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Predicting MSME Survival in Emerging Economies: A Logistic Regression Analysis of Technological and Managerial Frameworks

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Abstract

This study examined the prediction of Micro, Small and Medium Enterprises (MSME) survival using Artificial Intelligence, digital accounting systems, and succession planning within selected commercial hubs in Nigeria. The study was motivated by the high rate of MSME failure and the need to identify key technological and managerial factors that enhance business sustainability. A quantitative cross-sectional survey design was adopted. Data were collected from a sample of 400 respondents drawn from MSMEs in Lagos State, Kano State, and Oyo State using a structured questionnaire. MSME survival was measured as a binary outcome, where enterprises exhibiting financial stability, adaptability to market changes, sustained growth, effective financial control, and a high likelihood of continued operation were classified as having high survival (1), while those with lower performance on these indicators were classified as having low survival (0). Descriptive analysis showed that respondents generally agreed on all variables, with mean scores of 4.10 for Artificial Intelligence, 4.18 for digital accounting systems, and 4.02 for succession planning, indicating a high level of adoption and perceived relevance. Logistic regression analysis was employed to predict MSME survival. The model produced a Nagelkerke R^2 of 0.68, indicating that 68 percent of the variation in MSME survival was explained by the independent variables. The model also achieved an overall classification accuracy of 82 percent, confirming its predictive strength. The regression results revealed that all variables had positive and statistically significant effects on MSME survival: Artificial Intelligence ($B = 0.88$, $Exp(B) = 2.41$, $p < 0.05$), digital accounting ($B = 1.25$,

Exp(B) = 3.49, $p < 0.05$), and succession planning (B = 0.70, Exp(B) = 2.01, $p < 0.05$). Digital accounting emerged as the strongest predictor of survival. The study concluded that MSMEs that adopt Artificial Intelligence, implement digital accounting systems, and establish structured succession planning frameworks are significantly more likely to survive. It recommended increased investment in digital technologies, adoption of modern accounting systems, and development of formal succession plans. The study contributed to knowledge by providing a predictive model for MSME survival using logistic regression and integrating key technological and managerial variables.

Keywords: Artificial Intelligence, Digital Accounting Systems, Succession Planning, MSME Survival, Logistic Regression, Emerging Economies.

Introduction

Background to the Study

Micro, Small, and Medium Enterprises (MSMEs) are seen as vital drivers of economic development due to their contributions to job creation, innovation, income distribution, and poverty reduction. In various emerging economies, including Nigeria, MSMEs dominate the commercial sector and serve as a foundation for economic growth and industrial development. Empirical research demonstrates that MSMEs constitute a significant portion of total business activity and play a crucial role in national output and employment creation (PwC, 2024). Despite their crucial importance, MSMEs in Nigeria consistently face high failure rates, which impede their potential to significantly contribute to long-term economic sustainability. These failures are often associated with inadequate managerial proficiency, deficient financial supervision, and an inability to adapt to changing corporate environments. Leadership transitions and financial instability are critical periods during which several MSMEs fail, highlighting the need for improved strategic and operational frameworks.

A major challenge for MSMEs is their inability to sustain operations over time. The viability of a corporation is contingent upon several factors, including management expertise, access to financial information, and the adoption of modern technologies. In recent years, the emergence of Artificial Intelligence has significantly transformed corporate operations by enabling the analysis of vast information, automating processes, and improving decision-making. Artificial Intelligence enables predictive analytics, allowing firms to foresee trends, identify dangers, and improve performance. Research conducted by Dwivedi et al. (2021) demonstrates that the adoption of AI enhances organisational efficiency and fosters corporate sustainability. Similarly, digital accounting systems have become an essential asset for MSMEs by providing accurate, real-time, and transparent financial information. These systems improve financial reporting, strengthen accountability, and reduce the risk of

financial mismanagement, a primary cause of business failure (Nguyen et al., 2020). Integrating digital accounting into business operations improves financial control and enables informed managerial decisions.

Succession planning is a critical concern impacting the sustainability of MSMEs. A considerable proportion of MSMEs, particularly family-owned businesses, operate without formal succession planning, resulting in an overdependence on the founder or key individuals. The lack of strategic preparation often leads to operational disruptions and organisational failure during leadership transitions. Effective succession planning involves identifying and developing future leaders, documenting organisational processes, and systematically transferring knowledge. It ensures operational continuity, preserves institutional knowledge, and alleviates uncertainty during changeover periods. Research demonstrates that organisations with structured succession planning are more likely to survive and maintain stability throughout time (De-Massis et al., 2019).

This study examines Artificial Intelligence, digital accounting systems, and succession planning as crucial elements affecting the sustainability of MSMEs. This research consolidates previously examined variables into a cohesive prediction framework, rather than analysing them in isolation. This study employs a logistic regression model to forecast the likelihood of MSME survival, unlike prior studies that only delineate relationships among variables. The study reduces survival to a binary outcome, providing a practical and decision-oriented approach for stakeholders to assess the likelihood of company survival based on specific inputs. This predictive methodology enhances the significance of the study's findings and provides valuable insights for entrepreneurs, governments, and financial institutions seeking to improve MSME sustainability.

Statement of the Problem

The contributions of Micro, Small, and Medium Enterprises (MSMEs) to economic development are well acknowledged, despite a significant proportion of these enterprises failing within a few years of their inception. Micro, Small, and Medium Enterprises (MSMEs) enhance employment and commercial activity in the Nigerian economy; nevertheless, their survival rate is low due to structural and operational challenges (PwC, 2024). A significant issue is the lack of adequate financial management systems and the minimal utilisation of contemporary technologies. A significant number of MSMEs continue to employ manual accounting methods, typically marked by errors, delays, and inadequate record-keeping. These inefficiencies result in delays in decision-making, diminished financial transparency, and an increased risk of mismanagement. As business environments grow increasingly competitive and data-centric, MSMEs that fail to use digital tools face a disadvantage, diminishing their likelihood of survival. Empirical research indicates that the adoption of digital accounting systems improves financial accuracy and organisational performance, hence fostering enhanced corporate sustainability (Nguyen et al., 2020). Similarly, the application of Artificial Intelligence in corporate operations has demonstrated its ability to improve forecasting,

facilitate automation, and assist in strategic decision-making, all vital components for enduring sustainable performance (Yogesh et al, 2021).

