



ARTICLE HISTORY

Received: 15-06-2026

Accepted: 10-07-2026

Published: 11-07-2026

Journal homepage: <https://ssarpublishers.com/ssarjebm>

Abbreviated Key Title: SSAR J Econ Bus Manage

Volume-2, Issue-4, (Jul-Aug) 2026, Page 141-154 (Total PP.14)

E-mail: ssarpublishers@gmail.com

DIGITAL SOLUTIONS AND COMPETITIVE ADVANTAGE IN EMERGING MARKETS IN DELTA STATE

By

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ABSTRACT: This study examined the relationship between digital solutions and competitive advantage in emerging markets in Delta State, Nigeria. The specific objectives of the study were to examine the effect of digital innovation on competitive advantage and determine the effect of business analytics capability on competitive advantage in emerging markets in Delta State. The study adopted a survey research design. Primary data were collected through the administration of structured questionnaires to management and senior staff of selected manufacturing firms in Delta State. The population of the study comprised staff of selected manufacturing firms, while a sample size of 230 respondents was determined using the Taro Yamane formula. Data collected were analyzed using descriptive statistics, Pearson Product Moment Correlation, and Multiple Regression Analysis with the aid of Statistical Package for Social Sciences (SPSS) Version 25. The findings revealed that digital innovation has a significant positive effect on competitive advantage in emerging markets in Delta State ($\beta = 0.501$, $t = 9.224$, $p < 0.05$). The study also found that business analytics capability significantly affects competitive advantage ($\beta = 0.421$, $t = 8.017$, $p < 0.05$). Furthermore, the regression model showed that digital solutions jointly explained 61.0% variation in competitive advantage ($R^2 = 0.610$, $F = 177.846$, $p < 0.05$). The correlation analysis further indicated a strong positive relationship between digital innovation and competitive advantage ($r = 0.724$, $p < 0.01$), as well as between business analytics capability and competitive advantage ($r = 0.693$, $p < 0.01$). The study concluded that digital solutions significantly enhance competitive advantage among firms operating in emerging markets in Delta State. The study recommended that organizations should invest in digital innovation technologies and strengthen business analytics capabilities to improve operational efficiency, strategic decision-making, and market competitiveness.

KEYWORDS: Digital Solutions, Digital Innovation, Business Analytics Capability, Competitive Advantage, Emerging Markets.

INTRODUCTION

The contemporary business environment has witnessed rapid technological transformation driven by digital innovations, globalization, and increasing market competition. Organizations across the world are increasingly adopting digital solutions such as cloud computing, artificial intelligence, big data analytics, digital platforms, mobile technologies, and electronic commerce to improve operational efficiency, customer engagement, and overall organizational performance. In emerging markets, digital solutions have become strategic tools for achieving competitive advantage and sustaining business growth in highly dynamic and uncertain

environments. Digital solutions refer to the application of digital technologies and innovative systems to improve organizational processes, service delivery, communication, decision-making, and value creation. These technologies enable firms to streamline operations, reduce costs, enhance customer experiences, and respond quickly to market changes. The growing adoption of digital transformation initiatives has significantly altered the competitive landscape of businesses, especially in emerging economies where firms face infrastructural deficiencies, market volatility, and intense competition (Lua & Shaharudin, 2024).

Competitive advantage remains one of the major determinants of organizational survival and long-term success. Firms achieve competitive advantage when they possess unique capabilities, resources, or strategies that enable them to outperform competitors in terms of efficiency, innovation, market share, profitability, and customer satisfaction. In the digital era, organizations increasingly rely on technological capabilities and digital innovations to create value and differentiate themselves from competitors. Recent studies have shown that digital transformation positively influences organizational efficiency, innovation capability, and market competitiveness in emerging markets (Olaleye et al., 2024; Chabalala et al., 2024). Emerging markets such as Nigeria are experiencing increasing digital transformation due to advancements in internet penetration, financial technology (FinTech), e-commerce, and mobile communication systems. In Delta State, businesses are gradually integrating digital technologies into their operations to improve productivity, customer service, and market expansion. Many organizations now utilize digital marketing platforms, electronic payment systems, customer relationship management software, and data analytics to remain competitive in the marketplace. The adoption of digital technologies has become particularly important for small and medium-sized enterprises (SMEs) seeking to survive in a rapidly changing business environment.

Despite the growing relevance of digital solutions, many organizations in emerging markets still face several challenges such as inadequate technological infrastructure, poor digital literacy, cybersecurity concerns, high implementation costs, and inconsistent government policies. These challenges limit the effective utilization of digital technologies and hinder organizations from fully realizing the benefits of digital transformation. Furthermore, while several studies have examined digital transformation and organizational performance globally, limited empirical attention has been given to the relationship between digital solutions and competitive advantage within emerging markets in Delta State, Nigeria.

