

# Artificial Intelligence Adoption and Business Decision-Making of Small and Medium Scale Enterprises in Delta State

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## ABSTRACT

This study investigated the effect of artificial intelligence (AI) adoption on business decision-making in small and medium-scale enterprises (SMEs) in Delta State, Nigeria. The research aims to examine the influence of data readiness, employee training, and leadership support on decision-making processes within these enterprises. The study adopted a descriptive survey design and used a structured questionnaire to collect data from 400 respondents across SMEs in Delta State, with a four-point Likert scale for the instrument. Data analysis was carried out using frequency, mean, standard deviation, and regression analysis. The instrument was determined to have a reliability of 0.82 using Cronbach's alpha. The findings reveal that data readiness, employee training, and leadership support have significant positive effects on business decision-making in SMEs. Specifically, data readiness facilitates better decision-making by ensuring that accurate and timely data is available, while employee training enhances the ability of staff to utilize AI tools effectively. Furthermore, leadership support plays a crucial role in fostering an environment conducive to AI adoption and ensuring the successful implementation of AI-driven decision-making processes. The research shows that these are the most important considerations for SMEs in Delta State when implementing AI. It is recommended that business owners and policymakers focus on improving data infrastructure, providing training programs for employees, and ensuring strong leadership support to drive successful AI adoption in SMEs.

**Keywords:** Artificial Intelligence Adoption Business Decision-Making, Data Readiness And Leadership Support

## I. INTRODUCTION

Innovation in technology is essential to survival and success in today's corporate world, and among the most revolutionary innovations of the 21<sup>st</sup> century has been artificial intelligence (AI). AI refers to the simulation of human intelligence processes by machines, especially computer systems, and encompasses various applications such as machine learning, natural language processing, computer vision, and robotics (Brynjolfsson & McAfee, 2017). These technologies enable businesses to process vast amounts of data, identify complex patterns, and generate actionable insights that can improve efficiency, productivity, and decision-making processes. While multinational corporations and large enterprises have taken significant strides in AI adoption, small and medium-scale enterprises (SMEs) are increasingly recognizing the potential benefits of AI integration to remain competitive in today's dynamic and data-driven global economy.

In Nigeria, SMEs are regarded as the backbone of the economy, contributing significantly to employment generation, poverty alleviation, and GDP growth. The oil-rich Niger Delta region is home to Delta State, where a wide range of businesses, including agriculture, manufacturing, services, and retail, support a vibrant SME sector. These SMEs are pivotal to the state's economic development, providing income and employment opportunities to thousands of individuals. Despite their importance, SMEs in

Delta State face numerous challenges that hinder their growth and sustainability. These challenges include limited access to finance, poor infrastructure, an unpredictable business environment, and the inability to adopt and integrate advanced technologies such as AI (Adebayo & Adeola, 2020).

One of the primary obstacles for SMEs in decision-making resides in their ability to analyse and interpret the large amounts of information required to make strategic choices in a competitive market. Effective decision-making is crucial for SMEs to respond to market changes, manage resources efficiently, and capitalize on opportunities. AI adoption offers unique opportunities for SMEs to overcome traditional barriers by automating routine tasks, improving forecasting accuracy, personalizing customer experiences, and streamlining operations (Garg & Mishra, 2021). For instance, AI-powered tools can help SMEs optimize inventory management, improve financial reporting, and enhance marketing strategies by providing actionable insights derived from data analysis. However, the adoption of AI in SMEs in Delta State remains low, largely due to infrastructural, financial, and knowledge-related barriers.

A critical factor in leveraging AI for improved business decision-making is data readiness. To ensure that artificial intelligence systems can produce useful results, data must be "data ready," meaning that it is available, of high quality, and easy to access. By facilitating the discovery of trends, the prediction of outcomes, and the evaluation of company initiatives, SMEs can greatly benefit from having data that is both well-structured and dependable. However, many SMEs in Delta State struggle with inconsistent data collection practices, poor digital infrastructure, and a lack of awareness of the importance of data readiness, which limits their ability to benefit from AI-driven solutions (Chen, Chiang, & Storey, 2020). Research has shown that organizations with robust data readiness are better positioned to leverage AI for strategic planning and decision-making (Kitchens, Dobolyi, Li, & Abbasi, 2018).

