

# Big Data Analytics and Organizational Profitability in Telecommunication Firms in Delta State

Elvis Odile Okokpele, Henry Osazevaru and Young Okwuse

Department of Business Administration, DELSU Business School, Asaba, Delta State, Nigeria.  
Corresponding Author Email: elviskwene@gmail.com

## Direct Research Journal of Management and Strategic Studies



Vol. 7(1), Pp. 117-127, April 2026

Author(s) retains the copyright of this article

This article is published under the terms of the Creative Commons Attribution License 4.0.

Research Article  
ISSN: 2787-009X

Received 18 January 2026, Accepted 20 March 2026, Published 2 April 2026

### ABSTRACT

*This study examined the effect of big data analytics on organizational profitability in telecommunication firms in Delta State, Nigeria. Specifically, the study investigated the influence of descriptive analytics and predictive analytics on organizational profitability. A cross-sectional survey research design was adopted to collect quantitative data from employees across selected telecommunication firms. The study population comprised 960 employees, from which a sample size of 282 respondents was determined using Taro Yamane's formula. A stratified random sampling technique was employed to ensure proportional representation of managerial, technical, and administrative staff. Primary data were collected using structured questionnaires measured on a 5-point Likert scale, while secondary data were used to support and validate findings. Data analysis involved descriptive statistics, Pearson correlation, and multiple regression analysis. Reliability of the instrument was confirmed using Cronbach's alpha coefficients, all exceeding the acceptable threshold of 0.70. Out of 289 questionnaires distributed, 282 were retrieved, yielding a response rate of 97.6%, with 275 valid responses used for analysis. Descriptive statistics indicated a high level of adoption of both descriptive analytics (mean = 3.87) and predictive analytics (mean = 3.92), alongside a strong perception of organizational profitability (mean = 4.01). Correlation analysis revealed strong positive relationships between descriptive analytics and organizational profitability ( $r = 0.704$ ,  $p < 0.01$ ), and between predictive analytics and organizational profitability ( $r = 0.768$ ,  $p < 0.01$ ). The regression model demonstrated substantial explanatory power ( $R^2 = 0.659$ ), indicating that 65.9% of the variation in organizational profitability is explained by the independent variables. The overall model was statistically significant ( $F = 238.41$ ,  $p < 0.001$ ). Regression results showed that both descriptive analytics ( $\beta = 0.312$ ,  $p < 0.001$ ) and predictive analytics ( $\beta = 0.489$ ,  $p < 0.001$ ) have significant positive effects on organizational profitability, with predictive analytics exerting a stronger influence. Consequently, both null hypotheses were rejected. The findings suggest that the adoption and effective utilization of big data analytics significantly enhance organizational profitability, particularly through improved forecasting, decision-making, and strategic planning. The study concludes that telecommunication firms that invest in advanced analytics capabilities are more likely to achieve superior financial performance and sustain competitive advantage.*

**Keywords:** Big Data Analytics, Organizational Profitability, Telecommunication, descriptive analytics, prescriptive analytic



Citation: Okpella, E. O., Osazevaru, H. & Okwuse, Y. (2026). Big Data Analytics and Organizational Profitability in Telecommunication Firms in Delta State. Direct Research Journal of Social Science and Educational Studies. Vol. 7(1), Pp. 117-127. <https://doi.org/10.26765/DRJMSS1411749072>

## INTRODUCTION

In the contemporary business environment, organizations are increasingly relying on big data analytics (BDA) to gain strategic insights that enhance operational efficiency and profitability. Big data analytics refers to the systematic process of collecting, processing, and analyzing large volumes of structured and unstructured data to uncover patterns, correlations, and trends that inform decision-making (Mikalef et al., 2020). In the telecommunication sector, where companies generate enormous amounts of data daily from customer interactions, network usage, billing systems, and social media, leveraging big data analytics has become critical for maintaining competitiveness and maximizing profitability (Gandomi & Haider, 2015). Delta State, Nigeria, is witnessing rapid growth in telecommunications, driven by increased mobile phone penetration, internet usage, and demand for digital services. However, telecommunication firms in this region face challenges such as high operational costs, intense market competition, customer churn, and revenue leakage. The adoption of big data analytics allows these firms to gain actionable insights into customer behavior, market trends, and operational inefficiencies, thereby facilitating more informed strategic decisions and improving profitability (Chen et al., 2012).

Research indicates that firms that effectively utilize big data analytics experience improvements in profitability, operational efficiency, and customer satisfaction (Mikalef et al., 2019; Wamba et al., 2017). For instance, predictive analytics can help telecommunication firms anticipate customer churn and implement targeted retention strategies, while operational analytics can optimize network performance and reduce costs. Despite the acknowledged benefits of big data analytics, empirical research on its impact on organizational profitability within telecommunication firms in Delta State remains limited. This study, therefore, aims to investigate the effect of big data analytics on organizational profitability in telecommunication firms in Delta State, with a view to providing insights on how data-driven strategies can enhance financial performance and sustain competitive advantage in the sector.

### Study Problem

In today's highly competitive telecommunications sector, firms are confronted with enormous volumes of data generated from customer interactions, network operations, billing systems, and social media platforms. While this data has the potential to provide valuable insights for decision-making, many telecommunication firms in Delta State struggle to effectively harness it to improve organizational profitability. Despite the growing recognition of big data analytics (BDA) as a strategic tool for enhancing operational efficiency and revenue generation, several firms continue to rely on traditional decision-making

processes that do not fully leverage the insights embedded in their data (Mikalef et al., 2020; Wamba et al., 2017). The inability to properly utilize big data analytics leads to challenges such as inefficient resource allocation, poor customer retention, revenue leakage, and suboptimal strategic planning. This situation is compounded by a lack of skilled personnel, inadequate technological infrastructure, and limited understanding of advanced analytics tools among management teams (Chen et al., 2012). Consequently, telecommunication firms in Delta State may not be maximizing their profitability potential, thereby affecting their competitiveness and long-term sustainability in a rapidly evolving industry. Although global studies indicate a positive relationship between big data analytics and firm performance, there is a scarcity of empirical research within the Nigerian context, particularly focusing on the telecommunication sector in Delta State. Therefore, it is imperative to investigate how the adoption and utilization of big data analytics affect the organizational profitability of telecommunication firms in the region, to provide evidence-based insights for both practitioners and policymakers.