Recent literature indicates that firms that effectively adopt digital technologies are more capable of enhancing operational efficiency, improving innovation, strengthening customer relationships,

and achieving sustainable competitive advantage (Komolafe et al., 2024; Suharyadi et al., 2025). Digital ecosystems and business analytics frameworks have also been identified as critical drivers of firm competitiveness in emerging economies (Economic Modelling, 2026). Therefore, this study seeks to examine the effect of digital solutions on competitive advantage in emerging markets in Delta State. The study will specifically explore how digital technologies contribute to organizational efficiency, innovation, responsiveness, and market competitiveness among firms operating in the state. The outcome of the study is expected to provide valuable insights for business managers, policymakers, and stakeholders on the strategic importance of digital transformation in achieving sustainable competitive advantage in emerging economies.

Study problem

The increasing globalization of business activities and rapid advancement in digital technologies have transformed the way organizations operate and compete in modern markets. Digital solutions such as cloud computing, artificial intelligence, mobile technologies, e-commerce platforms, business analytics, and digital communication systems have become essential tools for improving operational efficiency, customer satisfaction, innovation, and organizational performance. In emerging markets, organizations are increasingly expected to adopt digital technologies to remain competitive and sustain long-term growth in highly dynamic business environments. Despite the growing importance of digital transformation, many businesses in emerging markets, particularly in Nigeria, still struggle to effectively integrate digital solutions into their operations. Several organizations in Delta State continue to experience operational inefficiencies, poor customer engagement, limited market expansion, low innovation capacity, and declining competitiveness due to inadequate utilization of digital technologies. Many firms still rely heavily on traditional business methods, which reduce their ability to respond quickly to changing market conditions and customer expectations.

Furthermore, challenges such as inadequate technological infrastructure, unstable internet connectivity, cybersecurity threats, high implementation costs, insufficient digital skills, and

inconsistent government policies have hindered the successful adoption of digital solutions among businesses in emerging markets. These limitations have negatively affected the ability of organizations to maximize the benefits of digital transformation and achieve sustainable competitive advantage. Although previous studies have examined digital transformation and organizational performance in developed economies, there is still limited empirical evidence on how digital solutions influence competitive advantage in emerging markets, particularly in Delta State, Nigeria. Most existing studies have focused on large corporations in developed countries, thereby creating a contextual and geographical research gap regarding businesses operating in emerging economies. Consequently, the inability of many organizations in Delta State to effectively leverage digital solutions may continue to weaken their competitiveness, reduce operational efficiency, and limit their capacity for innovation and market growth. It is against this background that this study seeks to examine the effect of digital solutions on competitive advantage in emerging markets in Delta State.

Research Questions

The study was guided by the following research questions:

- i. what is the effect of digital innovation on competitive advantage in emerging markets in Delta State?
- ii. to what extent does business analytics capability affect competitive advantage in emerging markets in Delta State?

Objectives of the study

The broad objective of the study is to determine the effect of digital solutions and competitive advantage in emerging markets in Delta State. The specific objectives are to:

- i. examine the effect of digital innovation on competitive advantage in emerging markets in Delta State.
- ii. determine the effect of business analytics capability on competitive advantage in emerging markets in Delta State.

Research Hypotheses

- i. examine the effect of digital innovation on competitive advantage in emerging markets in Delta State.

- ii. determine the effect of business analytics capability on competitive advantage in emerging markets in Delta State.

2. Literature Underpinnings

Conceptual Review

Digital Solutions

Digital solutions refer to the integration and application of digital technologies, software systems, and innovative technological tools to improve organizational operations, communication, service delivery, decision-making, and overall performance. These solutions include technologies such as cloud computing, artificial intelligence, business analytics, mobile applications, digital marketing platforms, electronic payment systems, and automation tools that enable organizations to enhance efficiency, innovation, and competitiveness in rapidly changing business environments. Digital solutions help organizations streamline processes, reduce operational costs, improve customer experiences, and respond effectively to market demands (Vial, 2021).

Competitive Advantage

Competitive advantage refers to the ability of an organization to outperform its competitors by providing greater value to customers through superior products, services, innovation, cost efficiency, or operational effectiveness. It enables a firm to achieve higher market share, profitability, and long-term sustainability compared to rival organizations. Competitive advantage arises when an organization possesses unique resources, capabilities, or strategies that are difficult for competitors to imitate (Porter, 1985).

Emerging Digital Markets in Delta State

Emerging digital markets in Delta State refer to the rapidly developing business environments and economic sectors within Delta State, Nigeria, where digital technologies are increasingly being adopted to facilitate commercial activities, communication, financial transactions, innovation, and service delivery. These markets are characterized by the growing use of internet-based platforms, mobile technologies, e-commerce systems, digital payment solutions, business analytics, and social media tools by businesses and consumers to improve productivity, market access, and competitiveness. Emerging digital markets are driven by technological advancement, increasing internet penetration, smartphone usage, and the expansion of

digital entrepreneurship within the state (Afolayan & Ogunnaike, 2023; Nwaiwu & Joseph, 2024). In Delta State, emerging digital markets have created opportunities for businesses, particularly small and medium-sized enterprises (SMEs), to expand customer reach, improve operational efficiency, and compete effectively in both local and global markets. However, these markets also face challenges such as inadequate digital infrastructure, low digital literacy, cybersecurity concerns, and inconsistent regulatory frameworks, which may affect the full realization of digital economic growth and competitive advantage.