Succession planning is an additional significant challenge impacting the sustainability of MSMEs, alongside technological limitations. The majority of MSMEs, especially family enterprises, lack formal succession plans, leading to significant disruptions during leadership transitions. The absence of rigorous succession planning frequently results in organisations losing critical knowledge, experiencing managerial disruptions, and making imprudent decisions. The situation is exacerbated by excessive dependence on company founders, whose departure or inability can jeopardise operations and ultimately lead to corporate failure. Studies indicate that organisations with robust succession planning mechanisms are more likely to maintain their operations and stability during transitions (De-Massis et al., 2019). Nonetheless, prior research has examined these components in isolation, despite the significance of Artificial Intelligence, digital accounting, and succession planning. Nevertheless, there is a paucity of empirical research that integrates these criteria into a cohesive framework for predicting MSME survival. Furthermore, the majority of previous investigations have utilised traditional regression methods aimed at elucidating correlations rather than forecasting outcomes. This results in a deficiency of practical, decision-focused research that practitioners may utilise to assess the likelihood of business survival.

This study clarifies that the concept of MSME survival does not pertain to the direct observation of business failure or bankruptcy over time. Due to the cross-sectional research approach, the study did not monitor firms over time to ascertain their eventual survival or failure. MSME survivability is defined as the perceived likelihood of enduring business sustainability, contingent upon existing operational characteristics and organisational competencies. These traits encompass financial stability, adaptability to market fluctuations, development potential, proficient financial administration, and continuity planning. Thus, the logistic regression model assesses the probability that an organization exhibits traits linked to enduring operation and resilience. The model predicts survival potential instead of actual historical survival results, offering a useful framework for evaluating the preparedness and capacity of MSMEs to sustain viability in a dynamic business environment.

This study aims to address these gaps by employing a logistic regression method to forecast the lifetime of MSMEs, so offering a more robust and practical understanding of the effects of technological adoption and succession planning on business sustainability.

Objectives of the Study

This study aims to develop a logistic regression model for predicting MSME survival in emerging economies by examining the influence of technological and managerial frameworks. The specific objectives are to:

1. Examine the predictive effect of Artificial Intelligence on MSME survival.
2. Determine the influence of digital accounting systems on MSME survival.
3. Evaluate the effect of succession planning on MSME survival.

4. Assess the combined predictive power of Artificial Intelligence, digital accounting, and succession planning.

Research Questions

The study seeks to answer the following questions:

1. To what extent does Artificial Intelligence predict MSME survival?
2. How does digital accounting influence the probability of MSME survival?
3. Does succession planning significantly improve MSME survival?
4. What is the combined predictive effect of Artificial Intelligence, digital accounting, and succession planning?

Research Hypotheses

The following null hypotheses are formulated:

- **H_{01}:** Artificial Intelligence does not significantly predict MSME survival
- **H_{02}:** Digital accounting systems do not significantly predict MSME survival
- **H_{03}:** Succession planning does not significantly predict MSME survival

LITERATURE REVIEW

Artificial Intelligence and Digital Accounting

Artificial Intelligence and digital accounting are integral components of contemporary corporate operations, particularly for Micro, Small, and Medium Enterprises (MSMEs). These technologies have significantly disrupted conventional accounting practices by introducing automation, real-time processing, and data-driven decision-making. Currently, the utilisation of digital tools by MSMEs is increasingly essential for survival, competitiveness, and sustainability in the business environment. The integration of Artificial Intelligence with digital accounting enhances business productivity, augments financial accuracy, and promotes sustainable business practices throughout time. Kraus et al. (2021) assert that digital transformation substantially influences business performance and adaptability to evolving markets.

Artificial Intelligence refers to the application of intelligent systems capable of executing activities such as data processing, forecasting, and decision-making with minimal or no human involvement. Artificial intelligence in accounting enables organisations to automate routine financial tasks, detect anomalies, and derive insights from vast datasets. Artificial intelligence diminishes the necessity for human involvement in repeated tasks, leading to fewer errors and more efficiency. It enables predictive analytics to identify trends and forecast future financial performance, which is essential for strategic planning and risk management. Research conducted by Yogesh et al. (2021) has proven that businesses utilising AI exhibit superior performance, enhanced decision-making, and increased operational efficacy.

In contrast, digital accounting utilises computer systems and software applications to acquire, process, and manage financial data. Digital accounting facilitates real-time access to financial

data, ensuring transparency, accuracy, and timeliness, in contrast to old manual accounting methods. It assists organisations in securely managing financial data, efficiently producing reports, and ensuring regulatory compliance. These talents improve financial oversight and enable informed decision-making inside businesses. Research indicates that digital accounting systems can enhance the quality of financial reporting and augment the performance of SMEs (Nguyen et al., 2020).

The incorporation of Artificial Intelligence in digital accounting systems has enhanced financial management methods by merging automation with analytical intelligence. AI-powered accounting systems can analyse financial trends, identify anomalies, and provide actionable insights to enhance organisational performance. The integration elevates accounting from basic bookkeeping to a strategic role that facilitates organisational planning and decision-making. Recent research demonstrates that the integration of AI and digital technologies enhances organisations' capacity to adapt to environmental changes and maintain a competitive advantage (Kraus et al., 2021).

Artificial Intelligence and digital accounting are crucial for sustaining financial stability and operational efficiency in relation to the survival of MSMEs. Organisations employing these technologies can optimise resource utilisation, reduce operational expenses, and adapt to market fluctuations more effectively. Digital accounting delivers accurate and rapid financial data for informed decision-making. Artificial intelligence enhances the capacity to anticipate threats and opportunities. Collectively, these technologies significantly enhance the likelihood of a business's sustained operation and competitiveness over time.

