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Original Article

Effect of Information Technology on Inventory Management in Oil and Gas Sector, South-South Nigeria

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ABSTRACT: *The study was on the effect of information technology on inventory management in the oil and gas sector, South-South Nigeria. Literatures were reviewed according to the variables identified. The design adopted for the study was a survey research design. The study employed a sample of 322 employees selected from a population that comprised all the selected oil and gas firms in South-South, Nigeria, through a stratified random sampling technique. The instrument used for data collection was a questionnaire. The split-half reliability method was used to determine the reliability coefficient of the data collection instrument. Experts from both industry and academia ascertained the face and content validity of the instrument. The results of the analysis using the Multiple regression model show that there is a significant effect of information technology (use of software, Artificial Intelligence, Network Administration, and Cyber security) on inventory management in the oil and gas sector in South-South, Nigeria. This means that the four variables of information technology (use of software, Artificial Intelligence, Network Administration, and Cyber security) predicted inventory management in the oil and gas sector in South-South, Nigeria. Based on these findings, it was recommended among others that Regulatory authorities and industry stakeholders should support these efforts by providing guidelines, funding incentives, and training programs that promote the effective use of information technology across the oil and gas sector.*

KEYWORDS: *Information technology, Artificial intelligence, Network administration, Cybersecurity, and inventory management*

1. INTRODUCTION

In the ever-changing global economy of today, information technology (IT) is a key factor in determining how successful and efficient organizational procedures are. To put it simply, information technology is the process of storing, retrieving, transmitting, and manipulating data or information using computers, software, and telecommunications equipment. Nigeria's oil and gas industry has seen increased production, streamlined procedures, and increased efficiency as a result of the use of information technology (IT) in inventory control (Ibrahim et al., 2020; Ogbuokiri et al., 2015). Businesses can better control their stock levels, save carrying costs, and lower the danger of stockouts or overstocking by using sophisticated software systems for inventory tracking (Akinyemi & Adediran, 2022). Furthermore, real-time inventory level monitoring made possible by IT solutions can result in proactive supply chain management and better informed decision-making (Enverus, 2024; HiddenBrains Africa, 2023). All things considered, information technology adoption is essential to improving efficiency and inventory management in Nigeria's oil and gas industry. Organizations have been forced to give up manual inventory methods due to the rise of automated inventory monitoring systems, which have been facilitated by globalization, intense rivalry, the financial crisis, and advancements in information and communication technology (ICT) (Olowookere, 2023). In today's digital business environment, even small and medium-sized businesses are progressively implementing computerized inventory management systems. The implementation of an electronic inventory tracking system may not be economically justified for certain SMEs, including convenience stores, wine bars, and shoe stores (Afolabi, 2022). However, computerized inventory tracking systems have emerged as a crucial part of strategic business planning for companies with significant raw material and finished goods turnover in an effort to boost efficiency and preserve competitiveness. Additionally, the popularity of electronic inventory systems has increased due to the development of strong, integrated software solutions that can handle a variety of recordkeeping requirements, including inventory control (Enverus, 2024; HiddenBrains Africa, 2023).

Any resource with economic worth that is retained to satisfy an organization's present and future needs is referred to as inventory, according to Sharma (2010). In order to increase asset productivity and inventory turns, target customers and position products in a variety of markets, fortify intra- and inter-organizational networks, improve technological capabilities to produce high-quality products, and impart effectiveness in inter-firm relationships, inventory management is acknowledged as a crucial tool. Small manufacturing companies' competitiveness and market share can even be increased with effective inventory management (Chalotra, 2013). While guaranteeing that resources are available when needed, prudent inventory planning, management, organization, and coordination minimize waste, depreciation, and theft (Ogbadu, 2009). Every company's main objective is to maximize profits, productivity, and business survival, all of which are ensured by efficient and effective inventory planning, control, organization, and coordination. Additionally, a balance between the trade-offs of

profitability and liquidity is guaranteed by effective working capital management achieved by timely and appropriate inventory management (Aminu, 2012). Since an organization's overall profitability is dependent on the volume of products sold, which is directly correlated with the product's quality, inventory management is also essential to the success and expansion of the business (Anichebe & Agu, 2013).