Digital innovation on competitive advantage in emerging markets in Delta State.

Digital innovation has become a critical driver of competitive advantage in emerging markets, particularly in developing economies such as Nigeria. Digital innovation refers to the introduction and application of new digital technologies, systems, and processes that improve organizational efficiency, customer engagement, product development, and overall business performance. In emerging markets in Delta State, businesses increasingly adopt digital innovations such as e-commerce platforms, mobile applications, cloud computing, artificial intelligence, digital payment systems, and business analytics to improve competitiveness and market performance.

Digital innovation enhances competitive advantage by enabling organizations to improve operational efficiency, reduce costs, increase productivity, and deliver superior customer value. Organizations that adopt innovative digital technologies are better positioned to respond quickly to market changes, customer demands, and competitive pressures. Through digital innovation, firms can create unique products and services, strengthen customer relationships, improve communication systems, and expand market reach beyond traditional geographical limitations (Sastra et al., 2025).

Furthermore, digital innovation improves organizational flexibility and strategic responsiveness in dynamic business environments. Firms operating in emerging markets often face challenges such as resource constraints, infrastructural deficiencies, and market uncertainty. The adoption of digital technologies allows organizations to overcome these challenges by facilitating faster decision-making, efficient

resource management, and enhanced innovation capabilities. Studies have shown that digital transformation and innovation capabilities significantly influence market orientation and sustainable competitive advantage in emerging economies (Lua & Shahrudin, 2024; Supriyadi & Firmansyah, 2026).

In Delta State, digital innovation has contributed significantly to the growth of small and medium-sized enterprises (SMEs) by improving access to customers, increasing operational efficiency, and enabling participation in digital markets. Businesses that utilize social media marketing, online payment systems, customer relationship management software, and digital communication platforms are more likely to achieve customer satisfaction, innovation, profitability, and long-term sustainability. Digital innovation also promotes organizational learning, creativity, and knowledge sharing, which are essential for maintaining competitive advantage in emerging markets (Qiu & Chang, 2024). Additionally, digital innovation encourages the development of digital ecosystems that support collaboration, technological advancement, and business growth. Firms with strong digital capabilities are better able to integrate innovation into their strategic operations, thereby enhancing productivity and market competitiveness. Emerging market firms that invest in digital innovation are more likely to achieve sustainable competitive advantage through improved service delivery, innovation performance, and customer responsiveness (Chabalala et al., 2024).

Business analytics capability on competitive advantage in emerging markets in Delta State.

Business analytics capability plays a significant role in enhancing competitive advantage in emerging markets, particularly among firms operating in Delta State, Nigeria. Business analytics capability refers to an organization's ability to collect, process, analyze, and utilize data effectively for strategic decision-making, operational efficiency, customer management, and innovation. Organizations that possess strong business analytics capabilities are better positioned to understand market trends, customer preferences, and competitive dynamics, thereby enabling them to make informed business decisions and achieve superior performance.

In emerging markets, business analytics capability enhances competitive advantage by improving organizational efficiency and strategic responsiveness. Firms that utilize analytics tools and data-driven technologies can identify market opportunities, predict customer behavior, optimize operations, and reduce operational costs. Through business analytics, organizations gain valuable insights that support innovation, product development, risk management, and customer satisfaction. Consequently, businesses with strong analytics capabilities are more likely to outperform competitors and sustain long-term growth in highly competitive environments (Wamba et al., 2021).

Furthermore, business analytics capability strengthens organizational decision-making and improves market competitiveness. In Delta State, many organizations increasingly rely on digital data and analytics systems to monitor business performance, evaluate customer needs, and improve service delivery. The effective use of analytics tools such as customer relationship management systems, predictive analytics, and business intelligence platforms enables firms to respond rapidly to environmental changes and market demands. Studies have shown that organizations that adopt data-driven decision-making processes achieve higher productivity, innovation, and competitive advantage compared to firms that rely solely on traditional management approaches (Mikalef et al., 2022).