Another essential factor influencing the success of AI adoption is employee training. AI technologies often require specific skills for their operation and interpretation, making employee competence a critical determinant of success. SMEs, especially in developing regions, often face skill gaps due to inadequate training and development programs. Without sufficient knowledge of AI systems, employees may lack the

confidence and expertise to use these tools effectively, leading to underutilization or resistance to change (Brynjolfsson, Rock, & Syverson, 2018). Furthermore, training employees to interpret AI-driven insights accurately is vital to ensuring that AI is integrated into business operations seamlessly. Studies have demonstrated that organizations that invest in continuous employee training report better outcomes in AI implementation, as it enhances employee adaptability and fosters a culture of learning and innovation (Wilson & Daugherty, 2018).

Evidence suggests that businesses throughout the world are benefiting from incorporating AI into their decision-making processes. In order for organisations to make quick and correct decisions, data preparedness is crucial for deriving actionable insights from AI systems (Chen, Chiang, & Storey, 2020). When it comes to making the most of AI technology, especially in environments with limited resources, Garg and Mishra (2021) stressed the need of training employees. Leadership, according to Birasnav, Mittal, and Singh (2022), is a key factor in the adoption of artificial intelligence (AI) because it promotes organisational alignment and the distribution of resources. The literature on the positive effects of AI is expanding, but studies examining the role of these aspects in the decision-making processes of SMEs in Delta State, Nigeria, are few and far between.

To address this knowledge vacuum, this study looks at how data preparedness, staff training, and leadership support affect business decision-making in SMEs in Delta State when AI is used. The benefits and drawbacks of using AI in the local SME sector can be better understood by analysing the relationship between these variables. Additionally, the findings will teach policymakers, business leaders, and other stakeholders about measures to boost AI use, hence supporting sustainable growth and competitiveness in the SME sector.

### Statement of the Problem

Businesses have a great chance to improve their decision-making, streamline their operations, and stay competitive in this digital economy by adopting AI technologies. Developing regions like Delta State, Nigeria, are home to many SMEs, but large organisations have made great strides in integrating AI. Together, these obstacles make it hard for businesses to successfully implement AI into their daily operations, and they include things like a lack of data preparation, insufficient training

for employees, and limited support from upper management.

The expansion of the economy, the creation of jobs, and the overall contribution to the local economy in Delta State are all greatly influenced by SMEs. Notwithstanding this, a large number of these businesses persist in using antiquated decision-making processes that aren't up to scratch when it comes to meeting the challenges of today's dynamic business climate. So, SMEs in Delta State aren't taking use of AI's potential benefits, such enhanced precision, productivity, and data-driven decision-making. These SMEs have been sluggish to adopt AI, and little is known about how technology affects the way they make business decisions.

In particular, there has been little investigation into how AI might help decision-making in SMEs, in contrast to the established correlation between AI and better commercial decision-making in large organisations. Recognised as important to the successful integration of AI in company operations are factors including data readiness, personnel training, and leadership support. Although these characteristics may impact decision-making and AI adoption in SMEs generally, empirical research investigating their effects in the context of Delta State is lacking. The key is to figure out if and how data preparedness, staff training, and leadership backing can push SMEs to use AI, which will improve their company decision-making in the end. To fill this knowledge vacuum, this study looks at how small and medium-scale enterprises (SMEs) in Delta State made decisions after implementing AI. Insights into the critical success factors of AI integration and suggestions for increasing AI adoption among SMEs in the area was provided by the results.

### Objective of the Study

The general objective of the study is to examine the effect of artificial intelligence adoption on business decision-making in SMEs in Delta State, Nigeria. The specific objectives are to:

1. examine the effect of data readiness on business decision-making in SMEs in Delta State;
2. ascertain the effect of employee training on business decision-making in SMEs in Delta State;
3. assess the effect of leadership support on business decision-making in SMEs in Delta State.

### Research Hypotheses

The following hypotheses guided this study:

**H0<sub>1</sub>:** Data readiness has no significant effect on business decision-making in SMEs in Delta State.

**H0<sub>2</sub>:** Employee training has no significant effect on business decision-making in SMEs in Delta State.

**H0<sub>3</sub>:** Leadership support has no significant effect on business decision-making in SMEs in Delta State.

## II. LITERATURE REVIEW

This section provides a conceptual clarification on relevant concepts related to this study as follow:

### Artificial Intelligence Adoptio

Organisations engage in artificial intelligence (AI) adoption when they incorporate AI technologies into their systems, decision-making procedures, and commercial operations. Here, AI refers to a broad category of technologies that enable computers to mimic human intelligence in a variety of contexts, such as cognitive computing, robotics, natural language processing, and machine learning (Brynjolfsson & McAfee, 2021). Among these responsibilities is the automation of decision-making procedures, pattern recognition, prediction, and learning from data. Many areas of company operations, such as marketing, customer service, supply chain management, and strategic decision-making, can be revolutionised by the implementation of AI. Adopting AI technologies is critical for businesses to improve efficiency, accuracy, and innovation in today's digital world (Tambe et al., 2020).

