies.

Business Growth Among Entrepreneurial Ventures

The concept of business growth refers to the process by which an enterprise expands its scale of operations, resource base, market reach, or financial returns over time, and it is widely regarded as a fundamental objective distinguishing surviving entrepreneurial ventures from thriving ones (Obiya, 2025, p. 5). Scholars consistently conceptualise business growth not as a single metric but as a multidimensional construct comprising four primary dimensions. The first dimension is revenue growth, defined as the increase in total sales or income generated by the venture over a specific period, which reflects market acceptance and expansion (University of Nigeria, Nsukka, 2025, p. 10). The second dimension is profitability growth, which refers to the improvement in profit margins often achieved through cost reduction or efficiency gains rather than solely through increased sales, and it indicates sustainable financial health (Adegbuyi et al., 2024, p. 16). The third dimension is operational efficiency growth, meaning the ability to produce more output using the same or fewer inputs such as labour, capital, or time, thereby capturing internal process improvements and scalability (Adekunle, 2025, p. 4). The fourth dimension is strategic growth, which encompasses the expansion of market reach, customer base, geographic presence, or product lines, reflecting the venture's adaptive capacity and long-term positioning (Adelakun & Mande, 2026).

Business growth can be measured either objectively, for example through annual percentage increases in sales, employee count, or profit, or subjectively, based on the owner-manager's perception of whether the business has grown relative to competitors, and both approaches are considered valid, though subjective measures are more common in small and informal ventures where financial records may be incomplete (Enakpodia, 2024, p. 12). For entrepreneurial ventures in particular—young, resource-constrained firms—business growth is conceptually distinct from growth in large corporations in three key ways. First, growth is often non-linear, with entrepreneurial ventures experiencing periods of rapid expansion followed by consolidation rather than steady incremental growth (Obiya, 2025, p. 6). Second, survival itself serves as a baseline, meaning that for many new ventures any positive growth beyond break-even is considered significant given high failure rates (University of Nigeria, Nsukka, 2025, p. 11). Third, resource constraints—such as limited access to capital, infrastructure, and skilled labour—shape entrepreneurial growth patterns, so that growth may manifest first in efficiency improvements before translating into revenue expansion (Adegbuyi et al., 2024, p. 18). Finally, a crucial conceptual distinction is that business growth can be viewed either as a process (the strategies and actions undertaken to expand) or as an outcome (the measurable result of those actions), with most empirical studies treating growth as the outcome variable while conceptual work recognises that the process itself determines which growth dimensions are prioritised (Adepoju, Thomas & Lawal, 2025).

B. Theoretical Review

The Resource-Based View (RBV) theory, pioneered by Barney (1991), provides the primary theoretical lens for this study. This theory is selected because it offers a robust explanatory framework for understanding how entrepreneurial ventures can leverage Artificial Intelligence (AI) not merely as an operational tool, but as a strategic internal resource capable of generating sustained business growth. The RBV theory posits that firms achieve competitive advantage and superior performance through the possession and strategic deployment of resources that are valuable, rare, inimitable, and non-substitutable (VRIN) (Barney, 1991; Peteraf, 1993). This resource-based logic is particularly pertinent to the study of AI adoption among entrepreneurial ventures in developing economies, where resource constraints and infrastructural deficits pose significant challenges to business growth. Applied to this study, Artificial Intelligence (AI) and the data it processes constitute VRIN resources that can serve as strategic assets for entrepreneurial ventures. The application of the VRIN framework to AI adoption can be articulated as follows:

Valuable Resources: AI technologies enable entrepreneurial ventures to create value by enhancing operational efficiency, improving decision-making accuracy, and enabling superior customer insights (Adekunle, 2025; Obiya, 2025). In the context of Uyo, where SMEs face significant challenges including limited access to financing and inadequate infrastructure (Thomas et al., 2024), AI can generate value by automating routine tasks, reducing operational costs, and enabling data-driven strategies that were previously inaccessible to small firms. The value creation potential of AI is particularly significant in resource-constrained environments where every efficiency gain directly impacts survival and growth.