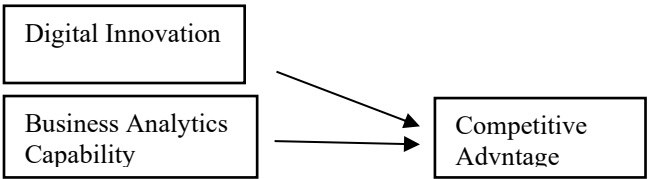
Business analytics capability also enhances innovation and customer relationship management in emerging markets. Firms can utilize analytics technologies to personalize products and services, improve customer experiences, and develop innovative business strategies that differentiate them from competitors. In highly dynamic markets, organizations that effectively leverage business data are more capable of identifying customer expectations and adapting to changing market conditions. This contributes significantly to customer retention, market expansion, and profitability (Akter et al., 2021). Additionally, business analytics capability promotes organizational agility and strategic flexibility, which are critical for survival in uncertain business environments. Emerging market firms often face challenges such as economic instability, infrastructural deficiencies, and increasing

competition. The integration of business analytics into organizational operations enables firms to improve forecasting accuracy, optimize resource allocation, and enhance operational effectiveness. As a result, organizations with advanced analytics capabilities are better able to maintain sustainable competitive advantage and improve overall organizational performance (Ciampi et al., 2021). Therefore, business analytics capability remains an essential digital solution for achieving competitive advantage in emerging markets in Delta State. Organizations that invest in analytics technologies and data-driven strategies are more likely to improve innovation, efficiency, customer satisfaction, and long-term business sustainability.

Conceptual Framework

Conceptual framework

Independent	Variable
Dependent Variable	
Digital	Solution
Competitive Advantage	



Source: Author’s conceptualization (2026)

Theoretical Review

Dynamic Capability Theory

The study on Digital Solutions and Competitive Advantage in Emerging Markets in Delta State is anchored on the Dynamic Capability Theory (DCT). The theory was originally developed by David Teece, Gary Pisano, and Amy Shuen in 1997. The theory explains how organizations develop, integrate, and reconfigure internal and external competencies to respond effectively to rapidly changing business environments. Dynamic capabilities refer to a firm’s ability to sense opportunities and threats, seize opportunities through innovation and strategic action, and transform organizational resources to maintain competitiveness in turbulent environments. The Dynamic Capability Theory emphasizes that organizations cannot rely solely on existing resources or traditional operational methods to sustain competitive advantage. Instead, firms must continuously adapt to environmental changes through innovation, technological advancement,

organizational learning, and strategic flexibility. In the context of digital transformation, the theory suggests that organizations that effectively utilize digital solutions such as business analytics, artificial intelligence, cloud computing, digital innovation, and information systems are more capable of improving operational efficiency, innovation performance, customer satisfaction, and long-term competitiveness (Supriyadi & Firmansyah, 2026).

Recent studies have further demonstrated that dynamic capabilities significantly influence digital transformation and sustainable competitive advantage in emerging markets. Organizations with strong dynamic capabilities are better able to integrate digital technologies into their operations, respond to market uncertainties, and exploit emerging business opportunities. Dynamic capability enhances organizational agility, innovation capability, and strategic responsiveness, all of which are critical for firms operating in volatile and uncertain environments (Saeedikiya et al., 2024; Zabel & O'Brien, 2024). The relevance of the Dynamic Capability Theory to this study lies in its explanation of how digital solutions contribute to competitive advantage in emerging markets. The theory supports the view that firms in Delta State can achieve superior performance and market competitiveness by adopting digital innovations and developing business analytics capabilities. Through digital transformation, organizations can improve decision-making, customer engagement, operational efficiency, innovation, and strategic adaptability. The theory therefore provides a strong framework for understanding how digital solutions enable organizations to survive and compete effectively in dynamic business environments.

Furthermore, the theory is relevant because it explains the relationship between digital innovation and organizational competitiveness. Firms that continuously upgrade technological capabilities and adapt to changing customer preferences are more likely to achieve sustainable competitive advantage. Dynamic capability also supports the role of business analytics capability in improving organizational learning, forecasting market trends, and enhancing strategic decision-making, which are essential for firms operating in emerging digital markets (Shu & Srimuang, 2023). Despite its major relevance, the Dynamic Capability Theory has faced several criticisms. Critics argue that the theory

is abstract and difficult to measure empirically because concepts such as sensing, seizing, and transforming capabilities are not easily quantifiable. Some scholars also contend that the theory lacks clear operational guidelines on how organizations can specifically develop dynamic capabilities in practice. Additionally, the theory has been criticized for overemphasizing internal organizational capabilities while giving limited attention to external environmental and institutional factors that may influence firm competitiveness, especially in developing economies with infrastructural and regulatory challenges (van de Wetering et al., 2021). However, despite these criticisms, the Dynamic Capability Theory remains highly relevant and appropriate for this study because it clearly explains how organizations can leverage digital solutions to adapt to environmental changes and sustain competitive advantage. The theory provides a comprehensive understanding of how digital innovation and business analytics capability enhance organizational competitiveness, flexibility, and long-term sustainability in emerging markets such as Delta State.