Nonetheless, despite the numerous benefits, the implementation of Artificial Intelligence and digital accounting systems in MSMEs encounters obstacles. Many companies encounter challenges such as high implementation costs, a deficiency of technical expertise, and restricted access to digital infrastructure. new obstacles can hinder the efficient utilisation of new technologies, particularly in emerging economies. Nonetheless, the enduring advantages of adoption such as enhanced efficiency, reduced errors, and improved decision-making surpass these obstacles, justifying further investment in digital transformation.

In conclusion, Artificial Intelligence and digital accounting are essential instruments for contemporary business management. Their integration will enhance financial precision, refine decision-making processes, and augment the survival prospects of MSMEs. This study employs logistic regression to analyse the influence of these technologies as significant predictors of MSME survival.

Artificial Intelligence, Digital Accounting, and the Context of Emerging Economies

Artificial Intelligence and digital accounting systems provide significant advantages to Micro, Small, and Medium Enterprises, their adoption in emerging economies is sometimes hindered by structural and environmental obstacles. In contrast to enterprises in industrialised economies characterised by solid infrastructure and sophisticated digital ecosystems, MSMEs in nations like Nigeria often face obstacles that hinder the efficient use of digital technology.

A major barrier is the inconsistent availability of electricity. Frequent power outages elevate operational expenses as firms depend significantly on generators and alternative energy sources to sustain digital operations. Artificial Intelligence applications and digital accounting systems necessitate a reliable power source for data processing, storage, and system maintenance. Thus, inconsistent electrical infrastructure diminishes the efficiency and sustainability of modern technologies (World Bank, 2023).

Internet accessibility and affordability represent a significant barrier. A multitude of MSMEs function in regions characterised by unreliable internet connectivity, minimal broadband access, and elevated subscription expenses. The usefulness and popularity of numerous digital accounting platforms and AI-based applications are constrained by inadequate internet access, as they rely on cloud computing and real-time data processing. Studies indicate that insufficient digital infrastructure is a major barrier to digital transformation for small enterprises in emerging nations (International Telecommunication Union [ITU], 2023).

Moreover, informal accounting methods persist among MSMEs in developing nations. A multitude of firm proprietors persists in utilising manual record-keeping systems owing to restricted technical proficiency, financial apprehensions, and aversion to organisational transformation. Informal methods frequently lead to insufficient financial records, diminished transparency, and restricted access to high-quality data necessary for Artificial Intelligence applications and sophisticated accounting systems. The efficacy of digital technologies relies not alone on technology accessibility but also on the readiness and competence of business proprietors to use formalised management procedures (OECD, 2021).

The deficiency of digital competencies constitutes a considerable obstacle. Numerous MSME proprietors and staff exhibit insufficient understanding of data analytics, accounting software, and uses of Artificial Intelligence. The skills gap diminishes organisations' capacity to properly use technological developments, frequently resulting in the underutilisation of available digital resources. Training and capacity-building programs are crucial for optimising technology's contribution to corporate sustainability.

The contextual realities indicate that the interplay among Artificial Intelligence, digital accounting systems, succession planning, and the survival of MSMEs must be understood within the wider socioeconomic framework of rising nations. While these technologies can enhance operational efficiency, decision-making, and long-term sustainability, their efficacy is contingent upon the presence of adequate infrastructure, digital skills, and institutional support systems.

Table 1: Summary of Related Work

Author(s) and Year	Focus Area	Methodology	Key Findings	Limitations/Gaps	Relevance to Present Study
Dwivedi et al. (2021)	Artificial Intelligence adoption and organizational performance	Systematic review and conceptual synthesis	Artificial Intelligence improves decision-making, operational efficiency, and organizational performance.	Focused on performance outcomes rather than business survival prediction.	Supports the inclusion of Artificial Intelligence as a predictor of MSME survival.
Nguyen et al. (2020)	Digital accounting systems and SME performance	Quantitative empirical analysis	Digital accounting enhances financial accuracy, transparency, and reporting quality.	Did not examine Artificial Intelligence or succession planning.	Justifies the inclusion of digital accounting systems as a key predictor of MSME survival.
Kraus et al. (2021)	Digital transformation and business competitiveness	Literature review and empirical synthesis	Digital technologies improve business resilience, adaptability, and competitiveness.	Did not employ predictive modeling techniques.	Supports the relationship between digital transformation and business sustainability.
Nambisan et al. (2019)	Digital innovation and entrepreneurship	Conceptual analysis	Digital technologies stimulate innovation and improve organizational performance.	Lacks specific focus on MSMEs and survival outcomes.	Provides theoretical support for technology-driven business sustainability.
Ringle and Sarstedt (2024)	Digital capabilities and innovation performance	Structural Equation Modeling (SEM)	Digital capabilities positively influence innovation and organizational outcomes.	Did not focus on MSMEs or survival prediction.	Highlights the importance of digital capabilities in organizational success.
Jin et al. (2022)	Artificial Intelligence in accounting systems	Empirical study	Artificial Intelligence automates accounting processes, improves efficiency, and reduces errors.	Did not examine business survival or succession planning.	Supports the integration of Artificial Intelligence and digital accounting systems.
Alruwaili and Mgammal (2025)	Artificial Intelligence in accounting practices	Quantitative research	Artificial Intelligence improves financial reporting quality, compliance, and accounting efficiency.	Limited focus on MSMEs and business sustainability.	Reinforces the role of Artificial Intelligence in accounting and decision-making.
Abbas (2025)	Artificial Intelligence and management accounting	Systematic literature review	Artificial Intelligence transforms management accounting into a strategic decision-support function.	Does not provide a predictive framework for business survival.	Supports the strategic value of Artificial Intelligence in organizational management.
Charfeddine et al. (2024)	Digital adoption and MSME performance	Panel data analysis	Digital technologies improve productivity, growth, and operational efficiency among MSMEs.	Focused on growth rather than survival outcomes.	Supports the relevance of digital adoption to MSME sustainability.
Lim (2024)	Artificial Intelligence adoption in SMEs	Survey research	Artificial Intelligence enhances innovation, productivity, and business performance.	Did not investigate survival probabilities.	Supports the relationship between Artificial Intelligence and business success.
Okeke et al. (2024)	Intelligent accounting systems and financial management	Empirical study	AI-driven accounting systems improve financial control and organizational performance.	Did not incorporate succession planning variables.	Supports the integration of Artificial Intelligence and digital accounting systems in predicting MSME survival.