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Rare Resources: While AI technologies are increasingly accessible globally, their effective adoption and integration into business processes remain relatively rare among entrepreneurial ventures in Nigeria (BusinessDay, 2025; eTranzact, 2025). The majority of Nigerian SMEs, including those in Uyo, are still in the infancy stages of AI adoption, grappling with challenges such as lack of awareness, limited access to affordable tools, and shortage of solutions tailored to local business needs (BusinessDay, 2025; Mohammed, Kutar, & Albakri, 2025). Consequently, entrepreneurial ventures that successfully adopt and integrate AI technologies can achieve a rarity advantage, distinguishing themselves from competitors who have not yet embraced these capabilities.

Inimitable Resources: The competitive advantage derived from AI adoption is difficult for competitors to imitate, not merely because of the technology itself, but because of the organisational learning, data accumulation, and contextual adaptation that accompany effective AI integration (Adegbuyi et al., 2024). Competitors cannot easily replicate the data-driven insights, customer relationship patterns, and operational efficiencies that an entrepreneurial venture develops over time through AI adoption. This inimitability is further reinforced by the need for complementary organisational capabilities, including digital literacy, change management, and strategic alignment (Mohammed, Kutar, & Albakri, 2025). In the Nigerian context, where digital infrastructure quality significantly moderates the AI-growth relationship (Adekunle, 2025), the inimitability of AI-driven advantages is amplified by the infrastructural and skills-related barriers that prevent rapid imitation.

Non-substitutable Resources: AI capabilities are difficult to substitute with alternative technologies or approaches. While traditional business strategies such as cost leadership or differentiation can be pursued without AI, they cannot replicate the combination of speed, scale, and analytical depth that AI enables (Huang & Rust, 2021; Dwivedi et al., 2021). The capacity to process vast amounts of data, identify patterns, and generate predictive insights represents a unique capability that cannot be adequately substituted by human cognition alone, particularly in the context of increasingly digital and data-driven markets.

For Nigerian entrepreneurial ventures, AI can serve as the strategic resource that allows them to leapfrog infrastructural constraints and outperform competitors. The adoption of AI technologies enables entrepreneurs to make superior data-driven decisions, identify market opportunities more effectively, and achieve operational efficiencies that are difficult for rivals to replicate quickly (Obiya, 2025; Nwosu, 2026). This leapfrogging potential is particularly relevant in Akwa Ibom State, where government interventions through initiatives such as the Ibom Leadership and Entrepreneurial Development Centre (Ibom-LED) programmes are actively promoting entrepreneurial development (BusinessDay, 2026b). By adopting AI, entrepreneurial ventures in Uyo can overcome traditional growth barriers—including limited access to financing, inadequate infrastructure, and shortage of business skills (Thomas et al., 2024)—and accelerate their growth trajectories in revenue, profitability, and market reach. This theory has been explicitly and effectively used to examine AI adoption and competitive advantage among Nigerian businesses. Adegbuyi, Noor, and Adeniyi (2024) applied the RBV framework to investigate the role of AI in SME management in Southwest Nigeria, finding that AI adoption enhances firm performance through the development of valuable, rare, and inimitable capabilities. Similarly, Adekunle (2025) utilised the RBV lens to examine the moderating role of digital infrastructure in the AI-performance relationship, confirming that AI serves as a strategic resource whose value is contingent upon complementary infrastructural assets. Obiya (2025) employed RBV principles to demonstrate that AI adoption functions as a force multiplier for Nigerian startups, enabling them to compete with larger, more established firms by leveraging unique data-driven capabilities.

While RBV serves as the primary theoretical foundation for this study, it is acknowledged that a comprehensive understanding of AI adoption and business growth requires consideration of complementary theoretical perspectives. The Technology-Organisation-Environment (TOE) framework offers valuable insights into the contextual factors that influence AI adoption decisions, including technological readiness, organisational culture, and environmental pressures (Mohammed, Kutar, & Albakri, 2025). The Diffusion of Innovations (DOI) theory provides a lens for understanding the adoption process and the factors that facilitate or impede the spread of AI technologies among entrepreneurial ventures (Rogers, 1995). However, RBV remains the most direct and applicable conceptual lens for this study, as it shifts the focus from external market conditions to the internal, AI-driven capabilities that drive entrepreneurial success in Nigeria. Therefore, RBV provides the most robust theoretical foundation for examining the effect of AI adoption on business growth among entrepreneurial ventures in Uyo, Akwa Ibom State. By conceptualising AI as a VRIN resource, this study can rigorously examine how AI adoption enables entrepreneurial ventures to develop sustainable competitive advantages, overcome infrastructural constraints, and achieve business growth. The theory's emphasis on internal capabilities aligns with the study's objective of understanding how entrepreneurial ventures can leverage AI to transform their operations and achieve superior performance, even in resource-constrained environments.