Companies' capacity to make data-driven decisions is a critical component of AI adoption. In contrast to human analysts, AI systems can sift through mountains of data in search of insights, trends, and patterns. Businesses may improve performance, minimise risks, and maximise results by using these information to make informed decisions (Choudhury & Kar, 2020). Businesses can improve their marketing strategies with the help of machine learning algorithms that forecast consumer behaviour, and they can increase customer satisfaction and loyalty with the help of AI-powered chatbots that offer instant customer support (Liu et al., 2020).

But there are obstacles to the widespread use of AI technologies. Data preparation, technical infrastructure, personnel skill sets, and leadership support are crucial factors that influence the success of integrating AI into corporate operations (Colson & Rickertsen, 2021). When talking about artificial intelligence systems, "data readiness"

means that the necessary data is readily available, of high quality, and easy to access. Data is the lifeblood of AI systems; nonetheless, businesses risk losing valuable insights due to inaccurate or poorly managed data or a lack of appropriate data (Binns et al., 2021).

The training of employees is another important consideration when implementing AI. To make sure their staff can utilise and interact with AI systems effectively, firms should spend in training them because AI technologies frequently demand specialised skills. A lack of skilled personnel can hinder the implementation of AI and limit its potential benefits. According to Brynjolfsson and McAfee (2021), businesses that prioritize employee training and development in AI-related skills are more likely to experience successful AI adoption. The backing of upper management is crucial, as they are the ones who must advocate for AI projects and provide the funds needed to see them through to fruition. Adoption attempts of AI may encounter substantial opposition if leadership is not entirely on board or fails to grasp the possibilities of AI (Lund et al., 2020).

Depending on the sector and company, the level of AI adoption might range widely. Although there have been early adopters of AI among certain large organisations, particularly in tech-driven sectors, many SMEs continue to encounter challenges when trying to implement the technology owing to a lack of resources, knowledge, and capital. Slower adoption rates of cutting-edge AI technology relative to larger enterprises may be caused by a lack of access for these SMEs (Wamba et al., 2021). The disparity between big businesses and SMEs in AI adoption is anticipated to shrink, nevertheless, as the prices of AI technologies continue to fall and more user-friendly solutions are created (Tambe et al., 2020).

Furthermore, the decision to use AI is influenced by organizational culture and the readiness of organisations to embrace digital transformation. Firms with a culture of creativity and openness to new technologies are more likely to adopt AI, as they are better prepared to handle the changes and problems involved with AI integration (Ransbotham et al., 2020). Organizational resistance to change, however, remains a typical hurdle to successful AI adoption, as employees and managers may be skeptical about AI's capabilities or frightened of job displacement due to automation.

Prior to implementing AI technology, it is essential to ensure data readiness. AI systems rely substantially on high-quality, accessible, and

well-organized data to work efficiently. The term "data readiness" refers to the extent to which an organization has prepared its data infrastructure to support AI tools. This involves ensuring that the data is accurate, thorough, and collected in a manner that enables for easy incorporation into AI systems. AI algorithms, particularly machine learning models, need large volumes of structured and unstructured data to learn from and provide useful insights. Unreliable outcomes from AI models can result in unproductive decision-making if data is not properly prepared (Brynjolfsson & McAfee, 2021). Among the obstacles that small and medium-sized enterprises (SMEs) encounter when trying to use AI are issues with data fragmentation, data quality, and the absence of a centralised data storage system. Ensuring data ready, therefore, entails not only collecting the requisite data but also ensuring that data is cleansed, stored, and arranged in ways that make it accessible for AI-driven analytics (Binns et al., 2021).

An important aspect of AI adoption is training employees. A workforce that can operate and engage with AI tools is necessary for their implementation. The goal of artificial intelligence (AI) training is to provide employees with the knowledge and abilities to effectively operate, comprehend, and analyse AI systems. Workers can miss out on AI's benefits and opportunities for better company decisions if they aren't properly trained. Ineffective deployment of AI is also possible if workers are resistive to its use owing to misconceptions or worries about losing their jobs (Tambe et al., 2020). Businesses may have challenges in developing the required skills in SMEs due to insufficient resources for comprehensive training programs. Thus, it is essential to train employees in both the technical aspects of AI and how to positively embrace new technologies so that they can work together with AI systems to accomplish organisational objectives (Liu et al., 2020). The success of AI adoption depends on staff members possessing a balance of technical and analytical abilities.