### Study Objectives

- i. To determine the effect of descriptive analytics on organizational profitability in telecommunication firms in Delta State.
- ii. To determine the effect of predictive analytics on organizational profitability in telecommunication firms in Delta State.

### Study Hypotheses

**H<sub>01</sub>:** there is no significant effect between descriptive analytics and organizational profitability in telecommunication firms in delta state

**H<sub>02</sub>:** there is no significant effect between predictive analytics and organizational profitability in telecommunication firms in delta state

### Literature Review

#### Big Data Analytics

Big Data Analytics (BDA) refers to the systematic process of collecting, organizing, and analyzing extremely large and complex datasets to uncover meaningful patterns, correlations, trends, and insights that support informed decision-making (Gandomi & Haider, 2015). It goes beyond traditional data processing techniques by employing advanced tools, machine learning algorithms, and statistical models to extract actionable intelligence from both structured and unstructured data sources (Chen et al., 2012). In the context of organizations, big data

analytics enables managers to make data-driven decisions, optimize operational processes, predict customer behavior, and improve overall performance. For telecommunication firms, BDA is particularly valuable as it allows for the analysis of vast amounts of network data, customer interactions, billing information, and social media activities, which can be leveraged to enhance profitability, reduce operational inefficiencies, and improve customer satisfaction (Mikalef et al., 2020). Thus, big data analytics is not only a technological tool but also a strategic capability that firms can deploy to gain competitive advantage in data-intensive industries.

### **Organizational Profitability**

**Organizational profitability** refers to the ability of a firm to generate financial gains or returns from its business operations after accounting for all expenses, costs, and obligations. It is a key indicator of a company's financial health, sustainability, and capacity to create value for its stakeholders (Atrill & McLaney, 2019). Profitability is often measured using financial ratios such as net profit margin, return on assets (ROA), and return on equity (ROE), which help assess how efficiently a firm converts revenue into actual profit (Ross, Westerfield, & Jordan, 2020). In the context of telecommunication firms, organizational profitability reflects the firm's ability to maximize revenue from services such as voice, data, and digital offerings, while minimizing operational costs, network losses, and inefficiencies. A high level of profitability indicates that the firm is effectively leveraging its resources, strategic initiatives, and innovations including technology-driven tools such as big data analytics to enhance financial performance and achieve competitive advantage (Wamba et al., 2017). Thus, organizational profitability is not only a financial outcome but also a strategic measure of a firm's effectiveness in resource utilization, market positioning, and value creation.

### **Telecommunication Firms in Delta State**

Telecommunication firms are organizations that provide communication services, including voice, data, internet, and digital solutions, to individuals, businesses, and government agencies. These firms play a critical role in connecting people, enabling information exchange, and supporting economic activities through various technologies such as mobile networks, broadband, and satellite services (Tchamyou, 2019). In the context of Delta State, Nigeria, telecommunication firms include both national operators and regional service providers that deliver mobile, internet, and digital communication services to a growing customer base. These firms generate large volumes of data from subscribers, network operations, and service interactions, which can be harnessed through big data analytics to improve

operational efficiency, customer satisfaction, and organizational profitability (Adewale & Oyelade, 2020). The sector is marked by intense competition, technological innovation, and regulatory oversight, which makes effective management and strategic utilization of data essential for sustained profitability and competitive advantage. Thus, telecommunication firms in Delta State are critical players in the state's digital economy, offering services that facilitate communication, commerce, and information flow while increasingly relying on technology-driven tools to optimize performance and profitability.

### **Descriptive analytics and organizational profitability in telecommunication firms**

Descriptive analytics, a sub-variable of big data analytics, refers to the examination of historical data to identify patterns, trends, and relationships within an organization's operations. It focuses on understanding "what has happened" by summarizing past performance through techniques such as data aggregation, reporting, dashboards, and visualization tools (Chen et al., 2012). In the context of telecommunication firms, descriptive analytics enables managers to gain insights into customer behavior, service usage patterns, network performance, and revenue trends. By analyzing past billing data, call records, and service complaints, firms can identify profitable customer segments, optimize pricing strategies, and improve resource allocation (Mikalef et al., 2020). These insights inform strategic decision-making, allowing firms to enhance organizational profitability by minimizing operational inefficiencies, reducing customer churn, and focusing on high-value services. Empirical studies have shown that organizations that effectively employ descriptive analytics experience better financial outcomes, as understanding historical trends helps firms plan more effectively, reduce costs, and maximize revenue streams (Wamba et al., 2017). In essence, descriptive analytics provides telecommunication firms with the foundational knowledge necessary to make informed, profit-enhancing business decisions.

### **Predictive analytics and organizational profitability in telecommunication firms**

Predictive analytics, a critical sub-variable of big data analytics, involves using statistical models, machine learning algorithms, and historical data to forecast future outcomes and trends. It focuses on answering "what is likely to happen" and supports proactive decision-making by anticipating customer behavior, market demand, and operational challenges (Davenport & Harris, 2017). In telecommunication firms, predictive analytics enables managers to identify potential customer churn, forecast network congestion, predict service demand, and detect fraud before it occurs. By leveraging predictive models,

firms can implement targeted marketing strategies, optimize network investments, and design customer retention programs, all of which contribute directly to organizational profitability (Mikalef et al., 2020). For instance, anticipating high-value customer behavior allows firms to focus resources on profitable segments, while predicting service outages helps reduce revenue loss and operational inefficiencies. Empirical studies suggest that organizations that adopt predictive analytics achieve higher financial performance because predictive insights support better planning, cost reduction, and revenue maximization (Wamba et al., 2017). Therefore, predictive analytics is a strategic capability for telecommunication firms, enabling them to enhance profitability by making data-driven decisions that reduce risk and improve operational effectiveness.