C. Empirical Review

Several empirical studies have examined the relationship between artificial intelligence adoption and business performance among entrepreneurial ventures and SMEs, with a growing body of evidence emerging from the Nigerian context. This review synthesises findings from relevant studies, highlighting methodological approaches, key findings, and existing gaps that justify the present investigation. Adekunle (2025) examined the moderating role of digital infrastructure in the relationship between AI adoption and business performance among micro, small, and medium-scale enterprises (MSMEs) in Southwest Nigeria. Employing a quantitative research design, the study analysed survey data from 379 MSMEs using descriptive statistics and moderated multiple regression via SPSS. The results indicated that AI

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adoption significantly enhances business performance, particularly in operational efficiency, customer engagement, and strategic decision-making. However, the study found that this positive relationship is significantly moderated by digital infrastructure; inadequate connectivity and limited access to digital applications hinder the full realisation of AI benefits. This finding underscores the critical importance of infrastructural factors in translating AI adoption into tangible performance improvements, a consideration directly relevant to the Uyo context where infrastructural challenges persist.

Aniediabasi and Joshua (2025) conducted a study specifically examining the effect of artificial intelligence technology on SME success in Akwa Ibom State, Nigeria. Focusing on five dimensions of AI—automation, customer engagement, supply chain optimisation, forecasting, and product development—the study adopted a survey design and selected 400 SMEs across the three senatorial districts of Akwa Ibom State: Uyo, Ikot Ekpene, and Eket. Primary data were collected and analysed using regression analysis. The results revealed that automation (p-value = 0.000 < 0.05), customer engagement (p-value = 0.000 < 0.05), supply chain optimisation (p-value = 0.000 < 0.05), forecasting (p-value = 0.001 < 0.05), and product development (p-value = 0.000 < 0.05) each had statistically significant positive effects on SME success. The study concluded that the adoption of AI technologies significantly enhances SME success, positively impacting operational efficiency, customer satisfaction, and overall competitiveness. While this study provides strong evidence for Akwa Ibom State, it covered the entire state, leaving a gap for a focused investigation specifically on entrepreneurial ventures concentrated in the capital city, Uyo. Mohammed, Kutar, and Albakri (2025) explored the barriers and challenges to AI adoption for Nigerian SMEs using empirical data from 144 Nigerian SMEs. The findings revealed that technical challenges, such as inadequate infrastructure and outdated technology, intersect with social issues, including resistance to change and low digital literacy, exacerbating the AI divide. Socio-technical barriers, including skills shortages, ethical concerns, and regulatory gaps, hinder AI integration and equitable outcomes. The study highlighted the need for targeted interventions, including policy support, infrastructure development, and capacity-building programmes, to enable SMEs to harness AI's transformative potential.

A nationwide survey conducted by eTranzact International PLC in partnership with the Enterprise Development Centre of Pan-Atlantic University (eTranzact, 2025), covering 5,290 SME respondents and 212 focus group participants across Enugu, Kano, Lagos, Abuja, and Port Harcourt, revealed that while Nigerian SMEs are increasingly aware of AI, adoption remains minimal across key sectors. The survey found that AI uptake is strongest in ICT and creative industries but lags in agriculture, fashion, and traditional manufacturing. With Nigeria's 39 million SMEs accounting for a significant share of GDP and employment, the report warned that these enterprises risk missing out on the productivity gains AI offers unless awareness translates into practical adoption. Nwosu (2026) investigated the effect of artificial intelligence and digital marketing on the performance of small and medium enterprises in Nigeria. The study found that AI tools significantly contribute to improving SME performance by enabling more precise customer targeting, automating routine marketing tasks, and providing data-driven insights that enhance strategic decision-making. This aligns with the broader narrative that AI serves as a critical enabler for SME growth in resource-constrained environments. Obiya (2025) examined the impact of Artificial Intelligence on the growth of startups in Nigeria, finding that AI adoption functions as a force multiplier—allowing young, resource-constrained firms to automate routine tasks and redirect human capital toward higher-value strategic activities. The study concluded that AI significantly enhances startup growth by improving operational efficiency, scalability, and market responsiveness.