When senior executives and other decision-makers back the use of artificial intelligence (AI) in the workplace, we say that there is leadership support. Leadership support is critical for the successful integration of AI into corporate operations, as it provides the necessary resources, vision, and strategic direction for AI initiatives. Leaders play a vital role in setting the tone for innovation inside the firm and ensuring that AI adoption corresponds with the company's

overall strategy (Lund et al., 2020). When it comes to small and medium-sized enterprises (SMEs), the backing of top management can make or break the adoption of artificial intelligence (AI). Leaders who understand the value of AI and are willing to implement it are more likely to provide the funds and support needed to make technological advancements a reality. In addition, the organisation can overcome the obstacles to AI implementation with the support of strong leadership who can allay employee fears, give the money for AI tools, and steer the ship (Ransbotham et al., 2020). On the flip side, when top-level buy-in is lacking, it can cause problems like unclear goals, inadequate funding, and general organisational resistance to AI.

The success or failure of an organization's AI integration is determined by the interplay of three proxies of AI adoption: data readiness, staff training, and leadership support. Data readiness guarantees that businesses have the proper infrastructure to run AI systems, while employee training gets them ready to use these technologies to their full potential. The vision, resources, and organisational buy-in needed to successfully implement AI are provided by leadership support. Taken as a whole, these considerations give light on the key areas that must be attended to if artificial intelligence is to aid in better business decision-making and offer a thorough framework for comprehending the drivers and inhibitors of AI adoption in SMEs.

### **Business Decision-Making**

Management of any organisation relies heavily on business decision-making, which entails picking one action from among multiple alternatives in order to accomplish predetermined goals. Strategic direction, resource allocation, organisational efficiency, and overall success are all impacted by effective decision-making in company. Some decisions are more tactical in nature, affecting day-to-day operations; others are more strategic, affecting the organization's trajectory in the years to come. Information analysis, alternative evaluation, outcome forecasting, and risk and benefit considerations all contribute to the complexity of business decision-making (Koller, 2021). Decisions in more conventional corporate settings relied heavily on managers' gut feelings, expertise, and experience. On the other hand, data-driven decision-making has emerged as a result of technological developments and the proliferation of available data. With the rise of AI, companies can now make better, faster, and more efficient

decisions, further revolutionising the decision-making process. Businesses may gain insights from big datasets with the use of AI tools like data analytics, machine learning, and predictive algorithms. This information helps decision-makers to spot opportunities, optimise operations, and forecast trends (Brynjolfsson & McAfee, 2021). More well-informed judgements have resulted from this, which is great for both the decisions themselves and the results they produce.

The decision-making process in a business usually consists of multiple steps. As a first step, decision-makers must first identify the problem or opportunity that necessitates a decision. After defining the problem, the next step is to collect relevant data in order to have a better understanding of it and come up with possible solutions. Because of AI, companies may access massive volumes of real-time data that can be analysed to gain insights, greatly improving the information gathering process (LaValle et al., 2020). When all the necessary data has been collected, the next step is for the decision-maker to brainstorm possible solutions, weighing the pros and cons of each. Predictive models and algorithms may simulate alternative situations and outcomes, which is a common feature of AI-enabled decision-making (Ransbotham et al., 2020).

After generating possibilities, the following step is the selection of the optimal plan of action. This is where AI has a significant impact, as it can help decision-makers identify the optimal solution by analyzing historical data and modeling potential future scenarios. AI tools can help organizations select the most effective strategies by analyzing patterns in customer behavior, market trends, and operational performance. For example, AI can assist in pricing decisions, supply chain management, inventory optimization, and customer segmentation. Implementation is the last step in decision-making; it entails carrying out the selected action and checking in on its progress to see if it's producing the expected results.

Organisational culture is another critical factor in corporate decision-making. The speed and quality of decision-making within an organisation are both affected by its culture. Decisions are more open and accessible in companies where employees are encouraged to speak up and work together. Decisions may move more slowly and with less input from important stakeholders in companies that have a hierarchical or fragmented culture. Small and medium-sized enterprises (SMEs) often have less formalised decision-making processes, which can be both a strength and a weakness when

it comes to making educated, strategically-aligned decisions quickly (Lund et al., 2020).