## **Theoretical Framework**

### **Theory and Its Relevance: Resource-Based View (RBV) Theory**

The Resource-Based View (RBV) theory provides a strong theoretical foundation for understanding the relationship between big data analytics (BDA) and organizational profitability in telecommunication firms. RBV posits that organizations achieve sustainable competitive advantage and superior performance by effectively acquiring, deploying, and leveraging valuable, rare, inimitable, and non-substitutable (VRIN) resources and capabilities (Barney, 1991). In the context of telecommunication firms, big data analytics capabilities including descriptive and predictive analytics, skilled personnel, technological infrastructure, and data-driven decision-making processes can be considered strategic resources. These capabilities enable firms to analyze large volumes of customer, network, and operational data, uncover valuable insights, anticipate trends, and make proactive decisions that enhance operational efficiency and revenue generation (Mikalef et al., 2020). By leveraging BDA as a unique and inimitable capability, telecommunication firms in Delta State can differentiate themselves from competitors, optimize marketing strategies, reduce operational costs, and ultimately improve organizational profitability (Wamba et al., 2017).

The RBV framework is particularly relevant because it emphasizes that merely possessing data is insufficient; it is the effective utilization of data analytics capabilities that creates value and strengthens profitability. This aligns with empirical evidence showing that firms with strong analytics capabilities outperform those with limited or underutilized resources in terms of financial and operational performance (Chen et al., 2012; Mikalef et al., 2020). Thus, the RBV theory supports the premise that big data analytics is a strategic organizational resource that can drive profitability and competitive advantage in the

telecommunication sector. Mikalef et al., (2020) conducted a comprehensive study on the impact of big data analytics capabilities on firm performance, emphasizing the mediating role of dynamic capabilities. The study examined organizations across multiple industries, including technology-intensive sectors, and found that firms with strong big data analytics capabilities achieved significantly higher profitability and competitive advantage. Specifically, the authors highlighted that predictive and descriptive analytics enable firms to anticipate market trends, optimize operational processes, and enhance customer retention. They further argued that big data analytics transforms data into strategic insights, allowing managers to make informed decisions that directly influence financial performance. The study also identified the role of organizational culture and technological infrastructure in maximizing the value of analytics capabilities. For telecommunication firms, which generate vast amounts of customer and operational data, the findings suggest that investment in analytics tools and skilled personnel can lead to improved revenue generation, reduced operational inefficiencies, and sustainable profitability. The study underscores the importance of integrating analytics into organizational strategy to enhance firm performance, which is directly relevant to the telecommunication sector in Delta State, where competition is intense and profitability depends on efficient data utilization. Overall, the research provides empirical evidence that big data analytics is a strategic resource capable of driving organizational profitability.

Wamba et al. (2017) investigated the effects of big data analytics on firm performance, focusing on the role of dynamic capabilities in leveraging analytics for financial and operational gains. The study revealed that organizations that effectively implement descriptive, diagnostic, and predictive analytics experience higher profitability due to improved decision-making, resource optimization, and proactive management of customer demands. The authors found that big data analytics enables firms to identify profitable customer segments, forecast network demands, and minimize revenue losses through predictive modeling and trend analysis. Additionally, the study highlighted that analytics capabilities contribute to operational efficiency, cost reduction, and innovation, all of which enhance overall organizational performance. For telecommunication firms, which handle large volumes of subscriber data and network performance metrics, the research indicates that adopting analytics-driven strategies can optimize service delivery and revenue generation. The study also emphasized that the successful impact of big data analytics on profitability depends on the alignment of analytics initiatives with firm strategy and investment in technological infrastructure. Consequently, the findings provide strong empirical support for the assertion that big data analytics is a critical driver of profitability in data-

intensive sectors, making it highly relevant for telecommunication firms in Delta State seeking competitive advantage and sustainable financial growth.

## METHODOLOGY

This section presents the methodology adopted in the study on Big Data Analytics and Organizational Profitability in Telecommunication Firms in Delta State. The methodology outlines the research design, study area, population, sample, data collection methods, research instruments, and analytical techniques used to achieve the study objectives.

### Research Design

The study adopted a cross-sectional survey research design, which is appropriate for examining relationships between variables at a specific point in time (Bryman, 2016). This design allows the researcher to collect primary data from employees and management of telecommunication firms in Delta State to analyze the effect of descriptive analytics and predictive analytics on organizational profitability. A survey design is suitable because it enables the collection of standardized information across respondents and facilitates quantitative analysis of the relationships among variables.

### Study Area

The study was conducted in Delta State, Nigeria, a region experiencing rapid growth in telecommunications services. Delta State hosts several telecommunication firms, including both national and regional operators, which provide mobile, internet, and digital communication services. The firms in the state generate large volumes of data daily, making them ideal for studying the impact of big data analytics on profitability.

### Study Population

The study population comprised all employees of selected telecommunication firms in Delta State. This includes managerial, technical, and administrative staff who are directly involved in operational, strategic, and customer service functions. A total of 960 employees across the selected firms constituted the population. Employees were considered appropriate respondents because they have direct experience with data analytics practices and are knowledgeable about their firm's operational and financial performance (Bryman, 2016).

### Sample and Sampling Technique

The sample size was determined using Taro Yamane's

formula for a population of 960 employees, resulting in a sample size of 282 respondents. A stratified random sampling technique was employed to ensure proportional representation of employees from managerial, technical, and administrative levels. Stratification was necessary to capture diverse perspectives on the use of big data analytics and its impact on profitability across different organizational levels.

### Data Sources and Collection

Primary data were used for the study, collected through structured questionnaires administered to the selected respondents. The questionnaire contained sections on demographic information, the use of descriptive and predictive analytics, and indicators of organizational profitability. Secondary data, such as company reports and financial statements, were also reviewed to supplement primary data and validate findings (Saunders et al., 2019).

### Research Instrument

A structured questionnaire was the main instrument for data collection. Items measuring descriptive analytics assessed the use of historical data, reporting tools, dashboards, and trend analysis in decision-making. Items for predictive analytics examined forecasting techniques, predictive modeling, and data-driven planning. Organizational profitability was measured using indicators such as revenue growth, cost optimization, and return on investment (ROI). The questionnaire employed a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5) to capture respondents' perceptions.