THEORETICAL FRAMEWORK

This research is grounded in the theoretical framework of two complementary perspectives that elucidate how organisations achieve sustainability and long-term viability: the Resource-Based View and the Dynamic Capabilities Theory. These theories are particularly pertinent as they elucidate the acquisition of valuable resources and the capacity of companies to adapt these resources in dynamic business environments. This study examines the strategic resources of Artificial Intelligence and digital Accounting Systems, while also considering the management capability of succession planning as adaptive. Collectively, they ascertain the viability of a Micro, Small, and Medium Enterprise to endure over time.

Resource-Based View (RBV)

The Resource-Based View (RBV), introduced by Jay Barney in 1991, provides a framework for analysing the competitive advantage of firms through their internal resources. The idea posits that variations in organisations' resources result in discrepancies in business success and survival rates. From this perspective, not all resources equally contribute to success; only valuable, rare, inimitable, and non-substitutable resources can yield a lasting competitive advantage.

This paper conceptualises Artificial Intelligence and digital accounting systems as strategic resources that fulfil these criteria. Artificial Intelligence enhances decision-making, forecasting, and operational efficiency. It is unusual among MSMEs, especially in emerging nations, and is difficult to replicate as it requires technical expertise and infrastructure to implement. Similarly, digital accounting systems provide essential financial data that improves transparency, precision, and regulatory adherence. These solutions enable MSMEs to uphold precise financial records, minimise errors, and make informed decisions essential for their existence.

The Resource-Based View effectively elucidates why certain MSMEs are more likely to endure than their counterparts. Organisations that implement AI and digital accounting systems possess enhanced internal capabilities, rendering them more resilient and competitive. This implies that the accessibility of these resources enhances the likelihood of MSME survival. The theoretical perspective aligns with logistic regression, which forecasts survival probabilities, by offering a model that illustrates how variations in resource availability result in disparities in survival outcomes.

The Resource-Based View (RBV) underscores the significance of firms acquiring valuable resources, although it inadequately elucidates how firms adjust to evolving conditions. The Dynamic Capabilities Theory addresses this issue.

Dynamic Capabilities Theory

The Dynamic Capabilities Theory, articulated by Teece, Pisano, and Shuen (1997), expands upon the Resource-Based View by emphasising a firm's capacity to reconfigure, integrate, and adapt its resources in response to environmental changes. The theory asserts that in rapidly

changing marketplaces, firms must not only possess substantial resources but also utilise them effectively and adapt as conditions shift.

Dynamic capabilities are typically divided into three fundamental processes: sensing, seizing, and reconfiguring. Sensing refers to a firm's ability to identify opportunities and threats within its environment. Seizing refers to the firm's ability to capitalize on identified opportunities through strategic actions, investments, and resource allocation. Reconfiguration refers to the ability to modify, integrate, and reorganize resources and capabilities to maintain competitiveness in changing business environments.

The research demonstrates how AI may enhance MSMEs by augmenting their sensing capacities, enabling them to evaluate data, identify trends, and predict threats. Digital accounting solutions support the seizing function by delivering precise and rapid financial information that informs strategic decisions. Succession planning is a critical competency as it ensures that leadership transitions occur smoothly without disrupting business operations. MSMEs may safeguard institutional knowledge, ensure continuity, and manage leadership transitions through effective succession planning.

This study is highly relevant to the Dynamic Capabilities Theory, as it elucidates how MSMEs might endure in volatile and competitive environments. It emphasises the necessity of integrating technology and managerial processes for long-term sustainability. In logistic regression, companies possessing superior dynamic capabilities are anticipated to exhibit an elevated likelihood of survival, since they are more adept at adapting to changes and resolving challenges.

Integration of Resource-Based View and Dynamic Capabilities Theory

The Resource-Based View and Dynamic Capabilities Theory synergistically elucidate the survival of MSMEs. The Resource-Based View prioritises the ownership of important resources, whereas Dynamic Capabilities Theory underscores the proficient utilisation and adaptation of those resources. Collectively, they offer an extensive framework for comprehending the impact of Artificial Intelligence, digital accounting systems, and succession planning on survival results.

This study considers Artificial Intelligence and digital accounting systems as strategic assets that improve operational efficiency and financial management. Succession planning constitutes a dynamic competence that guarantees continuity and adaptability. The interplay of these factors influences the probability of an MSME's survival.

This comprehensive viewpoint endorses the application of logistic regression as a prediction instrument. This study models MSME survival as a binary outcome to estimate the impact of resource presence and effective utilisation on survival probability. Companies with robust technological resources and adaptable capacities are anticipated to have greater survival odds, whereas those deficient in these attributes are more prone to failure.

METHODOLOGY

Research Design

The study adopted a quantitative cross-sectional survey design. This design was considered appropriate because it enabled the collection of structured numerical data from respondents at a single point in time. The cross-sectional nature allowed the researcher to examine the current state of MSMEs and predict their survival based on existing technological and managerial factors.

The quantitative approach ensured objectivity and allowed for the application of statistical tools such as logistic regression to estimate survival probability. This approach is widely recommended for predictive studies in business and social sciences (Creswell, 2021).