The University of Nigeria, Nsukka (2025) investigated the adoption of AI and blockchain technology on the profit growth of small-scale enterprises in Ebonyi State, Nigeria. The findings confirmed that AI adoption positively and significantly influences profit growth, as it enables better inventory management, cost reduction, and improved customer insights. The empirical literature reviewed reveals several important observations. First, there is consistent evidence across multiple studies that AI adoption positively influences business performance, operational efficiency, decision-making, and overall enterprise growth among Nigerian SMEs. Second, the positive relationship between AI adoption and business outcomes is contingent upon enabling factors, particularly digital infrastructure, which significantly moderates the extent to which AI adoption translates into performance improvements. Third, Nigerian SMEs face considerable barriers to AI adoption, including infrastructural deficits, skills shortages, resistance to change, and regulatory gaps. Fourth, while Aniediabasi and Joshua (2025) have examined AI's effect on SME success in Akwa Ibom State, their study focused on the broader state level and did not specifically isolate entrepreneurial ventures in Uyo. This gap is significant because Uyo, as the state capital, hosts a concentrated population of entrepreneurial ventures and benefits from specific government interventions such as the Ibom Leadership and Entrepreneurial Development Centre (Ibom-LED) programmes. The present study therefore addresses this gap by examining the effect of AI adoption specifically on business growth among entrepreneurial ventures in Uyo, Akwa Ibom State.

III. Methodology

A. Research Design

This study adopts a quantitative cross-sectional survey research design. This design is most appropriate because the objective is to examine the effect of AI adoption on business growth at a single point in time, allowing for the collection of numerical data to test hypotheses and establish statistical relationships between variables. The cross-sectional approach is efficient for capturing a snapshot of entrepreneurial behavior and outcomes within a defined period.

B. Area of the Study

The study was conducted in Uyo, Akwa Ibom State, Nigeria**.** Uyo is the state capital and the commercial nerve

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center of Akwa Ibom, hosting a high concentration of entrepreneurial ventures across diverse sectors including retail, fintech, hospitality, and professional services. The city's rapidly evolving digital economy and increasing exposure to technological innovations make it an ideal setting for investigating the nascent adoption of artificial intelligence among small and medium-sized enterprises (SMEs).

C. Population of the Study

The target population comprises all registered entrepreneurial ventures operating within the Uyo metropolis. According to the latest records from the Akwa Ibom State Ministry of Trade and Investment, there are approximately 1,850 registered SMEs actively operating across various service and trade sectors in the Uyo capital city as of 2025.

D. Sample Size and Sampling Technique

A stratified random sampling technique was employed to ensure adequate representation across the major business sectors. The population was first stratified into four key strata: (1) Retail and E-commerce, (2) Hospitality and Food Services, (3) Professional Services (e.g., legal, consulting, accounting), and (4) Technology and Fintech. Proportional allocation was then used to draw respondents from each stratum. To determine the sample size, the Yamane (1967) scientific formula was applied at a 95% confidence level with a 5% margin of error:

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

Where: N = Population. 1 = constant. e = Level of significance. n = sample size.

$$n = \frac{1850}{1 + 1850\ (0.05)2}$$

n = 329

Thus, a sample size of 329 entrepreneurial venture owners or managers was drawn for the study.

E. Sources of Data Collection

Only primary sources of data were utilized for this study. Data were collected directly from the respondents (business owners and senior managers) through a structured, self-administered questionnaire. This approach ensured that the information gathered was firsthand, current, and specific to the study's objectives.

F. Instrument for Data Collection

The instrument for data collection was **"**Artificial Intelligence Adoption and Business Growth Questionnaire (AIABG-Q). The questionnaire was divided into two sections. Section A and section B. Section A sought for information on the demographic data of the respondents. Section B was the main body of the questionnaire. This section contained twenty five (10) closed - ended questions using a five-point Likert' scale instrument through which the opinions of the respondents were expressed. Their responses were measured by means of a five - category rating system as follows:

SA - Strongly agree
A - Agree
D - Disagree
SD - Strongly disagree
U - Undecided

G. Reliability of the Instrument

To establish the internal consistency and reliability of the questionnaire, a pilot study was conducted with 30 randomly selected entrepreneurial ventures in Ikot Ekpene, a neighboring city outside the study area. The collected pilot data were analyzed using the Cronbach's Alpha coefficient. The reliability coefficients obtained were 0.84 for the AI Adoption scale and 0.81 for the Business Growth scale. Since both values exceeded the acceptable threshold of 0.70, the instrument was deemed highly reliable and suitable for the main data collection.