### Data Analysis

Data were analyzed using descriptive and inferential statistics. Descriptive statistics summarized respondents' demographic characteristics and scale responses. Inferential statistics, including correlation analysis, Pearson correlation matrix, and regression analysis, were used to test the relationship between big data analytics (descriptive and predictive) and organizational profitability. Reliability of the instrument was assessed using Cronbach's alpha, with a threshold of 0.7 indicating acceptable internal consistency (Hair et al., 2019).

### Model Specification

The study model specifies organizational profitability (OP) as the dependent variable, while descriptive analytics (DA) and predictive analytics (PA) serve as independent variables. The model is expressed as:

$$OP = \beta_0 + \beta_1 DA + \beta_2 PA + \epsilon$$

Where:

- OP = Organizational Profitability
- DA = Descriptive Analytics
- PA= Predictive Analytics
- $\beta_0$  = Constant term
- $\beta_1, \beta_2$ = Coefficients of the independent variables
- $\epsilon$ = Error term

This model allows the assessment of the magnitude and significance of the effects of descriptive and predictive analytics on organizational profitability in telecommunication firms.

## RESULTS

### Response Rate and Questionnaire Administration

Table 1 presents the distribution and retrieval of the research instruments administered to respondents. Out of the 289 questionnaires distributed, 282 were successfully retrieved, representing a response rate of 97.6%. This high retrieval rate indicates a strong level of participation and engagement among respondents. However, 7 questionnaires (2.4%) were deemed invalid due to incomplete or inconsistent responses, resulting in 275 valid questionnaires (95.2%) used for the final analysis. The response rate exceeds the minimum acceptable threshold for survey-based research, thereby enhancing the reliability and generalizability of the findings (Hair et al., 2019).

**Table 1:** Questionnaire Distribution and Retrieval

Description	Frequency	Percentage (%)
Questionnaires Distributed	289	100
Questionnaires Retrieved	282	97.6
Invalid Questionnaires	7	2.4
Valid Questionnaires Used	275	95.2

### Demographic Characteristics of Respondents

The demographic profile of respondents, as presented in (Table 2), provides insight into the composition of the study sample. The results show that 58.9% of respondents were male, while 41.1% were female, indicating a male-dominated workforce within the sampled organizations. In terms of age distribution, the majority of respondents (40.7%) fall within the 31–40 years age bracket, followed by those aged 20–30 years (26.9%), 41–50 years (22.9%), and 51 years and above (9.5%). This suggests that the sample is largely composed of individuals within the economically active and professionally productive age group. Regarding educational attainment, most respondents possess a B.Sc./HND qualification (56.7%), followed by M.Sc./MBA holders (33.5%), and PhD holders

(9.8%). This indicates a relatively high level of educational background, which is essential for understanding and responding to issues related to big data analytics. Work experience distribution reveals that 37.8% of respondents have between 6–10 years of experience, 25.8% have 11–15 years, 24.7% have 1–5 years, and 11.6% have 16 years and above. This reflects a workforce with moderate to substantial experience, suggesting that respondents possess adequate organizational knowledge to provide informed responses.

**Table 2:** Demographic Characteristics of Respondents.

Variable	Category	Frequency	Percentage (%)
Gender	Male	162	58.9
	Female	113	41.1
Age	20–30 years	74	26.9
	31–40 years	112	40.7
	41–50 years	63	22.9
	51 years & above	26	9.5
Education Level	B.Sc./HND	156	56.7
	M.Sc./MBA	92	33.5
	PhD	27	9.8
Work Experience	1–5 years	68	24.7
	6–10 years	104	37.8
	11–15 years	71	25.8
	16 years & above	32	11.6

### Preliminary Analysis: Data Screening and Reliability

Prior to the main analysis, data screening procedures were conducted to ensure data quality and suitability for statistical analysis. Missing data were minimal (less than 2%) and were treated using mean substitution, thereby minimizing potential bias. Additionally, no significant outliers were identified based on standardized residual values, confirming the robustness of the dataset. The internal consistency of the measurement scales was assessed using Cronbach’s alpha, as presented in Table 3. The results indicate that descriptive analytics ( $\alpha = 0.81$ ), predictive analytics ( $\alpha = 0.84$ ), and organizational profitability ( $\alpha = 0.86$ ) all exceed the recommended threshold of 0.70 (Nunnally & Bernstein, 1994). This confirms that the measurement instruments are reliable and suitable for further statistical analysis.

**Table 3:** Scale Reliability (Cronbach’s Alpha).

Variable	No. of Items	Cronbach’s Alpha
Descriptive Analytics	5	0.81
Predictive Analytics	5	0.84
Organizational Profitability	6	0.86

### Descriptive Statistics

Table 4 presents the descriptive statistics for the key study

variables. The results indicate that descriptive analytics has a mean score of 3.87 (SD = 0.68), predictive analytics has a mean of 3.92 (SD = 0.72), and organizational profitability has a mean of 4.01 (SD = 0.65). These mean values suggest that respondents generally agree that big data analytics practices particularly descriptive and predictive analytics are actively implemented within their organizations and contribute positively to organizational profitability. The relatively low standard deviations further indicate consistency in respondents' perceptions.

**Table 4:** Descriptive Statistics.

Variable	Mean	Std. Deviation
Descriptive Analytics	3.87	0.68
Predictive Analytics	3.92	0.72
Organizational Profitability	4.01	0.65

## Correlation Analysis

The Pearson correlation matrix in Table 5 shows the strength and direction of relationships among the study variables. Descriptive analytics is positively and significantly correlated with organizational profitability ( $r = 0.704$ ,  $p < 0.01$ ), indicating a strong association between the use of descriptive analytics and improved firm performance. Similarly, predictive analytics exhibits an even stronger positive correlation with organizational profitability ( $r = 0.768$ ,  $p < 0.01$ ), suggesting that predictive capabilities play a more pronounced role in enhancing profitability outcomes. Additionally, descriptive analytics and predictive analytics are significantly correlated ( $r = 0.621$ ,  $p < 0.01$ ), indicating that organizations adopting one form of analytics are likely to adopt the other. Overall, the results demonstrate strong interrelationships among the constructs.