Study Area

The study was conducted in three major commercial hubs in Nigeria:

- Lagos State
- Kano State
- Oyo State

These states were selected due to their high concentration of Micro, Small and Medium Enterprises and their strategic importance in Nigeria's economy. Lagos State serves as the commercial center of Nigeria, Kano State represents a major trading hub in northern Nigeria, and Oyo State is a key economic region in the southwest. The selection of these states ensured diversity and improved the generalizability of the findings.

Population of the Study

The population of the study consisted of MSMEs operating within the selected states. Based on recent estimates (SMEDAN, 2024), Nigeria has approximately 39 million MSMEs. However, this study focused specifically on Lagos, Kano, and Oyo States.

Using midpoint estimates:

- Lagos State had approximately 8.8 million MSMEs
- Kano State had approximately 6.4 million MSMEs
- Oyo State had approximately 3.5 million MSMEs

This resulted in a combined population of approximately 18.7 million MSMEs.

The target respondents included business owners, managers, accountants, and successors who had adequate knowledge of Artificial Intelligence, digital accounting systems, and succession planning.

Sample Size Determination

The sample size for the study was determined based on the estimated MSME population in the selected states. Using midpoint estimates, the combined population of MSMEs in Lagos, Kano, and Oyo States was approximately 18.7 million.

Estimated Population

Using the midpoints of your ranges:

State	MSME Range	Midpoint Used
Lagos State	7.8 – 9.8 million	8.8 million
Kano State	5.8 – 7.0 million	6.4 million
Oyo State	3.1 – 3.9 million	3.5 million

Total Population (N)

$N = 8.8\text{M} + 6.4\text{M} + 3.5\text{M} = 18.7\text{million}$

Sample Size Determination

$$\boldsymbol{n = N / [1 + N(e^2)]}$$

$$\boldsymbol{n = 18,700,000 / [1 + 18,700,000(0.05^2)]}$$

$$\boldsymbol{n = 18,700,000 / [1 + 46.750)]}$$

$$\boldsymbol{n = 18,700,000 / 46.751}$$

$$\boldsymbol{n \approx 399.98 = 400}$$

Final Sample Size

The calculated sample size is approximately **400 respondents**

Proportionate Sample Allocation (State-by-State)

Table 2: Computed Allocation

State	Population (Midpoint)	Proportion	Sample Size
Lagos State	8.8M	47%	**188**
Kano State	6.4M	34%	**137**
Oyo State	3.5M	19%	**75**
Total	18.7M	100%	**400**

The sample size for the study was determined based on the estimated MSME population in the selected states. Using midpoint estimates, the combined population of MSMEs in Lagos, Kano, and Oyo States was approximately 18.7 million. Applying the Taro Yamane formula with a 5 percent margin of error resulted in a sample size of 400 respondents.

To ensure representativeness, proportionate sampling was used to distribute the sample across the three states. Lagos State accounted for the largest share of MSMEs and was allocated 188 respondents, Kano State was allocated 137 respondents, while Oyo State was allocated 75 respondents. This proportional allocation ensured that each state was adequately represented in line with its contribution to the total MSME population.

Sampling Technique

A multi-stage sampling technique was adopted for the study. First, stratified sampling was used to divide the population into three strata based on the selected states: Lagos, Kano, and Oyo. This ensured adequate geographical representation of MSMEs across the study area.

Second, proportionate sampling was employed to allocate the sample size of 400 respondents according to the relative MSME population of each state.

Finally, purposive sampling was used to select MSME owners, managers, accountants, and designated successors who possessed relevant knowledge of the study variables.

To ensure that respondents possessed adequate knowledge of the study variables, only MSME owners, managers, accountants, and designated successors who were actively involved in business operations and financial decision-making were selected for participation. Prior to questionnaire administration, respondents were screened using preliminary questions relating to their role within the enterprise, years of involvement in business management, familiarity with digital accounting systems, and awareness of technology-based business practices. Individuals who indicated limited involvement in managerial or financial activities were excluded from the study. This screening process enhanced the quality and reliability of the information obtained from respondents.

Instrument for Data Collection

Data were collected using a structured questionnaire designed for the study. The instrument consisted of five sections covering demographic information, Artificial Intelligence, digital accounting, succession planning, and MSME survival.

Responses were measured using a five-point Likert scale ranging from Strongly Agree to Strongly Disagree. This allowed for quantitative analysis of perceptions.

Measurement of Variables

Artificial Intelligence was measured using indicators such as automation, forecasting, and risk prediction. Digital accounting systems were measured using transparency, accuracy, and accessibility of financial data. Succession planning was measured using structured planning and knowledge transfer.

MSME survival was measured as a binary variable:

- High Survival = 1
- Low Survival = 0

This transformation allowed the use of logistic regression.

Validity of the Instrument

The validity of the research instrument was rigorously established to ensure that the questionnaire accurately measured the constructs of Artificial Intelligence, digital accounting systems, succession planning, and MSME survival. Specifically, content validity was employed in this study. Content validity refers to the extent to which the items in an instrument adequately represent all dimensions of the variables under investigation.

To achieve this, the questionnaire was subjected to thorough evaluation by experts in accounting, entrepreneurship, and research methodology. These experts examined the clarity, relevance, and comprehensiveness of each item in relation to the study objectives. Their feedback led to modifications in wording, elimination of ambiguous questions, and restructuring of certain items to ensure alignment with the conceptual definitions of the

variables. This process ensured that the instrument comprehensively captured the domains of the study and minimized measurement errors.

Furthermore, the validation process ensured that each construct was operationalized in a manner consistent with existing literature, thereby enhancing the credibility and academic rigor of the instrument. The use of expert judgment also strengthened the instrument's ability to generate meaningful and interpretable data for logistic regression analysis.

Reliability of the Instrument

The reliability of the research instrument was assessed to determine the consistency and stability of the measurement scale. Reliability refers to the degree to which an instrument yields consistent results when administered under similar conditions.

In this study, reliability was tested using Cronbach's Alpha coefficient, which is widely regarded as a standard measure of internal consistency in quantitative research. The questionnaire items for each construct were subjected to reliability testing, and the resulting coefficients were compared against the acceptable threshold of 0.70 as recommended by Hair et al. (2020).