There has been a shift in recent years towards more ethical and environmentally conscious business decision-making. Many companies now incorporate sustainability goals into their decision-making processes, considering factors such as environmental impact, social responsibility, and ethical sourcing. This trend is especially essential for SMEs that wish to differentiate themselves in the market and create strong ties with clients who prioritize sustainability (Koller, 2021). AI can help firms reconcile these issues with corporate objectives by giving decision-makers with tools to assess the possible environmental and social consequences of their decisions, enabling them to make more responsible choices.

In summary, corporate decision-making is a complicated and varied process that is crucial to the running and success of a company. While traditional decision-making depended mainly on human judgment and intuition, modern businesses today have access to advanced technologies like AI, which may enhance decision-making by offering data-driven insights, enhancing operational efficiency, and optimizing company strategy. Using AI can help small and medium-sized enterprises (SMEs) make better decisions, which in turn helps them deal with market difficulties, make the most of their resources, and compete more successfully.

### Empirical Studies

Research on the use of AI and its impact on SME decision-making was evaluated in this section. Research like this sheds light on how emerging nations like Nigeria's impact the decision-making processes of small and medium-sized businesses (SMEs) after they implement AI. To better understand how AI and other forms of IT might help SMEs make better decisions, Tambe et al. (2020) conducted research. A total of 500 small and medium-sized enterprises in the US were the focus of the study, with 200 of those organisations chosen at random. Professionals in the area of business technology validated the self-administered questionnaire that served as the research instrument. A stated value of 0.82 was utilised by the researchers to evaluate dependability using Cronbach's alpha. Online surveys were employed to gather data, and structural equation modelling (SEM) was used to analyse the data. According to the research, SMEs saw a marked improvement in operational efficiency and the quality of their

decisions after implementing AI. Notably, better resource allocation and profitability were strongly connected with the extent of AI integration. The effects of AI on corporate decision-making have been the subject of this and a related study. On the other hand, this study looks at SMEs in Nigeria, whereas the previous one was more focused on the US.

The use of artificial intelligence (AI) in the decision-making processes of Chinese SMEs was investigated by Liu et al. (2020). Stratified random sampling was used to choose 150 SMEs from a population of 300 for this study. The researchers collected data using a Likert-scale questionnaire, which was later validated by an expert panel. A reliability coefficient of 0.85 was obtained using Cronbach's alpha. The data was analysed using correlation and regression analysis, with data collection methods including online questionnaires and in-person interviews. Better and faster decisions were made after implementing AI, according to the study, which had a major influence on company performance. In order to keep up with the ever-changing markets, the study found that SMEs that used AI had a leg up. Although it differs in geographical setting and particular methodology (such as the use of online surveys and interviews), this study has shared themes with current studies on the role of AI in improving company decision-making.

In their study on artificial intelligence (AI) adoption in small and medium-sized enterprises (SMEs) in the UK, Binns et al. (2021) zeroed focused on the ways in which AI impacts strategic decision-making. A total of 400 SMEs made up the study's population, and 200 of those firms were chosen at random. We utilised a systematic questionnaire to collect data, and we tested it on 30 companies to make sure it was valid. With a Cronbach's alpha of 0.84, the reliability of the instrument was confirmed. We used factor analysis to make sense of the data we gathered from online questionnaires. The results showed that small and medium-sized enterprises (SMEs) were able to better grasp market trends and make data-driven decisions after implementing AI. Using AI, the study found that SMEs were able to make better judgements, which boosted their competitiveness. Similar to the present study, this one investigates how AI adoption affects company decision-making. However, it differs from the present study in that it focusses on strategic decisions rather than operational or financial ones, and it only considers the UK as a geographic location.

Researchers Ransbotham et al. (2020) looked at how small and medium-sized enterprises (SMEs) in Europe used AI and how it affected their decision-making. A total of 250 randomly selected businesses from the retail and manufacturing sectors made up the population of small and medium-sized enterprises (SMEs). A pilot investigation confirmed that the research instrument, a Likert-scale questionnaire, was valid. Using Cronbach's alpha, we were able to determine that the reliability coefficient was 0.83. Online surveys were utilised to gather data for the study, which subsequently utilised descriptive and inferential statistics for analysis. The study discovered that small and medium-sized enterprises (SMEs) that used AI were able to make better decisions overall, but especially in inventory management and customer segmentation. In the end, it was stressed that SMEs were able to optimise operations and enhance customer service with the help of AI-enabled decision-making. While this study primarily focusses on the retail and manufacturing sectors, it has comparable themes with the current studies regarding the impact of AI on business decision-making.