Empirical Review

Empirical evidence on digital solutions and competitive advantage has continued to attract scholarly attention, particularly within emerging markets where firms increasingly rely on digital technologies to improve operational efficiency and market performance. For instance, Hoang, Hien, Thang, Phuong, and Duong (2025) conducted a study titled *Digital Capabilities and Sustainable Competitive Advantages: The Case of Emerging Market Manufacturing SMEs in Vietnam*. The objective of the study was to examine the effect of digital capabilities on sustainable competitive advantage among manufacturing small and medium-sized enterprises (SMEs) in an emerging market economy. The researchers specifically investigated the mediating role of digital absorptive capacity and the influence of digital leadership on firm competitiveness. The study adopted a mixed-method research design involving qualitative and quantitative approaches, while data were collected from 314 manufacturing firms using Partial Least Squares Structural Equation Modeling (PLS-SEM) and Artificial Neural Network (ANN) techniques. The findings revealed that digital capabilities significantly improve sustainable competitive

advantage among SMEs. The study further found that digital absorptive capacity positively mediates the relationship between digital capabilities and competitive advantage, while digital leadership enhances digital transformation and organizational competitiveness. The researchers concluded that organizations operating in emerging markets can achieve sustainable competitive advantage by investing in digital capabilities, innovation, and digital leadership development. The study therefore emphasized the strategic importance of digital transformation in improving firm competitiveness and long-term sustainability in emerging economies.

Similarly, Suharyadi, Adhi, Isoni, and Irawan (2026) carried out a study titled *Leveraging Digital Transformation for Sustainable Competitive Advantage in Emerging Markets: A Managerial Perspective* in Indonesia, Malaysia, and Vietnam. The objective of the study was to investigate the influence of managerial capability on digital transformation and its effect on sustainable competitive advantage among firms operating in emerging markets. The study specifically examined the mediating role of dynamic capabilities and the moderating role of institutional context in the relationship between digital transformation and competitive advantage. A quantitative explanatory survey research design was adopted, and data were collected from 150 mid-level and senior managers across manufacturing, service, and financial sectors. The data were analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM). The findings showed that managerial capability significantly influences digital transformation, which in turn positively affects firms' dynamic capabilities and competitive advantage. The study also found that digital transformation enhances organizational adaptability, innovation, and market responsiveness, thereby contributing significantly to sustainable competitiveness in emerging markets. The researchers concluded that firms that effectively integrate digital solutions into their operational and strategic activities are more likely to achieve superior market performance and long-term competitive advantage. The study therefore recommended increased investment in digital infrastructure, innovation capability, and strategic

managerial development for organizations operating in emerging economies.

3. Methodology

This section presents the methodology adopted for the study titled *Digital Solutions and Competitive Advantage in Emerging Markets in Delta State*. The chapter discusses the research design, study area, population of the study, sample size and sampling techniques, sources and methods of data collection, instrument for data collection, validity and reliability of the instrument, method of data analysis, and model specification.

Research Design

The study adopted the survey research design. The survey design was considered appropriate because it enables the researcher to collect quantitative data from a large number of respondents systematically and objectively. The design also facilitates the examination of the relationship between digital solutions and competitive advantage among manufacturing firms in Delta State. The survey research design is widely used in management and social science research because it allows researchers to gather opinions, perceptions, and attitudes of respondents regarding specific phenomena under investigation (Saunders, Lewis, & Thornhill, 2019). The design was suitable for this study because it enabled the researcher to obtain firsthand information on digital innovation, business analytics capability, and competitive advantage from employees and management staff of selected manufacturing firms.

Study Area

The study was conducted in Delta State, Nigeria. Delta State is located in the South-South geopolitical zone of Nigeria and is recognized as one of the major commercial and industrial hubs in the region. The state comprises several urban and semi-urban centers such as Asaba, Warri, Ughelli, Sapele, Agbor, and Kwale, where numerous manufacturing and business activities are concentrated. Delta State was selected for the study because of the increasing adoption of digital technologies among manufacturing firms operating within the state. The presence of small, medium, and large-scale manufacturing firms makes the state appropriate for investigating the effect of digital solutions on competitive advantage in emerging markets.

Population of the Study

The population of the study consisted of management and senior staff of selected manufacturing firms in Delta State. The selected firms were chosen because of their active involvement in manufacturing operations and utilization of digital technologies in business activities.

Table 3.1 Population of Selected Manufacturing Firms in Delta State

S/N	Manufacturing Firms	Population
1	Beta Glass Plc, Ughelli	120
2	Guinness Nigeria Plc, Benin/Asaba Depot	95
3	Ok Foods Limited, Asaba	80
4	Pyanwood Manufacturing Company, Warri	70
5	Eagle Flour Mills, Sapele	65
6	Chivita Processing Outlet, Asaba	60
7	Crown Flour Mill, Warri	50
Total		540

Source: Personnel Departments of Selected Manufacturing Firms, 2026.

Therefore, the total population of the study was 540 respondents.