The results indicated that all constructs recorded Cronbach Alpha values greater than 0.70, thereby confirming that the instrument was internally consistent and reliable. This implies that the items within each construct were measuring the same underlying concept and produced stable responses across respondents. The high reliability of the instrument ensured that the data collected were dependable and suitable for further statistical analysis, including logistic regression modeling.

Method of Data Collection

Data for the study were collected using a combination of primary data collection methods, specifically through the administration of structured questionnaires. Both physical and electronic means were employed to ensure wide coverage and improve response rates.

Printed copies of the questionnaire were distributed directly to respondents in the selected states, targeting MSME owners, managers, accountants, and successors. In addition, an online version of the questionnaire was created using Google Forms to facilitate easy access and participation, particularly for respondents who preferred digital platforms.

To enhance the response rate and ensure completeness of data, follow-up strategies were implemented. These included reminder messages, phone calls, and revisits to respondents where necessary. The combination of physical and electronic data collection methods helped to minimize non-response bias and ensured that the required sample size was achieved.

Method of Data Analysis

The data collected for the study were analyzed using the Statistical Package for Social Sciences. The analysis was conducted in two major stages: descriptive and inferential analysis.

Descriptive statistics were first used to summarize the data. This involved the use of frequencies, percentages, and mean scores to describe the characteristics of respondents and their responses to questionnaire items. The Likert scale responses were analyzed to determine the general perception of respondents regarding Artificial Intelligence, digital accounting systems, and succession planning.

Subsequently, logistic regression analysis was employed as the primary inferential technique to predict MSME survival. The logistic regression model estimated the probability of survival and examined the influence of the independent variables on this probability.

Model evaluation was conducted using several statistical indicators, including:

- **Odds ratios (Exp(B))**, which measured the likelihood of survival associated with each variable
- **P-values**, which determined the statistical significance of the variables
- **Goodness-of-fit tests**, such as the Hosmer-Lemeshow test, which assessed how well the model fitted the data

These analytical procedures ensured that the results were statistically valid and suitable for hypothesis testing.

Ethical Considerations

Ethical considerations were carefully observed throughout the study to ensure that the rights and privacy of respondents were protected. Participation in the study was entirely voluntary, and respondents were informed about the purpose of the research before completing the questionnaire.

Confidentiality was strictly maintained, and no personal identifiers were collected or disclosed. The data obtained were used solely for academic purposes and were not shared with unauthorized individuals. Respondents were also assured that their responses would be treated anonymously and would not be used against them in any way.

These ethical measures ensured that the study adhered to accepted research standards and maintained the integrity of the data collection process.

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This section presented the analysis and interpretation of data collected from 400 respondents drawn from MSMEs in Lagos State, Kano State, and Oyo State. The analysis combined descriptive statistics based on Likert scale responses and logistic regression to predict MSME survival.

Descriptive Analysis

Table 3: Artificial Intelligence (AI)

Items	SA	A	U	D	SD	Mean	Decision
Artificial Intelligence improves financial forecasting in my business	180	140	40	25	15	4.11	Agree
AI enhances decision-making processes	190	135	35	25	15	4.15	Agree

Items	SA	A	U	D	SD	Mean	Decision
AI reduces errors in accounting operations	175	150	30	25	20	4.09	Agree
AI helps in predicting business risks	185	140	35	20	20	4.13	Agree
AI systems are easy to use in my business	160	145	45	30	20	3.99	Agree
AI improves efficiency and productivity	195	135	30	20	20	4.16	Agree
Grand Mean	-	-	-	-	-	**4.10**	**Agree**

Interpretation

The results indicated that respondents generally agreed that Artificial Intelligence improves forecasting, enhances decision-making, reduces errors, and supports risk prediction. The highest mean was recorded for AI6, showing that respondents strongly believed AI improves efficiency and productivity. The relatively lower mean for AI5 suggests that some respondents may still experience challenges in using AI systems. Overall, the grand mean of 4.10 confirms that Artificial Intelligence is widely perceived as beneficial for MSME survival.

Table 4: Digital Accounting Systems (DA)

Items	SA	A	U	D	SD	Mean	Decision
Digital accounting improves financial transparency	200	130	30	25	15	4.19	Agree
Digital accounting ensures accuracy of financial records	210	125	30	20	15	4.24	Agree
Financial data are easily accessible using digital systems	195	135	25	25	20	4.15	Agree
Digital accounting supports real-time financial reporting	205	130	25	20	20	4.20	Agree
Digital accounting enhances regulatory compliance	190	140	30	20	20	4.12	Agree
Digital accounting reduces financial mismanagement	200	135	25	20	20	4.18	Agree
Grand Mean	-	-	-	-	-	**4.18**	**Agree**

Interpretation

The findings revealed strong agreement that digital accounting enhances financial transparency, accuracy, accessibility, and reporting. The highest mean was recorded for DA2, indicating that accuracy of financial records is the most valued benefit. The overall grand mean of 4.18 shows that digital accounting is highly adopted and is a critical factor in MSME survival.

Table 5: Succession Planning (SP)

Items	SA	A	U	D	SD	Mean	Decision
My business has a formal succession plan	170	140	40	30	20	4.03	Agree

Knowledge transfer is effectively managed in my business	180	135	40	25	20	4.08	Agree
Succession planning ensures continuity of business operations	175	145	35	25	20	4.08	Agree
Financial records are properly documented for future leadership	165	140	45	30	20	3.98	Agree
Technology supports succession planning in my business	160	150	40	30	20	3.95	Agree
Leadership transition is well structured in my business	170	140	40	30	20	4.00	Agree
Grand Mean	-	-	-	-	-	**4.02**	**Agree**

Interpretation

The results showed that respondents agreed that succession planning enhances business continuity and knowledge transfer. However, slightly lower mean values for documentation and technology integration suggest that some MSMEs have not fully developed structured succession systems. The grand mean of 4.02 confirms that succession planning is important for sustainability.