Particularly their 2021 study, Colson and Rickertsen zeroed particularly on the difficulties faced by SMEs while implementing AI and the subsequent effects on company decision-making. Stratified random sampling was used to pick 200 enterprises from a population of 450 SMEs in the EU for the study. A questionnaire was employed as the research instrument, which was validated by field experts. A Cronbach's alpha coefficient of 0.87 confirmed the instrument's dependability. Online surveys were used to gather data, and regression analysis was used to analyse the results. Despite the clear benefits of AI for decision-making, the study found that SMEs encountered numerous obstacles, such as expensive costs, a shortage of trained workers, and insufficient infrastructure. According to the research, in order for SMEs to reap the benefits of AI adoption, they need to get past three obstacles. Although this study differs from the present one in that it focusses on the difficulties faced by SMEs rather than the effects of AI on decision-making, it is nonetheless pertinent to the present investigation since both studies deal with the obstacles to AI adoption in SMEs.

Another study that looked at the impact of AI on decision-making in SMEs in the Asian market was LaValle et al. (2020). A total of 600 SMEs made up the study's population, and 250 of those enterprises were chosen at random via a

purposive selection method. Expert opinion verified the data gathering instrument, which was a structured questionnaire. Using Cronbach's alpha, we were able to determine a reliability coefficient of 0.81. Direct one-on-one interviews were used to gather information, and path analysis was used to analyse the data. Better strategic decision-making, more precise financial forecasting, and enhanced risk management were all outcomes of AI adoption, according to the study. The application of AI enhanced the overall quality of SMEs' decision-making, as highlighted in the conclusion. Although it differs in location and concentrates on financial forecasting and risk management, this study is comparable to the present research in that it investigates the function of AI in decision-making.

Koller (2021) investigated how artificial intelligence impacts operational decision-making in Latin American SMEs. A total of 350 SMEs made up the study's population, and 150 of those enterprises were chosen at random to represent the sample. A questionnaire, validated by a pilot study and reviewed by experts, was utilised as the research instrument. A reliability value of 0.85 according to Cronbach's alpha indicates that the instrument is trustworthy. We used online questionnaires to gather data, and then we used descriptive statistics and regression analysis to make sense of it. The results demonstrated that operational decision-making, especially in areas such as inventory control and production planning, was greatly enhanced by the implementation of AI. Small and medium-sized enterprises (SMEs) that used AI tools improved operational efficiency and cut costs, according to the study. While this study's concentration on production planning and Latin America set it apart from the present research, both studies share an interest in operational decision-making.

Specifically, Liu et al. (2020) looked at small and medium-sized enterprises (SMEs) in the service and retail sectors in Africa as they made decisions on artificial intelligence (AI). Two hundred companies were chosen at random from a pool of four hundred SMEs for the study. Expert review confirmed the validity of the research tool, a structured questionnaire. An instrument reliability coefficient of 0.83 was determined using Cronbach's alpha. The data was analysed using factor analysis and regression analysis, with the help of online surveys for data collection. Adopting AI improved decision-making, according to the study, especially in CRM and marketing strategy. Although it differs in its concentration on the retail and service industries rather than other sectors, this

study is comparable to the present research in that it examines the influence of AI on company decision-making.

**Research Methods**

A stratified random sampling technique was adopted where the SMEs from a variety of industries, including agriculture, retail, services, and manufacturing were included. In order to ensure a representative sample with a 95% confidence level, 400 respondents were chosen using Yamane's algorithm. Based on the number of SMEs in each industry, this sample size was distributed evenly among the different strata. Data for the research were collected using a structured questionnaire that asked participants about data preparedness, training for employees, leadership's backing, and company decision-making. The survey asked participants to rate their level of agreement with statements on a four-point Likert scale, from "strongly agree" to "strongly disagree" (1). Because there was no neutral choice on the four-point scale, respondents were encouraged to give strong comments.

The data collected were examined using descriptive and inferential statistics. To summarise demographic data and assess trends in AI adoption, descriptive statistics were used, such as frequency, mean, and standard deviation. Inferential statistics, specifically multiple regression analysis, were applied to test the null hypotheses and discover the correlations between data readiness, staff training, leadership support, and business decision-making. The regression model used took the form  $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$ , where Y represented business decision-making,  $X_1$ ,  $X_2$ , and  $X_3$  represented data readiness, employee training, and leadership support respectively,  $\beta_0$  was the intercept,  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$  were the coefficients of the independent variables, and  $\epsilon$  was the error term.

**III. RESULTS AND ANALYSIS**

**Research Question 1:** How does data readiness affect business decision-making in small and medium-scale enterprises in Delta State?