**Table 5:** Correlation Matrix.

Variables	DA	PA	OP
Descriptive Analytics (DA)	1.000		
Predictive Analytics (PA)	0.621**	1.000	
Organizational Profitability (OP)	0.704**	0.768**	1.000

## Regression Analysis

### Model Summary

The regression model summary presented in (Table 6) shows a correlation coefficient (R) of 0.812, indicating a strong relationship between the independent variables (descriptive and predictive analytics) and organizational profitability. The coefficient of determination ( $R^2$ ) is 0.659, implying that approximately 65.9% of the variation in

organizational profitability is explained by the model. The adjusted  $R^2$  value of 0.654 further confirms the model's explanatory power, even after adjusting for the number of predictors.

**Table 6:** Model Summary.

R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error
0.812	0.659	0.654	0.421

### Analysis of Variance (ANOVA)

The ANOVA results in (Table 7) reveal that the overall regression model is statistically significant ( $F = 238.41$ ,  $p < 0.001$ ). This indicates that the independent variables jointly have a significant effect on organizational profitability and that the model provides a good fit for the data.

**Table 7:** ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	84.512	2	42.256	238.41	0.000
Residual	43.678	272	0.160		
Total	128.190	274			

### Regression Coefficients

Table 8 presents the regression coefficients for the independent variables. The results indicate that descriptive analytics has a positive and significant effect on organizational profitability ( $\beta = 0.312$ ,  $t = 4.39$ ,  $p < 0.001$ ). This suggests that increased use of descriptive analytics significantly enhances organizational profitability. Similarly, predictive analytics demonstrates a stronger positive and statistically significant effect on organizational profitability ( $\beta = 0.489$ ,  $t = 7.52$ ,  $p < 0.001$ ). This implies that predictive analytics contributes more substantially to profitability compared to descriptive analytics. The constant term ( $\beta = 0.842$ ,  $p < 0.001$ ) further indicates a baseline level of profitability when other factors are held constant.

**Table 8:** Regression Coefficients.

Variable	Beta ( $\beta$ )	Std. Error	t-value	Sig.
Constant	0.842	0.213	3.95	0.000
Descriptive Analytics	0.312	0.071	4.39	0.000
Predictive Analytics	0.489	0.065	7.52	0.000

### Hypotheses Testing

**Hypothesis One ( $H_{01}$ ):** Descriptive analytics has no significant effect on organizational profitability. The regression results show that descriptive analytics

significantly influences organizational profitability ( $\beta = 0.312$ ,  $p < 0.05$ ). Therefore, the null hypothesis ( $H_{01}$ ) is rejected, indicating that descriptive analytics has a statistically significant positive effect on organizational profitability.

**Hypothesis Two ( $H_{02}$ ):** Predictive analytics has no significant effect on organizational profitability. The findings reveal that predictive analytics significantly affects organizational profitability ( $\beta = 0.489$ ,  $p < 0.05$ ). Consequently, the null hypothesis ( $H_{02}$ ) is rejected, confirming that predictive analytics exerts a significant positive influence on organizational profitability.

## **DISCUSSION**

### **Effect of Descriptive Analytics on Organizational Profitability**

The findings of this study reveal that descriptive analytics has a positive and statistically significant effect on organizational profitability in telecommunication firms in Delta State. The estimated coefficient ( $\beta = 0.312$ ) indicates that firms that systematically utilize historical and real-time data for monitoring operations and evaluating performance are more likely to achieve improved financial outcomes. This underscores the critical role of data-driven insights in enhancing managerial efficiency, transparency, and informed decision-making.

The result aligns with the growing body of literature emphasizing the importance of data analytics in improving financial performance. For instance, Susena and Hidayah (2026) demonstrate that big data adoption significantly enhances profitability through improved financial planning and forecasting, while Owusu (2026) highlights that analytics adoption enables firms to identify inefficiencies and capitalize on emerging opportunities. Similarly, Tarode et al. (2026) argue that technological transformation, including analytics integration, has a significant positive impact on firm performance, thereby reinforcing the relevance of descriptive analytics as a foundational component of digital transformation. Descriptive analytics enhances operational efficiency by enabling firms to track performance indicators such as customer behavior, service usage patterns, and network efficiency. This supports the findings of Al Dabbas (2026), who establishes that operational efficiency particularly in inventory management has a direct and positive effect on profitability. In the same context, Nurudeen and Ajibola (2024) show that effective cost control mechanisms significantly improve firm profitability, suggesting that data-driven monitoring systems inherent in descriptive analytics contribute to cost minimization and revenue optimization. Furthermore, descriptive analytics plays a crucial role in strengthening financial management practices. Kukreja (2026) emphasizes that efficient working capital

management significantly enhances firm profitability, while Turyandi et al. (2026) highlight the importance of financial performance analysis in navigating market fluctuations and sustaining profit margins. By providing accurate and timely financial data, descriptive analytics supports these processes and enables firms to maintain financial stability and responsiveness.

The findings also resonate with studies that identify key financial determinants of profitability. Wijayanti and Rohaeni (2026) and Dincă and Akomeah (2026) identify liquidity, leverage, and asset utilization as critical drivers of profitability, while Odhiambo et al. (2026) emphasize the role of effective asset allocation in enhancing financial returns. Descriptive analytics provides the necessary data infrastructure for monitoring and optimizing these variables, thereby facilitating improved financial performance. In addition, Widodo (2026) highlights the importance of data-driven financial modeling in enhancing profitability, further supporting the argument that descriptive analytics strengthens financial decision-making processes.

From a strategic perspective, descriptive analytics contributes to improved organizational analysis and planning. Mulenga et al. (2026) find that strategic organizational analysis significantly enhances financial performance, as it enables firms to evaluate past performance and design effective future strategies. This is consistent with the role of descriptive analytics in providing historical insights that guide strategic decisions and improve organizational outcomes.