Sample Size and Sample Population

The sample size for the study was determined using the Taro Yamane (1967) formula:

Where:

- n = Sample size
- N = Population size
- e= Level of significance (0.05)

$$n = \frac{540}{1 + 540(0.05)^2} = 230$$

Therefore, the sample size for the study was 230 respondents.

Table 3.2 Sample Distribution

S/N	Manufacturing Firms	Population	Sample Size
1	Beta Glass Plc	120	51
2	Guinness Nigeria Plc	95	40
3	Ok Foods Limited	80	34

4	Pyanwood Manufacturing Company	70	30
5	Eagle Flour Mills	65	28
6	Chivita Processing Outlet	60	26
7	Crown Flour Mill	50	21
Total		540	230

Source: Researcher's Computation, 2026.

Sampling Technique

The study adopted the stratified and simple random sampling techniques. Stratified sampling was used to divide respondents into strata based on their firms to ensure adequate representation of all selected manufacturing firms. Thereafter, simple random sampling technique was used to select respondents from each stratum.

The use of these sampling techniques minimized sampling bias and ensured fairness in the selection process.

Sources of Data Collection

The study utilized both primary and secondary sources of data.

Primary data were obtained directly from respondents through the administration of structured questionnaires to management and senior staff of selected manufacturing firms. Secondary data were sourced from textbooks, journal articles, conference papers, internet materials, theses, and other scholarly publications related to digital solutions and competitive advantage.

Method of Data Collection

The researcher adopted the direct administration method in distributing the questionnaire to respondents. Copies of the questionnaire were personally administered with the assistance of research assistants to ensure proper distribution and retrieval. This method enhanced the response rate and enabled respondents to seek clarification where necessary.

Instrument of Data Collection

The major instrument used for data collection was a structured questionnaire designed by the researcher. The questionnaire was divided into two sections:

- **Section A:** Demographic information of respondents.

- **Section B:** Questions relating to digital innovation, business analytics capability, and competitive advantage.

The questionnaire items were structured using a five-point Likert Scale as follows:

Scale	Weight
Strongly Agree (SA)	5
Agree (A)	4
Undecided (U)	3
Disagree (D)	2
Strongly Disagree (SD)	1

Source:

Validity of Instrument

The validity of the instrument was ensured through face and content validity. The questionnaire was subjected to scrutiny by experts in management sciences and research methodology to ensure that the items adequately measured the variables of the study. Corrections and suggestions made by the experts were incorporated into the final draft of the instrument to improve clarity, relevance, and adequacy. According to Creswell and Creswell (2023), validity ensures that research instruments accurately measure what they are intended to measure.

Reliability of Instrument

The reliability of the instrument was tested using the Cronbach's Alpha reliability method through a pilot study conducted among respondents outside the study area but with similar characteristics.

Table 3.3 Reliability Statistics

Variables	Number of Items	Cronbach's Alpha
Digital Innovation	5	0.841
Business Analytics Capability	5	0.856
Competitive Advantage	6	0.882
Overall Reliability	16	0.860

Source: Researcher's Pilot Study, 2026.

The Cronbach's Alpha coefficients exceeded the minimum acceptable threshold of 0.70 recommended by Hair et al. (2019), indicating that the instrument was reliable and internally consistent.

Method of Data Analysis

Data collected for the study were analyzed using both descriptive and inferential statistical tools.

Descriptive Statistics

Descriptive statistics such as frequency tables, percentages, mean scores, and standard deviation were used to analyze respondents' demographic characteristics and research questions.

Inferential Statistics

Pearson Product Moment Correlation and Multiple Regression Analysis were used to test the hypotheses and determine the relationship between digital solutions and competitive advantage. The analyses were conducted using the Statistical Package for Social Sciences (SPSS) Version 25. The decision rule was based on a 5% level of significance. The null hypothesis was rejected if the probability value (p-value) was less than 0.05.

Model Specification

The model for the study was specified to determine the effect of digital solutions on competitive advantage in emerging markets in Delta State.

The functional relationship is expressed as:

$$CA=f(DI,BAC)$$

Where:

CA = Competitive Advantage

DI = Digital Innovation

BA = Business Analytics Capability

Fr = Functional relationship

The econometric model is stated as:

$$CA=\beta_0+\beta_1DI+\beta_2BAC+\mu$$

Where:

- β_0 = Constant term
- β_1 – β_2 = Regression coefficients
- μ = Error term

The a priori expectation is:

$$\beta_1>0,\beta_2>0$$

This implies that digital innovation and business analytics capability are expected to positively influence competitive advantage among manufacturing firms in Delta State.

4. Results and Discussion

This section presents the analysis and interpretation of data collected for the study titled Digital Solutions and Competitive Advantage in Emerging Markets in Delta State. The analyses were carried out in line with the objectives and hypotheses of the study. The section covers questionnaire distribution and response rate, demographic analyses of respondents, preliminary analyses, descriptive

statistics, correlation analysis, regression analysis, test of hypotheses, and discussion of findings.