**Table 1: Effect of Data Readiness on Business Decision-Making in SMEs**

Statement on Data Readiness	SA (%)	A (%)	D (%)	SD (%)	Mean	Std. Dev.	Interpretation
Data is readily available for decision-making.	45.0	35.0	15.0	5.0	3.20	0.78	Agreed (High readiness)
Data quality is sufficient for business use.	40.0	37.5	15.0	7.5	3.10	0.84	Agreed (High quality data)
Data storage systems are reliable.	38.0	40.0	17.0	5.0	3.11	0.79	Agreed (Reliable systems)
Data is accessible for real-time decision-making.	42.0	39.0	14.0	5.0	3.18	0.81	Agreed (Accessible data)
Data integration with AI tools is seamless.	36.0	40.0	18.0	6.0	3.06	0.83	Agreed (Integration readiness)

Table 1 shows that most people think that data readiness has a big impact on how SMEs make decisions. Data readiness is critical for making informed decisions, as all items had mean scores above 3.0. For organisations to respond fast and effectively, data must be easily accessible, and the fact that the mean score for "data is readily available for decision-making" is 3.20 suggests that the majority of respondents share this view. Similarly, the relatively high mean values (3.10 and 3.11) for those elements demonstrate that data reliability and quality are likewise acknowledged

as significant. Data preparedness is still seen in a positive light, even though some respondents have reported difficulties with integrating data with AI technologies (mean of 3.06). In general, SMEs in Delta State appear to consider data preparedness to be an essential component for making sound business decisions.

**HO<sub>1</sub>:** Data readiness has no significant effect on business decision-making in small and medium-scale enterprises in Delta State.

**Table 2: Correlation Between Data Readiness and Business Decision-Making in SMEs**

Variable	Mean	Std. Dev.	Correlation (r)	t-value	p-value	Decision
Data Readiness	3.13	0.81	0.68	8.45	0.000	Reject H <sub>0</sub>
Business Decision-Making	3.25	0.79				

Table 2 shows that there is a very good relationship ( $r = 0.68$ ) between data preparedness and the ability of businesses to make decisions. The null hypothesis is rejected since the t-value of 8.45

is statistically significant at  $p < 0.05$ . This proves that data readiness has a major impact on how small and medium-sized enterprises (SMEs) in Delta State make decisions.

**Research Question 2:** What is the effect of employee training on business decision-making in SMEs in Delta State?

**Table 3: Effect of Employee Training on Business Decision-Making in SMEs**

Statement on Employee Training	SA (%)	A (%)	D (%)	SD (%)	Mean	Std. Dev.	Interpretation
Employees receive adequate AI-related training.	42.0	36.0	15.0	7.0	3.13	0.81	Agreed (Adequate training)
Training programs align with business needs.	44.0	33.0	18.0	5.0	3.16	0.76	Agreed (Alignment with needs)
Employees are confident in applying AI tools.	40.0	37.0	18.0	5.0	3.12	0.78	Agreed (Confidence in tools)
Training enhances decision-making capabilities.	46.0	35.0	15.0	4.0	3.23	0.74	Strongly Agreed
On-the-job training is frequently provided.	39.0	38.0	17.0	6.0	3.10	0.80	Agreed (Frequent training)

Table 3's findings point to a favourable relationship between SMEs' training programs and the decisions their employees make for the company. All questions have average means above 3.0, indicating that most people think that educating employees is important for their decision-making skills. The fact that "training enhances decision-making capabilities" had the highest mean score (3.23) suggests that, after receiving sufficient training, employees feel more capable and secure in their decision-making abilities. Additionally, the training is relevant and helps solve real difficulties, as shown by the

alignment of training programs with company needs (mean of 3.16). While on-the-job training is still generally well-received, the somewhat lower mean for "on-the-job training is frequently provided" (3.10) indicates that there might be room to expand its frequency. Consequently, educating employees is seen as crucial for better company decision-making.

**HO<sub>2</sub>:** Employee training has no significant effect on business decision-making in small and medium-scale enterprises in Delta State.

**Table 4: Correlation Between Employee Training and Business Decision-Making in SMEs**

Variable	Mean	Std. Dev.	Correlation (r)	t-value	p-value	Decision
Employee Training	3.15	0.80	0.72	9.12	0.000	Reject H <sub>0</sub>
Business Decision-Making	3.25	0.79				

A strong positive association ( $r = 0.72$ ) between company decision-making and staff training is revealed by the analysis. Since the t-value is 9.12 and the p-value is less than 0.05, the

null hypothesis can be rejected. It appears that training employees greatly improves the decision-making process in SMEs.