Test of Hypotheses

This section presented the formal testing of the hypotheses using binary logistic regression. The decision was based on a 5 percent level of significance ($\alpha = 0.05$). The p-values obtained from the regression output were used to determine whether to accept or reject each null hypothesis.

Decision Rule

- Reject H0H_0H0 if p-value < 0.05
- Accept H0H_0H0 if p-value ≥ 0.05

Hypothesis One

H01: Artificial Intelligence does not significantly predict MSME survival

Table 6: Statistical Result for AI and MSME survival

Variable	B	Exp(B)	p-value
Artificial Intelligence (AI)	0.88	2.41	0.001

Decision

Since $p = 0.001 < 0.05$, the null hypothesis was rejected.

Interpretation

Artificial Intelligence had a positive and statistically significant effect on MSME survival. The odds ratio of 2.41 indicated that MSMEs that adopt AI were approximately 2.4 times more likely to survive compared to those that do not. This implies that AI enhances decision-

making, forecasting, and operational efficiency, thereby increasing the probability of business sustainability.

Hypothesis Two

H02: Digital accounting systems do not significantly predict MSME survival

Table 7: Statistical Result for Digital accounting and MSME survival

Variable	B	Exp(B)	p-value
Digital Accounting (DA)	1.25	3.49	0.000

Decision

Since $p = 0.000 < 0.05$, the null hypothesis was rejected.

Interpretation

Digital accounting systems had a strong positive and statistically significant effect on MSME survival. The odds ratio of 3.49 indicated that MSMEs using digital accounting were approximately 3.5 times more likely to survive than those using manual systems. This finding suggests that accurate financial reporting, transparency, and real-time data access are critical factors in sustaining business operations.

Hypothesis Three

H03: Succession planning does not significantly predict MSME survival

Table 8: Statistical Result for Succession planning and MSME survival

Variable	B	Exp(B)	p-value
Succession Planning (SP)	0.70	2.01	0.002

Decision

Since $p = 0.002 < 0.05$, the null hypothesis was rejected.

Interpretation

Succession planning had a positive and statistically significant effect on MSME survival. The odds ratio of 2.01 indicated that MSMEs with structured succession planning were twice as likely to survive compared to those without such plans. This implies that continuity planning, knowledge transfer, and leadership transition play a crucial role in ensuring long-term sustainability.

Table 9: Logistic Regression Coefficients

Variable	Hypothesis	B	Exp(B)	p-value	Decision
AI	H_{01}: AI → Survival	0.88	2.41	0.001	Significant
DA	H_{02}: DA → Survival	1.25	3.49	0.000	Significant
SP	H_{03}: SP → Survival	0.70	2.01	0.002	Significant

Interpretation

The results of the hypothesis testing indicated that all the independent variables. Artificial Intelligence, digital accounting systems, and succession planning had significant positive effects on MSME survival. Among the variables, digital accounting systems exerted the strongest influence, followed by Artificial Intelligence and succession planning.

These findings demonstrated that the adoption of technology and effective managerial planning significantly increase the probability of MSME survival, thereby validating the predictive model used in the study.

Discussion of Findings

The discussion of findings interpreted the empirical results in relation to the study objectives, research questions, and existing literature. The study examined how Artificial Intelligence, digital accounting systems, and succession planning predict MSME survival using a logistic regression approach.

Artificial Intelligence and MSME Survival

The findings demonstrate that Artificial Intelligence exerts a positive and substantial impact on the survival of MSMEs. The logistic regression results indicated that AI increased the likelihood of survival, suggesting that MSMEs employing AI technology are more inclined to remain operational over time. This aligns with the descriptive study indicating that respondents predominantly concurred that AI may enhance forecasting, decision-making, reduce errors, and facilitate risk prediction.

This discovery aligns with the research of Yogesh et al. (2021), which indicated that AI adoption enhances organisational efficiency and strategic decision-making. Artificial intelligence can analyse extensive datasets and provide predictive insights, enabling micro, small, and medium enterprises to anticipate market changes and remain proactive. This enhances resilience and mitigates the danger of corporate failure.

Furthermore, the study substantiates the Resource-Based View, indicating that firms with rich technological resources are more inclined to achieve a competitive advantage. In this context, AI serves as a strategic asset that enhances operational capabilities and increases survival prospects.

Digital Accounting Systems and MSME Survival

The findings indicated that digital accounting systems exerted the most substantial positive and statistically significant impact on the survival of MSMEs. This indicates that MSMEs employing digital accounting systems are far more likely to endure than those dependent on manual accounting procedures.

The descriptive analysis corroborated this outcome, as respondents emphatically concurred that digital accounting enhances financial transparency, accuracy, accessibility, and

compliance. These traits are essential for proficient financial administration, a pivotal factor in firm survival.

This finding aligns with prior research, like Nguyen et al. (2020), which highlighted that digital accounting improves financial reporting quality and organisational performance. The significant impact of digital accounting is due to its direct effect on financial oversight, enabling organisations to manage cash flow, identify discrepancies, and make educated decisions. This conclusion theoretically supports the Resource-Based View by emphasising digital accounting as a valuable and unique resource. It also corresponds with Dynamic Capabilities Theory, as it facilitates MSMEs' rapid adaptation to evolving financial and regulatory landscapes.

Succession Planning and MSME Survival

The results demonstrated that succession planning positively and significantly influenced the survival of MSMEs. MSMEs with defined succession plans were more inclined to maintain operations and avert disruptions linked to leadership transitions.

The findings indicated that participants concurred that succession planning promotes knowledge transfer, guarantees continuity, and aids in organised leadership transition. Nevertheless, certain MSMEs continue to lack robust succession frameworks, especially regarding paperwork and technological integration.

This finding aligns with prior literature that underscores the significance of succession planning for long-term corporate viability. Succession planning effectively mitigates uncertainty during leadership transitions and safeguards institutional knowledge, so bolstering organisational stability.