Questionnaire Distribution and Response Rate

A total of 250 questionnaires were distributed to respondents in selected manufacturing firms in Delta State. Out of the questionnaires distributed, 230 were returned, while 20 were invalidated due to incomplete responses and inconsistencies. Therefore, 210 valid questionnaires were used for the analysis.

Table 4.1 Questionnaire Distribution and Response Rate

Questionnaire Status	Frequency	Percentage (%)
Questionnaires Distributed	250	100
Questionnaires Returned	230	92.0
Invalidated Questionnaires	20	8.0
Valid Questionnaires Used	210	84.0

Source: Field Survey, 2026.

The table above indicates that 230 questionnaires representing 92.0% were successfully retrieved, while 20 questionnaires representing 8.0% were invalidated. The high response rate was considered adequate for the study.

Demographic Analyses of Respondents

Demographic Characteristics of Respondents

Table 4.2 Gender Distribution of Respondents

Gender	Frequency	Percentage (%)
Male	122	58.1
Female	88	41.9
Total	210	100

Source: Field Survey, 2026.

The result shows that 58.1% of the respondents were male, while 41.9% were female, indicating that both genders were adequately represented in the study.

Table 4.3 Age Distribution of Respondents

Age Bracket	Frequency	Percentage (%)
21–30 years	48	22.9
31–40 years	92	43.8
41–50 years	46	21.9

51 years and above	24	11.4
Total	210	100

Source: Field Survey, 2026.

The analysis indicates that respondents within the age bracket of 31–40 years constituted the majority with 43.8%, suggesting that most respondents were actively involved in organizational decision-making and operations.

Table 4.4 Educational Qualification of Respondents

Qualification	Frequency	Percentage (%)
OND/NCE	24	11.4
HND/B.Sc.	118	56.2
Master's Degree	52	24.8
Ph.D.	16	7.6
Total	210	100

Source: Field Survey, 2026.

The table reveals that the majority of respondents possessed HND/B.Sc. qualifications, representing 56.2%, indicating that respondents were knowledgeable enough to provide reliable responses.

Table 4.5 Years of Work Experience

Years of Experience	Frequency	Percentage (%)
1–5 years	42	20.0
6–10 years	86	41.0
11–15 years	50	23.8
Above 15 years	32	15.2
Total	210	100

Source: Field Survey, 2026.

The result indicates that the majority of respondents had between 6–10 years of work experience, representing 41.0%, implying adequate organizational experience among respondents.

Pattern of Data Presentation for Research Questions and Hypotheses

Research Question One

What is the effect of digital innovation on competitive advantage in emerging markets in Delta State?

Table 4.6 Descriptive Statistics for Digital Innovation

Items	Mean	Std. Dev.
The organization adopts modern digital technologies	4.18	0.72

Digital innovation improves operational efficiency	4.11	0.75
The organization utilizes digital platforms for customer engagement	4.06	0.81
Digital technologies enhance product/service delivery	4.20	0.69
The organization supports technological innovation	4.08	0.77
Grand Mean	4.13	0.75

Source: Field Survey, 2026.

The grand mean score of 4.13 indicates that respondents strongly agreed that digital innovation positively influences competitive advantage among firms in emerging markets in Delta State.

Research Question Two

To what extent does business analytics capability affect competitive advantage in emerging markets in Delta State?

Table 4.7 Descriptive Statistics for Business Analytics Capability

Items	Mean	Std. Dev.
The organization uses data analytics for decision-making	4.15	0.74
Analytics tools improve organizational performance	4.09	0.78
Business analytics enhances customer satisfaction	4.03	0.82
Analytics capability improves market responsiveness	4.17	0.70
The organization relies on digital data for strategic planning	4.12	0.73
Grand Mean	4.11	0.75

Source: Field Survey, 2026.

The result indicates a grand mean score of 4.11, showing that business analytics capability significantly contributes to competitive advantage in emerging markets.

Descriptive Statistics

Table 4.8 Descriptive Statistics of Study Variables

Variables	Mean	Std. Dev.
Digital Innovation	4.13	0.75
Business Analytics Capability	4.11	0.75
Competitive Advantage	4.19	0.69

Source: Researcher's Computation, 2026.

The high mean values indicate positive perceptions among respondents regarding digital solutions and competitive advantage.

Correlation Analysis

Pearson Correlation Matrix

Table 4.9. Pearson Correlation Matrix

Variables	Digital Innovation	Business Analytics Capability	Competitive Advantage
Digital Innovation	1.000		
Business Analytics Capability	0.651**	1.000	
Competitive Advantage	0.724**	0.693**	1.000

Correlation is significant at 0.01 level (2-tailed).

Source: Researcher's Computation, 2026.

The result reveals a strong positive relationship between digital innovation and competitive advantage ($r = 0.724$, $p < 0.01$). Similarly, business analytics capability showed a strong positive relationship with competitive advantage ($r = 0.693$, $p < 0.01$).