H. Method of Data Analysis

Data collected from the field were coded, entered, and analyzed using the Statistical Package for Social Sciences (SPSS) version 26.0. Two main analytical approaches were employed:

1. Descriptive Statistics: Frequency counts, percentages, means, and standard deviations were used to summarize the demographic characteristics of respondents and describe the levels of AI adoption and business growth among the ventures.
2. Inferential Statistics: To test the formulated hypothesis and establish the effect of AI adoption on business growth, Simple Linear Regression Analysis was conducted at a 0.05 significance level. Regression analysis was specifically chosen because it allows for the examination of the causal relationship between a single independent variable (AI adoption) and a dependent variable (business growth), enabling the researcher to determine both the direction and magnitude of the effect.

I. Ethical Considerations

Ethical considerations are strictly observed throughout the research process. Informed consent is obtained from all respondents prior to their participation in the study. Respondents are informed of the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any time without any consequences. Confidentiality and anonymity of respondents' responses are guaranteed; no identifying information is collected, and data are reported only in aggregate form. The study adheres to the ethical guidelines for research involving human participants as prescribed by the University of Uyo.

IV. Data Presentation, Analysis And Findings

A. Presentation of Data

This section is basically designed to present, analyse and interpret the primary data obtained via the questionnaire which was purposively administered to the respondents. These are shown in the Table 4.1.

From the Table, out of 329 questionnaires administered, 318 representing 96% were successfully returned. 2 copies of questionnaire representing 3.4 % were not returned

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TABLE 4.1. Number of questionnaire copies administered and returned

		Percentage
Copies of Questionnaire Administered	329	
Copies of Questionnaire Retrieved	318	**96.6**
Copies of Questionnaire not Retrieved	11	**3.4**
Total		**100**

Source: Fieldwork, 2026

The result shows that 144 respondents (45.3%) strongly agreed and 99 respondents (31.1%) agreed that their businesses utilize AI-powered tools such as chatbots, predictive analytics, and automation software for daily operations. In contrast, 19 respondents (6.0%) were undecided, while 38 respondents (11.3%) disagreed and 20 respondents (6.3%) strongly disagreed. Thus, 76.4% of the respondents expressed a positive view of the statement. This indicates that a substantial majority of the businesses surveyed have adopted AI-powered tools to support their routine operational activities. The result indicates that 112 respondents (35.2%) strongly agreed and 104 respondents (32.7%) agreed that their businesses have invested in AI technologies to improve customer service and client interactions. However, 32 respondents (10.1%) were undecided, while 47 respondents (14.8%) disagreed and 23 respondents (7.2%) strongly disagreed. The combined positive response of 67.9% suggests that most businesses have made investments in AI to enhance customer relationships and service delivery. Nevertheless, the relatively higher level of disagreement (22.0%) indicates that AI investment in customer service is not yet universal among the businesses studied. The result reveals that 126 respondents (39.6%) strongly agreed and 95 respondents (29.9%) agreed that their businesses employ AI for data analysis to support strategic decision-making. Meanwhile, 19 respondents (6.0%) were undecided, while 48 respondents (15.1%) disagreed and 30 respondents (9.4%) strongly disagreed. With a combined positive response of 69.5%, the finding indicates that a considerable majority of businesses use AI-based data analysis to improve the quality of managerial and strategic decisions. However, the 24.5% negative response suggests that a notable proportion of businesses have not yet fully embraced AI-driven analytical decision-making.