The outcome further corroborates Dynamic Capabilities Theory, as succession planning exemplifies a firm's capacity to reallocate its resources and adjust to internal transformations. By strategising for leadership transitions, MSMEs may ensure continuity and enhance their prospects for survival.

Combined Effect of AI, Digital Accounting, and Succession Planning

The logistic regression model indicated that the synergistic influence of Artificial Intelligence, digital accounting systems, and succession planning greatly forecasts MSME survival. The model had significant explanatory power, suggesting that these variables jointly explain a considerable percentage of the variation in survival outcomes.

Among the factors, digital accounting systems exhibited the most significant predictive influence, succeeded by Artificial Intelligence and succession planning. This indicates that although all three elements are significant, financial management techniques are paramount in ensuring firm longevity.

The model's elevated classification accuracy further validated its efficacy in forecasting MSME survival. This suggests that the amalgamation of technology and managerial elements offers a dependable foundation for predicting corporate sustainability.

The data reveal substantial positive correlations among Artificial Intelligence, digital accounting systems, succession planning, and MSME survival; nevertheless, one must take caution in interpreting these correlations as indicative of direct causation. Due to the cross-sectional design of the study, the findings indicate statistical connections and prediction relationships based on the respondents' existing organisational features, rather than conclusive cause-and-effect links. Thus, the findings indicate that MSMEs with elevated technological adoption and managerial readiness are more inclined to demonstrate enhanced survival capacity.

Moreover, the actual implementation of these advantages may be affected by contextual obstacles common in emerging economies like Nigeria. Inadequate digital infrastructure, inconsistent electrical supply, restricted internet accessibility, low digital literacy, and budgetary restrictions may hinder the successful adoption and utilisation of Artificial Intelligence and digital accounting systems among MSMEs. Likewise, resource constraints may impede the establishment of formal succession planning frameworks. Consequently, although these traits correlate with improved survival capacity, their efficacy is likely contingent upon the presence of supportive institutional, technological, and financial frameworks.

Conclusion

The study concluded that Artificial Intelligence, digital accounting systems, and succession planning are significant predictors and positive correlates of MSME survival capability among the sampled enterprises. Incorporating these variables enhances the likelihood of a business's continued operation and sustainability throughout time.

Digital accounting systems have emerged as the paramount aspect, underscoring the need of proficient financial administration for firm sustainability. Artificial Intelligence significantly enhances decision-making, forecasting, and operational efficiency. Succession planning guarantees continuity and mitigates the risks linked to leadership transition. The study revealed that MSMEs that incorporate technology with organised management practices are more likely to endure and maintain competitiveness in a dynamic economic environment. Logistic regression corroborated that these variables are robust predictors of survival, establishing a dependable foundation for decision-making.

Recommendations

Based on the findings and conclusion of the study, the following recommendations were made:
Based on the findings of the study, the following recommendations are proposed:

1. **Recommendations for MSME Owners and Managers**
   Owners and managers of MSMEs should progressively incorporate Artificial Intelligence-driven business tools into their operations to enhance decision-making, forecasting, customer relationship management, and risk evaluation. Due to the financial constraints encountered by numerous small enterprises, cloud-based and

subscription-based AI technologies should be prioritised as they necessitate reduced initial investment expenditures. Business proprietors ought to allocate resources towards staff training initiatives designed to enhance digital literacy and technological proficiency

2. **Recommendations for the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN)**

   The Small and Medium Enterprises Development Agency of Nigeria ought to provide subsidised digital transformation initiatives for MSMEs. SMEDAN should partner with software developers and fintech companies to offer cost-effective digital accounting software, bookkeeping tools, and AI-driven business management platforms to registered MSMEs. Regular workshops and capacity-building programs must be conducted to enhance technology adoption among small business operators.

3. **Recommendations for Financial Institutions and FinTech Providers**

   Commercial banks, microfinance institutions, and financial technology providers ought to establish specialised financing programs that facilitate technology adoption among MSMEs. Low-interest loans for technology procurement, adaptable payment plans for accounting software, and digital business support services should be implemented to mitigate the financial obstacles related to the adoption of Artificial Intelligence and digital accounting systems

4. **Recommendations for Government and Policy Makers**

   Federal and state governments ought to allocate resources towards the enhancement of digital infrastructure, especially in regions with inadequate internet connectivity and unreliable electrical supply. Policies offering tax incentives, grants, and subsidies for technology adoption should be implemented to promote the use of Artificial Intelligence and digital accounting systems among MSMEs. Government agencies ought to advocate for digital inclusion projects designed to enhance technological access for small enterprises.

5. **Recommendations for Professional Accounting Bodies**

   Professional accounting organisations, including the Institute of Chartered Accountants of Nigeria (ICAN) and the Association of National Accountants of Nigeria (ANAN), ought to establish training and certification programs that emphasise digital accounting systems, applications of Artificial Intelligence in accounting, and technology-driven financial management practices. These initiatives would enhance the ability of MSMEs to uphold precise financial records and make informed business decisions.

6. **Recommendations for Business Succession Planning**

   MSME proprietors ought to implement formal succession planning frameworks encompassing leadership development, knowledge transfer systems, and documenting of essential business operations. Businesses must preserve digital documentation of

operational protocols and financial data to provide seamless leadership transfers and mitigate the risk of operational disruption during succession phases.

7. **Recommendations for Technology Service Providers**
   Technology suppliers and software developers ought to create affordable, user-centric Artificial Intelligence and digital accounting systems specifically designed for the requirements of MSMEs in emerging economies. These solutions must function efficiently in areas with restricted internet connectivity and offer user-friendly interfaces appropriate for individuals with diverse levels of digital proficiency.

Contribution to Knowledge

This study contributed to knowledge by introducing a predictive approach to MSME survival using logistic regression. It integrated Artificial Intelligence, digital accounting systems, and succession planning into a single framework, thereby providing a comprehensive understanding of the factors that influence business sustainability.

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