Regression Analysis

Model Summary

Table 4.10 Model Summary

R	R Square	Adjusted Square	R	Std. Error
0.781	0.610	0.604		0.418

Source: Researcher's Computation, 2026.

The result indicates that digital solutions jointly explained 61.0% variation in competitive advantage.

ANOVA Result

Table 4.11 ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	62.184	2	31.092	177.846	0.000
Residual	36.180	207	0.175		
Total	98.364	209			

Source: Researcher's Computation, 2026.

The ANOVA result shows that the regression model is statistically significant ($F = 177.846$, $p < 0.05$), indicating that digital solutions significantly predict competitive advantage.

Coefficients Table

Table 4.12 Regression Coefficients

Variables	Beta	t-value	Sig.
Constant	1.185	4.986	0.000
Digital Innovation	0.501	9.224	0.000
Business Analytics Capability	0.421	8.017	0.000

Dependent Variable: Competitive Advantage

Source: Researcher's Computation, 2026.

The regression result shows that digital innovation significantly affects competitive advantage ($\beta = 0.501$, $p < 0.05$). Similarly, business analytics capability significantly influences competitive advantage ($\beta = 0.421$, $p < 0.05$).

Test of Hypotheses

Hypothesis One

H₀₁: Digital innovation has no significant effect on competitive advantage in emerging markets in Delta State.

The regression result in Table 4.13 revealed that digital innovation significantly affects competitive advantage ($\beta = 0.501$, $t = 9.224$, $p = 0.000$). Since the p-value is less than 0.05, the null hypothesis was rejected. Therefore, digital innovation has a significant positive effect on competitive advantage in emerging markets in Delta State.

Hypothesis Two

H₀₂: Business analytics capability has no significant effect on competitive advantage in emerging markets in Delta State.

The regression analysis revealed that business analytics capability significantly affects competitive advantage ($\beta = 0.421$, $t = 8.017$, $p = 0.000$). Since the significance value is less than 0.05, the null hypothesis was rejected. Therefore, business analytics capability significantly influences competitive advantage in emerging markets in Delta State.

Discussion of Findings

Digital innovation and competitive advantage in emerging markets in Delta State.

The findings of the study established that digital solutions significantly enhance competitive advantage among manufacturing firms operating in

emerging markets in Delta State. Specifically, the study revealed that digital innovation positively affects competitive advantage. Organizations that adopt modern digital technologies, innovation systems, and digital platforms are better positioned to improve operational efficiency, customer satisfaction, product delivery, and organizational performance. The finding supports the Dynamic Capability Theory, which emphasizes that firms must continuously integrate and reconfigure technological capabilities to achieve sustainable competitiveness in rapidly changing business environments (Teece, Pisano, & Shuen, 1997). The result also aligns with the study of Suharyadi et al. (2026), who found that digital transformation and innovation capability significantly improve organizational competitiveness and sustainability in emerging markets.

Business analytics capability has no significant effect on competitive advantage

Furthermore, the study established that business analytics capability significantly influences competitive advantage. Organizations that effectively utilize data analytics and digital information systems are more capable of improving strategic decision-making, forecasting market trends, enhancing customer relationships, and responding quickly to environmental changes. This finding agrees with the work of Wamba et al. (2021), who maintained that business analytics capability improves organizational performance and competitive advantage through data-driven decision-making and operational efficiency. The result also corroborates the findings of Mikalef et al. (2022), who argued that analytics capability strengthens dynamic capabilities and organizational competitiveness in uncertain business environments. Overall, the study demonstrates that digital innovation and business analytics capability are critical drivers of competitive advantage in emerging markets. Firms that invest in digital solutions are more likely to achieve superior market performance, innovation, efficiency, and long-term sustainability.

Conclusions

Based on the findings of the study, it was concluded that digital solutions significantly enhance competitive advantage among manufacturing firms operating in emerging markets in Delta State. Specifically, digital innovation improves

organizational efficiency, innovation, customer engagement, and market competitiveness. Firms that adopt modern digital technologies are better positioned to respond effectively to changing market conditions and customer demands. The study further concluded that business analytics capability positively influences competitive advantage by improving data-driven decision-making, operational effectiveness, strategic planning, and organizational responsiveness. Organizations that leverage analytics technologies and digital information systems are more likely to achieve superior performance and long-term sustainability. Therefore, the study concludes that digital solutions remain essential strategic tools for organizations seeking to survive, compete, and achieve sustainable growth in emerging markets characterized by rapid technological changes and increasing competition.

Recommendations

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

- i. Manufacturing firms in Delta State should strengthen digital innovation practices by investing in modern digital technologies, automation systems, and innovative digital platforms to improve operational efficiency, customer satisfaction, and competitive advantage.
- ii. Organizations should enhance their business analytics capability by adopting data-driven decision-making systems, business intelligence tools, and analytics technologies to improve strategic planning, market responsiveness, and organizational performance in emerging markets.

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