**Research Question 3:** How does leadership support affect business decision-making in SMEs in Delta State?

**Table 5: Effect of Leadership Support on Business Decision-Making SMEs**

Statement on Leadership Support	SA (%)	A (%)	D (%)	SD (%)	Mean	Std. Dev.	Interpretation
Leaders encourage AI adoption in decision-making.	48.0	38.0	10.0	4.0	3.30	0.72	Strongly Agreed
Leadership allocates resources for AI projects.	46.0	37.0	12.0	5.0	3.24	0.75	Agreed (Resource allocation)
Leaders provide training opportunities.	43.0	40.0	12.0	5.0	3.21	0.78	Agreed (Support for training)
Leadership ensures alignment of AI with goals.	47.0	36.0	12.0	5.0	3.25	0.74	Strongly Agreed
Leaders monitor the impact of AI on decisions.	44.0	38.0	13.0	5.0	3.22	0.77	Agreed (Impact monitoring)

The data in Table 5 clearly shows that having the support of leadership is seen as a crucial factor for making effective business decisions. Respondents hold leadership in high esteem when it comes to AI adoption, resource allocation, and decision-making, as seen by mean scores all above 2.50. With a mean score of 3.30, "leaders encourage AI adoption in decision-making" clearly indicates that leadership is pushing for the incorporation of AI into decision-making processes, underscoring the significance of leadership vision. Additionally, the results for "leadership allocates resources for AI projects" (3.24) and "leaders ensure alignment of AI with goals" (3.25) highlight that leadership is dedicated to providing resources for the successful

implementation of AI, in addition to providing direction. While monitoring is crucial, it may not be as regular or emphasised as other forms of leadership assistance, but it is still acknowledged positively, based on the somewhat lower mean for "leaders monitor the impact of AI on decisions" (3.22). In small and medium-sized enterprises (SMEs), the leadership is crucial in determining the results of decisions by providing resources, direction, and support.

**HO<sub>3</sub>:** Leadership support has no significant effect on business decision-making in small and medium-scale enterprises in Delta State.

**Table 6: Correlation Between Leadership Support and Business Decision-Making in SMEs**

Variable	Mean	Std. Dev.	Correlation (r)	t-value	p-value	Decision
Leadership Support	3.24	0.76	0.75	9.68	0.000	Reject H <sub>0</sub>
Business Decision-Making	3.25	0.79				

The results demonstrate a highly significant positive relationship ( $r = 0.75$ ) between the backing of leadership and corporate decision-making. Because the t-value is 9.68 and the p-value is less than 0.05, the null hypothesis can be rejected. This proves that SMEs' leadership support greatly affects their business decisions.

**Findings**

The results of the analysed data revealed the following findings:

1. Data preparedness significantly improves decision-making in SMEs by ensuring the

availability of accessible, high-quality, and structured data for effective AI utilization.

2. Training employees enhances SMEs' decision-making capabilities by equipping staff with the skills and confidence needed to use AI tools effectively.
3. Leadership buy-in is the most critical factor influencing AI-driven decision-making, as it drives resource allocation, organizational alignment, and fosters a culture of innovation.

**IV. CONCLUSION**

The study's results showed that SMEs in Delta State, Nigeria, get substantial benefits from

incorporating AI into their commercial decision-making processes. Improved decision-making is a byproduct of data preparedness, which guarantees that organisations have access to trustworthy, high-quality data. By providing workers with the knowledge and assurance to make good use of AI tools and understand data, training helps improve decision-making. The most important component is having the support of leadership. This will help to create an innovation culture, allocate resources properly, and match organisational goals with AI strategy. For small and medium-sized enterprises (SMEs) to reap the full benefits of artificial intelligence (AI) adoption, these results stress the need of technical readiness, human capacity building, and organisational commitment.

## V. RECOMMENDATIONS

The study recommends thus:

1. To guarantee the availability of trustworthy, high-quality data for decision-making, SMEs should invest in data management systems, which should be a priority when it comes to data preparation.
2. In order to enhance staff competency in running AI systems and interpreting data, it is recommended that continuous employee training be institutionalised.
3. Small and medium-sized enterprise (SME) leadership should allocate resources, offer strategic direction, and cultivate an innovation-friendly atmosphere to actively promote the implementation of artificial intelligence (AI).
4. In order to encourage SMEs to use AI, policymakers and appropriate business development organisations should establish initiatives to do so.

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