The result shows that 91 respondents (28.6%) strongly agreed and 116 respondents (36.5%) agreed that they regularly update their AI systems to keep pace with technological advancements in their industry. On the other hand, 27 respondents (8.5%) were undecided, while 55 respondents (17.3%) disagreed and 29 respondents (9.1%) strongly disagreed. The total positive response of 65.1% indicates that most businesses make efforts to maintain and update their AI systems. However, this item recorded the lowest level of agreement among the five indicators, suggesting that continuous technological upgrading may remain a challenge for some businesses, possibly because of financial, technical, or infrastructural constraints. The result indicates that 151 respondents (47.5%) strongly agreed and 98 respondents (30.8%) agreed that AI adoption has been fully integrated into their business processes, including marketing, sales, and inventory management. Only 19 respondents (6.0%) were undecided, while 31 respondents (9.7%) disagreed and 19 respondents (6.0%) strongly disagreed. The combined positive response of 78.3% represents the highest level of agreement among all the items. This indicates that AI is not merely being used experimentally by most of the businesses surveyed but has become integrated into important functional areas of their operations.

TABLE 4.1.1 Percentage analysis of the Responses on Artificial Intelligence Adoption

Artificial Intelligence Adoption Dimension	**SA**	**A**	**U**	**D**	**SD**	**Total**
My business utilizes AI-powered tools (e.g., chatbots, predictive analytics, automation software) for daily operations.	144(45.3%)	99(31.1%)	19(6.0%)	38(11.3%)	20(6.3%)	318(100%)
I have invested in AI technologies to improve customer service and client interactions.	112(35.2%)	104(32.7%)	32(10.1%)	47(14.8%)	23(7.2%)	318(100%)
My business employs AI for data analysis to support strategic decision-making.	126(39.6%)	95(29.9%)	19(6.0%)	48(15.1%)	30(9.4%)	318(100%)
I regularly update my AI systems to keep pace with technological advancements in my industry.	91(28.6%)	116(36.5%)	27(8.5%)	55(17.3%)	29(9.1%)	318(100%)
The adoption of AI has been fully integrated into my business processes such as marketing, sales, or inventory management.	151(47.5%)	98(30.8%)	19(6.0%)	31(9.7%)	19(6.0%)	318(100%)

Source: Researcher's computation (2026)

TABLE 4.1.2 Percentage analysis of the Responses on Business Growth

Business Growth Dimension	**SA**	**A**	**U**	**D**	**SD**	**Total**
My business has experienced a significant increase in sales revenue since adopting AI technologies.	126(39.6%)	114(35.8%)	28(8.8%)	38(11.9%)	12(3.8%)	318(100%)
AI adoption has enabled my business to expand its customer base and market reach.	136(42.8%)	100(31.4%)	22(6.9%)	37(11.6%)	23(7.2%)	318(100%)
My business has recorded improved operational efficiency and reduced costs due to AI integration.	125(39.3%)	95(29.9%)	17(5.3%)	56(17.6%)	35(7.9%)	318(100%)
AI tools have contributed to the introduction of new products or services in my business.	128(40.3%)	115(36.2%)	23(7.2%)	32(10.1%)	20(6.3%)	318(100%)
Overall, my business has witnessed substantial growth in market share and profitability since adopting AI.	110(34.6%)	102(32.1%)	42(13.2%)	41(12.9%)	23(7.2%)	318(100%)

The result indicates that 126 respondents (39.6%) strongly agreed and 114 respondents (35.8%) agreed that their businesses had experienced a significant increase in sales revenue since adopting AI technologies. Meanwhile, 28 respondents (8.8%) were undecided, while 38 respondents (11.9%) disagreed and 12 respondents (3.8%) strongly

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disagreed. The combined positive response of 75.4% indicates that a substantial majority of the respondents perceive AI adoption as having contributed positively to sales revenue growth. This suggests that AI may be enhancing sales processes, customer targeting, marketing effectiveness, and business responsiveness. The result shows that 136 respondents (42.8%) strongly agreed and 100 respondents (31.4%) agreed that AI adoption had enabled their businesses to expand their customer base and market reach. In contrast, 22 respondents (6.9%) were undecided, while 37 respondents (11.6%) disagreed and 23 respondents (7.2%) strongly disagreed. The total positive response of 74.2% indicates that most businesses believe AI has contributed to greater customer acquisition and wider market penetration. This suggests that AI tools may be helping businesses identify potential customers, personalize marketing efforts, and access broader markets. The result reveals that 125 respondents (39.3%) strongly agreed and 95 respondents (29.9%) agreed that their businesses had recorded improved operational efficiency and reduced costs as a result of AI integration. However, 17 respondents (5.3%) were undecided, while 56 respondents (17.6%) disagreed and 35 respondents (7.9%) strongly disagreed. The combined positive response of 69.2% indicates that the majority of respondents perceive AI as contributing to improved efficiency and cost reduction. Nevertheless, this item recorded a relatively high negative response of 25.5%, suggesting that the benefits of AI in reducing operational costs may not be equally experienced by all businesses. Some businesses may still face high implementation costs or challenges in integrating AI with existing operational systems.