Moreover, the integration of analytics with human and organizational capabilities further amplifies its impact on profitability. Zafar (2026) demonstrates that human capital efficiency significantly influences financial performance, particularly when supported by advanced analytics tools. Similarly, Yousif Riyadh et al. (2026) highlight that human resource analytics enhances talent management and organizational resilience, both of which contribute to sustained profitability. These findings suggest that descriptive analytics not only improves operational processes but also strengthens organizational competencies.

In addition, descriptive analytics supports corporate governance and financial reporting processes. Abbas et al. (2026) show that firm characteristics and financial performance influence audit report timeliness, while Yahaya (2026) establishes that governance mechanisms such as risk management committees improve earnings quality. Furthermore, Yahaya (2026) also demonstrates that employee welfare practices significantly influence organizational financial performance. Descriptive analytics enhances these processes by ensuring the availability of accurate and timely information, thereby reducing information asymmetry and improving decision quality. The role of descriptive analytics also extends to supporting financial strategies such as tax planning and capital structure decisions. Febyansyah and Wijaya (2026) show

that profitability is influenced by leverage and capital intensity, while descriptive analytics provides the data necessary to optimize these financial strategies. By enabling firms to evaluate different financial scenarios, descriptive analytics enhances strategic financial planning and profitability outcomes. The findings provide strong empirical support for the positive effect of descriptive analytics on organizational profitability. By enhancing operational efficiency, improving financial management, supporting strategic decision-making, and strengthening organizational capabilities, descriptive analytics serves as a critical driver of financial performance. The result is consistent with extant empirical evidence across diverse sectors, which collectively underscores the transformative role of analytics in achieving sustainable profitability.

### **Effect of Predictive Analytics on Organizational Profitability**

The results of this study indicate that predictive analytics has a strong and statistically significant positive effect on organizational profitability ( $\beta = 0.489$ ), highlighting its critical role in enhancing strategic and operational performance. This finding suggests that organizations that effectively deploy predictive analytics are better equipped to anticipate future trends, optimize resource allocation, and improve financial outcomes. The forward-looking capability of predictive analytics enables firms to transition from reactive to proactive decision-making, thereby strengthening their competitive positioning and profitability.

This result is strongly supported by existing literature. Pandya (2025) asserts that predictive analytics enhances the accuracy of forecasting business outcomes, thereby enabling organizations to align their strategies with anticipated market developments. Similarly, Nguyen et al. (2026) emphasize that big data analytics capabilities, particularly predictive analytics, significantly enhance organizational foresight and ambidexterity, which are essential for improved performance. These findings are further reinforced by Srinivas and Anupama (2026) and Husaeni (2026), who highlight the growing relevance of artificial intelligence and predictive analytics in driving organizational efficiency and financial success across industries.

From an operational standpoint, predictive analytics contributes to profitability through improved financial management and customer-related outcomes. Alonge et al. (2024) demonstrate that predictive analytics models enhance cash flow optimization in complex business environments, leading to improved financial stability and profitability. In the same vein, Manzoor et al. (2026) reveal that predictive analytics improves customer churn prediction using profit-sensitive metrics, thereby directly influencing revenue retention. Complementing this, Isen et

al. (2026) find that customer analytics significantly improves sales funnel conversion and customer retention, both of which are key drivers of organizational profitability. In addition, predictive analytics strengthens risk management and strategic planning capabilities. Balan et al. (2024) highlight the importance of predictive tools in assessing risks and guiding strategic resource utilization under dynamic business conditions. Anwar et al. (2026) further argue that predictive analytics supports adaptive planning and sustainability resilience, enabling organizations to respond effectively to environmental uncertainties. These capabilities are particularly crucial in sectors characterized by rapid change and intense competition. The integration of predictive analytics into broader organizational systems also enhances its impact on performance. Adeniran et al. (2024) and Kumar et al. (2025) note that data-driven management practices significantly improve operational efficiency and business outcomes. Similarly, Aldabbas and Gianni (2026) demonstrate that business intelligence and analytics capabilities foster organizational agility and creativity, which are key determinants of productivity and profitability. This aligns with Fosso Wamba et al. (2024), who find that big data analytics-enabled sensing capabilities improve organizational outcomes through the mediating role of analytics culture.

Furthermore, predictive analytics facilitates innovation and long-term value creation. Bhavikatta (2026) shows that predictive and prescriptive analytics drive sustainable product development through technological innovation, particularly in manufacturing SMEs. Madanchian (2024) also underscores the role of predictive analytics in managing complex systems and fostering e-commerce innovations, thereby enhancing business performance. These findings suggest that predictive analytics not only improves short-term financial outcomes but also contributes to long-term organizational sustainability.

Sector-specific evidence further validates the positive impact of predictive analytics on organizational performance. Theodorakopoulos et al. (2024) demonstrate that big data analytics enhances customer satisfaction and business performance in the tourism sector through improved trend analysis. Chong et al. (2026) also find that analytics adoption in human resource management improves talent management and operational performance. In the financial context, Al-Hashimy and Yao (2026) and Yahaya (2026) provide evidence that data-driven financial and reporting practices significantly enhance organizational performance and profitability. Moreover, the role of predictive analytics within digital transformation initiatives cannot be overstated. Utonga et al. (2026) and Shah Alam et al. (2024) show that the adoption of digital technologies, including big data analytics and artificial intelligence, leads to significant improvements in firm performance. These findings reinforce the argument that predictive analytics is a core

component of modern digital business strategies that drive profitability. The findings of this study are consistent with the broader literature, which identifies predictive analytics as a key driver of organizational success. When combined with other forms of analytics, predictive analytics contributes substantially to explaining variations in organizational profitability. Its relatively stronger effect, as evidenced by the coefficient ( $\beta = 0.489$ ), underscores its dominant role compared to other analytics capabilities. Consequently, organizations are encouraged to invest in predictive analytics infrastructure, skills, and systems to enhance decision-making, improve operational efficiency, and sustain competitive advantage in increasingly data-driven environments.