The findings show that 128 respondents (40.3%) strongly agreed and 115 respondents (36.2%) agreed that AI tools had contributed to the introduction of new products or services in their businesses. Meanwhile, 23 respondents (7.2%) were undecided, while 32 respondents (10.1%) disagreed and 20 respondents (6.3%) strongly disagreed. The combined positive response of 76.5% indicates that AI adoption has significantly supported innovation and the development of new products and services. This suggests that AI provides businesses with new insights into customer needs and market opportunities, thereby supporting product and service innovation. The result indicates that 110 respondents (34.6%) strongly agreed and 102 respondents (32.1%) agreed that their businesses had witnessed substantial growth in market share and profitability since adopting AI. On the other hand, 42 respondents (13.2%) were undecided, while 41 respondents (12.9%) disagreed and 23 respondents (7.2%) strongly disagreed. The combined positive response of 66.7% indicates that the majority of businesses experienced overall improvements in market position and profitability following AI adoption. However, this item recorded the lowest positive response among the five indicators, suggesting that the broader effects of AI adoption on market share and profitability may take longer to materialize or may depend on other factors beyond technology adoption alone.

B. Testing of Hypothesis

There is no statistically significant effect of artificial intelligence adoption on the business growth of entrepreneurial ventures in Uyo, Akwa Ibom State.

Linear Regression showing the effect of artificial intelligence adoption on the business growth of entrepreneurial ventures in Uyo, Akwa Ibom State.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.864[a]	.746	.746	.40955

a. Predictors: (Constant), AI_Adoption

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	156.045	1	156.045	930.319	.000[b]
	Residual	53.004	316	.168		
	Total	209.049	317			

a. Dependent Variable: Business_Growth

b. Predictors: (Constant), AI_Adoption

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.848	.101		8.371	.000
	AI Adoption	.789	.026	.864	30.501	.000

a. Dependent Variable: Business Growth

The regression analysis examines the effect of Artificial Intelligence (AI) Adoption on Business Growth among the 318 businesses studied.

The model produced an R-value of 0.864, indicating a very strong positive relationship between AI adoption and business growth. The R^2 value of 0.746 indicates that AI adoption explains 74.6% of the variation in business growth. The adjusted R^2 is also 0.746, confirming that the explanatory power of the model remains stable after adjustment for the sample size and number of predictors. The remaining 25.4% of the variation in business growth is attributable to other factors not included in the model. The ANOVA result shows an F-statistic of 930.319 with a significance value of 0.000 ($p < 0.05$). This indicates that the regression model is statistically significant overall. Therefore, AI adoption significantly explains variations in business growth. The coefficient of AI Adoption is 0.789, with a standard error of 0.026 and a standardized beta coefficient of 0.864. The t-value is 30.501, with a significance level of 0.000 ($p < 0.05$). This indicates that AI adoption has a positive and statistically significant effect on business growth. The unstandardized coefficient of 0.789 implies that a one-unit increase in AI adoption is associated with an estimated 0.789-unit increase in business growth, holding other factors constant. The standardized beta coefficient of 0.864 further confirms that the relationship is very strong. The constant value of 0.848 is also statistically significant ($t = 8.371$, $p < 0.05$), indicating the estimated level of business growth when AI adoption is held constant at zero. Since the p-value for AI adoption is 0.000, which is less than the 0.05 significance level, the null hypothesis is rejected. The study therefore concludes that Artificial Intelligence adoption has a positive and statistically significant effect on business growth.

C. Discussion of Finding

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The findings of this study reveal that Artificial Intelligence (AI) adoption has a positive and statistically significant effect on business growth among the 318 businesses examined. The very strong correlation coefficient (R = 0.864) indicates that businesses with higher levels of AI adoption tend to experience higher levels of business growth. This finding suggests that the application of AI-powered tools, data analytics, automation, intelligent customer service systems, and other AI technologies can enhance the capacity of businesses to improve their performance and achieve growth. The finding may be explained by the ability of AI to improve the efficiency and effectiveness of business operations. AI-powered tools can automate routine activities, reduce processing time, improve decision-making through data analysis, personalize customer interactions, and identify new market opportunities. These capabilities can enable businesses to respond more quickly to changing market conditions and customer preferences. Similarly, the integration of AI into marketing, sales, inventory management, and customer service may help businesses reduce operational inefficiencies while improving the quality and speed of service delivery. The finding can further be explained from the perspective of the Resource-Based View (RBV) (Barney, 1991), which suggests that firms can achieve competitive advantage and superior performance by possessing and effectively utilizing valuable, rare, difficult-to-imitate, and non-substitutable resources. AI technology, particularly when combined with organizational knowledge, skilled employees, quality data, and effective managerial capabilities, can serve as a strategic resource that enhances business competitiveness and growth. Similarly, the Dynamic Capabilities Theory (Teece, Pisano, & Shuen, 1997) supports the finding by emphasizing the ability of firms to adapt, integrate, and reconfigure their resources in response to changing environmental conditions. AI adoption can enhance these capabilities by enabling businesses to analyze market trends, identify opportunities, automate processes, and respond rapidly to changes in customer demand.

V. Summary, Conclusion and Recommendations

A. Summary of Findings

The study found high levels of AI adoption among the surveyed businesses, with positive response rates ranging from 65.1% to 78.3% across all five adoption indicators. The highest adoption was recorded in the full integration of AI into business processes (78.3%), while regular system updates recorded the lowest (65.1%). The study also found that the majority of businesses reported positive growth outcomes following AI adoption, with agreement rates ranging from 66.7% to 76.5% across all five growth indicators. The highest growth was recorded in the introduction of new products and services (76.5%), while market share and profitability recorded the lowest (66.7%). The regression analysis revealed a very strong positive correlation between AI adoption and business growth (R = 0.864), with AI adoption explaining 74.6% ($R^2 = 0.746$) of the variation in business growth. The ANOVA result (F = 930.319, p = 0.000) and the regression coefficient (B = 0.789, β = 0.864, t = 30.501, p = 0.000) confirmed that AI adoption has a positive and statistically significant effect on business growth. Based on the p-value of 0.000, which is less than the 0.05 significance level, the null hypothesis was rejected. The study therefore concludes that Artificial Intelligence adoption has a positive and statistically significant effect on the business growth of entrepreneurial ventures in Uyo, Akwa Ibom State.

B. Conclusion

The study concludes that Artificial Intelligence adoption has a positive, strong, and statistically significant effect on the business growth of entrepreneurial ventures in Uyo, Akwa Ibom State. Businesses that have embraced AI technologies—particularly in marketing, sales, inventory management, and customer service—have experienced notable improvements in sales revenue, customer base expansion, operational efficiency, product innovation, and overall market share. The findings are theoretically supported by the Resource-Based View (Barney, 1991), which positions AI as a valuable strategic resource, and the Dynamic Capabilities Theory (Teece, Pisano, & Shuen, 1997), which explains AI's role in enhancing firms' ability to sense and respond to market changes. However, the varying levels of agreement across indicators suggest that the benefits of AI are not uniform, and challenges such as financial constraints, technical expertise, and system integration may limit full realization of AI's potential.

C. Recommendations

Based on the findings of the study, the following recommendations were made:

i. Businesses should deepen AI integration across all core operational areas, prioritize regular system upgrades, and invest in employee training to build internal capacity and maximize growth outcomes.
ii. Government should provide financial incentives such as tax breaks, subsidies, and grants to reduce the cost of AI adoption, while also investing in digital infrastructure including affordable internet, reliable electricity, and technical support systems to create an enabling environment.
iii. Future studies should adopt longitudinal designs to assess the long-term effects of AI adoption, explore moderating factors such as firm size and industry type, and complement quantitative data with qualitative inquiries to gain deeper insights into implementation challenges.

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Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Recommended Citation

Abaikpa, U. A., Okon, E. E., & Ubeh, N. S. (2026). Effect of Artificial Intelligence Adoption on the Business Growth of Entrepreneurial Ventures in Uyo, Akwa Ibom State.

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