## Conclusion

This study examined the effects of descriptive and predictive analytics on organizational profitability in telecommunication firms in Delta State, Nigeria, with emphasis on two key objectives. First, the study established that descriptive analytics plays a vital role in enhancing organizational profitability. By leveraging historical and real-time data for reporting and performance monitoring, telecommunication firms are able to improve operational efficiency, support informed decision-making, optimize resource allocation, and reduce costs. This demonstrates that effective use of descriptive analytics provides a strong foundation for improved financial performance. Second, the study found that predictive analytics exerts a more pronounced influence on organizational profitability due to its forward-looking capabilities. By enabling firms to forecast customer behaviour, anticipate market trends, and identify potential risks, predictive analytics supports proactive decision-making, strengthens competitive advantage, and enhances overall financial outcomes. Its application in areas such as customer retention, demand forecasting, and risk management further reinforces its strategic importance. The study concludes that both descriptive and predictive analytics are critical drivers of organizational profitability, with predictive analytics playing a more dominant role. The integration of these analytics capabilities into business processes is therefore essential for telecommunication firms seeking sustainable growth and competitiveness in a data-driven environment.

## REFERENCES

- Abbas, D. S., Octaviani, A. P., Annisa, D. S., Harahap, M., & Kholisah, M. (2026). The Effect of Profitability, Solvency, Company Size and Company Age on Audit Report Lag in The Energy Sector 2021-2024. *Prosiding Simposium Ilmiah Akuntansi*, 48-70.
- Adeniran, I. A., Efunniyi, C. P., Osundare, O. S., Abhulimen, A. O., & OneAdvanced, U. K. (2024). The role of data science in transforming business operations: Case studies from enterprises. *Computer Science & IT Research Journal*, 5(8), 2026-2039.
- Adewale, F., & Oyelade, O. (2020). Digital transformation and organizational performance in Nigeria's telecommunications sector. *International Journal of Business and Technology*, 5(2), 45–60.
- Al Dabbas, H. (2026). Analyzing the Relationship between Inventory Efficiency and Profitability: Empirical Evidence from Amman Stock Exchange. Available at SSRN 6134287.
- Aldabbas, H., & Gianni, M. (2026). Driving organizational performance: the impact of business intelligence, agility and creativity. *International Journal of Productivity and Performance Management*, 1-22.
- Al-Hashimy, H. N. H., & Yao, J. (2026). Financial management practices and their impact on organizational performance within the accounting information system in Iraq. *Global Business and Economics Review*, 34(1), 114-134.
- Alonge, E. O., Eyo-Udo, N. L., Chibunna, B. R. I. G. H. T., Ubanadu, A. I. D., Balogun, E. D., & Ogunsola, K. O. (2024). A predictive analytics model for optimizing cash flow management in multi-location and global business enterprises. *Journal details pending*.
- Anwar, N., Talib, E. A. H., Praja, S. E., Agusalim, M., & Idrus, I. (2026). Predictive Analytics and Adaptive Planning for Sustainability Resilience. In *The Role of AI in Sustainable Supply Chain Management* (pp. 195-250). IGI Global Scientific Publishing.
- Atrill, P., & McLaney, E. (2019). *Accounting and finance for non-specialists* (11th ed.). Pearson Education. 12(2), 23–41
- Balan, O., Gutsul, T., Riabenko, V., Baranovska, O., Polishko, Y., & Gnatko, D. (2024). Risk assessment in the development of strategy for the use of company's resource potential under modern conditions. *Economics & Business Management*, 15(4).
- Bhavikatta, N. B. (2026). The impact of predictive and prescriptive big data analytics on sustainable product development through technological innovation in manufacturing SMEs. *Production & Manufacturing Research*, 14(1), 2618335.
- Chen, H., Chiang, R. H. L., & Storey, V. C. (2012). Business intelligence and analytics: From big data to big impact. *MIS Quarterly*, 36(4), 1165–1188.
- Chong, L. Y. Q., Lim, T. S., & Nipo, D. T. (2026). Human resource analytics adoption and its impact on talent management and operational performance: evidence from Malaysian firms. *Journal of Modelling in Management*, 1-20.
- Davenport, T. H., & Harris, J. G. (2017). *Competing on analytics: Updated, with a new introduction: The new science of winning*. Harvard Business Review Press.
- Dincă, M. S., & Akomeah, F. (2026). Firm Profitability Drivers in the Automotive Sector: Evidence from ROA-Based Analysis.
- Febyansyah, A., & Wijaya, M. S. (2026). The Effect of Profitability, Leverage, and Capital Intensity on Tax Planning Moderated by Firm Size in Real Estate Companies (2022–2024). *Jurnal Informatika Ekonomi Bisnis*, 107-114.
- Fosso Wamba, S., Queiroz, M. M., Wu, L., & Sivarajah, U. (2024). Big data analytics-enabled sensing capability and organizational outcomes: assessing the mediating effects of business analytics culture. *Annals of Operations Research*, 333(2), 559-578.
- Gandomi, A., & Haider, M. (2015). Beyond the hype: Big data concepts, methods, and analytics. *International Journal of Information Management*, 35(2), 137–144.
- Husaeni, U. A. (2026). Ten years of mapping the growth and trends research of artificial intelligence in the financial sector: a bibliometric analysis. *Journal of Chinese Economic and Business Studies*, 1-29.
- Ise, B., Moyosore, F. O., Adetola, T. P., Lawal, A. K., Amuna, M., Ntim, P. Y., & Kwarteng, R. A. (2026). The Impact of Customer Analytics on Sales Funnel Conversion and Customer Retention in the E-Commerce Industry. *Asian Journal of Economics, Business and Accounting*, 26(1), 207-224.
- Kukreja, D. H. (2026). Working Capital Management and Firm Profitability: Industry-Level Evidence from Indian Service Sector Firms. Available at SSRN 6192298.
- Kumar, T., Agarwal, R., & Bijwe, S. (2025). Transforming Business Operations with Data-driven Management in the TechStrat World.
- Madanchian, M. (2024). The role of complex systems in predictive analytics for e-commerce innovations in business management. *Systems*, 12(10), 415.
- Manzoor, A., Qureshi, M. A., Kidney, E., & Longo, L. (2026). E-profits: a

- business-aligned evaluation metric for profit-sensitive customer churn prediction. *International Journal of Data Science and Analytics*, 22(1), 75.
- Mikalef, P., Krogstie, J., Pappas, I. O., & Pavlou, P. (2020). Big data analytics capabilities and innovation: The mediating role of dynamic capabilities. *Information & Management*, 57(2), 103168.
- Mulenga, C., Bwalya, K., & Musonda, B. (2026). Strategic Organizational Analysis and Its Effect on the Financial Performance of SMEs in Chembe District, Luapula Province, Zambia. *Afrihorizon Business Strategy and Management Journal*, 3(1), 1-11.
- Nguyen, V. V., Nguyen, P. V., Nguyen, S. T. N., & Vrontis, D. (2026). From data to decisions: enhancing ambidexterity and performance through big data analytics capability and organizational foresight. *Journal of Asia Business Studies*, 20(1), 220-241.
- Nurudeen, A. O., & Ajibola, H. (2024). COST CONTROL AND PROFITABILITY OF LISTED MANUFACTURING COMPANIES IN NIGERIA. *Fuoye Journal of Management Sciences; Volume 2, Number 1; 2024 (Online)*.
- Odhiambo, L. A., Kosgei, M., & Gitagia, F. K. (2026). Asset allocation and profitability of fund managers registered by Retirement Benefits Authority Kenya. *International Academic Journal of Economics and Finance (IAJEF) | ISSN 2518-2366*, 5(2), 216-240.
- Owusu, S. (2026). *Determinants of Big Data Analytics Adoption among Small and Medium-Sized Enterprises in Ghana* (Doctoral dissertation, Walden University).
- Pandya, S. (2025). Investigating the Application of Data Analytics in Forecasting Business Outcomes. *IJSAT-International Journal on Science and Technology*, 16(4).
- Ross, S. A., Westerfield, R. W., & Jordan, B. D. (2020). *Fundamentals of corporate finance* (13th ed.). McGraw-Hill Education.
- Shah Alam, S., Ahsan, M. N., Masukujjaman, M., Kokash, H. A., & Ahmed, S. (2024). Adoption of big data analytics and artificial intelligence among hospitality and tourism companies: Perceive performance perspective. *Journal of Quality Assurance in Hospitality & Tourism*, 1-35.
- Srinivas, P., & Anupama, B. (2026). Understanding the Organizational Applications of Artificial Intelligence: Insights from a Systematic Literature Review and Bibliometric Analysis. *International Journal of Economic Social Science and Management LAW*, 7(1), 362-375.
- Susena, K. C., & Hidayah, N. R. (2026). The Effect of Big Data Adoption on Regional Bank Profitability: Simulated Data in the Financial Planning. *Jurnal Ilmiah Manajemen Kesatuan*, 14(1), 511-522.
- Tarode, S., Agarwal, B., Rastogi, S., & Sharma, D. (2026). Tech transformation and financial performance: a quantile perspective on the small-and medium-sized enterprises. *Journal of Economic and Administrative Sciences*, 1-19.
- Tchamy, V. S. (2019). The impact of mobile telecommunication on economic growth in Africa. *Telecommunications Policy*, 43(1), 101-115.
- Theodorakopoulos, L., Theodoropoulou, A., & Halkiopoulou, C. (2024, September). Big data and business intelligence in tourism: Analyzing trends and enhancing customer satisfaction through online review analytics. In *International Conference of the International Association of Cultural and Digital Tourism* (pp. 507-536). Cham: Springer Nature Switzerland.
- Turyandi, I., Andin, W. A., Wibiksana, M. R., & Wardani, S. A. (2026). Net Profit Margin (Npm) Analysis in Measuring SK Hynix Inc.'S Financial Performance Against Semiconductor Market Fluctuations 2020-2024. *Jurnal DIALEKTIKA: Jurnal Ilmu Sosial*, 24(1), 154-161.
- Utonga, D., Tundui, C. S., & Mkuna, E. (2026). Harnessing performance through digital technology adoption: an empirical analysis of SMEs in the Tanzanian fruit juice processing industry. *Cogent Business & Management*, 13(1), 2612771.
- Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S. J., Dubey, R., & Childe, S. J. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. *Journal of Business Research*, 70, 356-365.
- Widodo, P. (2026). The use of Dynamic Panel Data to Estimate the Profitability of Conventional Banks. *Journal La Sociale*, 7(1), 80-104.
- Wijayanti, M., & Rohaeni, H. (2026). Liquidity, Leverage, and Asset Utilization as Determinants of Profitability: Evidence from Indonesian Transportation Sector Firms (2019-2020, 2022-2023). *International Journal of Economics Management and Social Science*, 9(1), 204-216.
- Yahaya, O. A. (2026). Employee welfare practices and organizational financial performance: A panel study. *Journal of Accounting and Finance*, 8(2), 100-142.
- Yahaya, O. A. (2026). How could earnings quality profit from risk management committee presence. *Journal of Business, Economics, and Management*, 18(1), 615-638.
- Yahaya, O. A. (2026). Occupational safety reporting and firm profitability: Evidence from Nigerian listed firms. *Journal of Financial Accounting and Reporting*, 7(2), 776-804.
- Yousif Riyadh, M., Rawad Fadhil Abed, A., & Alyaa Hussein Mohammed Ali, A. (2026). The Role of Human Resources Analytics in Talent Management to Enhance Organizational Resilience and Achieve Competitive Advantage: An Applied Study at Mansour Pharmaceutical and Medical Supplies Company. *The Role of Human Resources Analytics in Talent Management to Enhance Organizational Resilience and Achieve Competitive Advantage: An Applied Study at Mansour Pharmaceutical and Medical Supplies Company*, 8(1), 275-286.
- Zafar, M. B. (2026). From People to Profits: Examining Human Capital Efficiency in Islamic Banking through Machine Learning. *Journal of the Knowledge Economy*, 1-26.