1.1.1.PROBLEM OF THE STUDY

Particularly in the fast-paced commercial world of today, effective inventory management is crucial to striking a balance between cash flow, operational effectiveness, and customer service. Due to outdated forecasting and replenishment models, traditional inventory procedures can lead to excess stock, high carrying costs, and production delays. Inventory management has grown more complicated and prone to inefficiencies as companies are under increasing demand from shareholders and consumers to increase responsiveness and efficiency. Risks, including data errors, system outages, and cybersecurity threats, make these difficulties even worse. This study aims to examine how the integration of information technology in terms of use of software, artificial intelligence, network administration, and cybersecurity can address these issues by improving inventory management and data integrity across the supply chain in the Oil and Gas Sector, Nigeria.

1.1.2.OBJECTIVE AND HYPOTHESIS OF THE STUDY

The objective of this study was to investigate the effect of information technology on inventory management in the oil and gas sector in South-South, Nigeria.

Ho: There is no significant effect of Information Technology in terms of use of software, Artificial Intelligence, Network Administration, and Cyber-security on Inventory Management in the oil and gas sector in South-South, Nigeria

2. LITERATURE REVIEW

2.1. CONCEPT OF INFORMATION TECHNOLOGY AND INVENTORY MANAGEMENT

Using the quick growth of information and communication technology, companies are trying to create and set up worldwide, strategic, and effective inventory control systems to enhance supply chain management. To promote such global inventory control systems that are also compatible with sustainability objectives, organizations must individually and jointly design and implement effective systems. Mongare and Nasidai (2014) conducted a study to investigate how technology affects inventory control systems in Kenyan ferry services. Descriptive statistics were used to analyze the data that was gathered. In terms of accuracy, convenience of access to information, and efficiency, technology has had a stronger impact on inventory control, which has an impact on organizational performance, according to the study. According to the study, modern inventory control systems should be well implemented because they provide a platform for easily evaluating risk in areas where the organization invests a lot of money in purchasing inventory.

Inventory is a specific quantity or supply of goods that is held for a certain purpose. The goal of inventory management, also known as inventory control, is to strike a balance between reducing costs and meeting inventory demand (Eneje, Nweze & Udeh, 2012). According to Eneje, Nweze, and Udeh (2012), "inventory management" refers to the collection of practices that a business uses to make it easier for finished goods and raw materials to enter the production process. According to Panigrahi (2013), a company's inventory includes all of the readily available goods and parts that can be purchased. Inventory management, according to George (2015), is the methodical process of controlling how much stock companies keep on hand so they can effectively meet internal and external demand at the right times. The literature now in publication contains a number of additional definitions of this type. Supervising the transportation and storage of semi-finished, finished, and raw materials is part of inventory management. The objective is to reduce associated costs and guarantee that there is always a sufficient supply of inventory. Kotler (2012).

Significant improvements have been brought about in a number of industries, including Nigeria's oil and gas sector, by the incorporation of information technology (IT) into inventory management. Emerging research and industry practices contradict claims that IT has no discernible impact. Inventory tracking, demand forecasting, and resource allocation have improved with the use of software programs like Enterprise Resource Planning (ERP) and Warehouse Management Systems (WMS), increasing operational effectiveness and cutting down on unnecessary expenses (Terab, Umar, & Oyedeji, 2023). Additionally, artificial intelligence (AI) is becoming more and more important since it makes predictive analytics possible, which reduces inventory-related risks, optimizes stock levels, and avoids shortages or overstocking. However, a shortage of qualified workers and inadequate infrastructure hinder AI's full potential in South-South Nigeria's oil and gas industry (Eteyen, 2024).

Real-time inventory monitoring and decision-making depend on smooth data interchange and system integration, both of which are supported by effective network administration. Although its full benefits have not yet been fully realized by all operators in the region, technological infrastructure has been proven to have a favorable impact on business performance in this context (Akhimien & Adekunle, 2023). As inventory systems become more and more digitalized, cybersecurity has become more and more important. Strong cybersecurity measures, including access control, system segmentation, and frequent vulnerability testing, are essential to safeguard inventory data and preserve operational continuity in the oil and gas industry, which is especially susceptible to cyberattacks (Chaoui, 2024).

3. THEORETICAL FRAMEWORK

3.1. INNOVATION DIFFUSION THEORY BY ROGERS (1995)

The Innovation Diffusion Theory (IDT) was developed by Rogers (1995). The five main innovation qualities that make up IDT are observability, trialability, complexity, and compatibility. The relative benefit, compatibility, and complexity of these attributes aid in comprehending the user adoption and decision-making process. They can also be used to predict when new technical developments will be introduced and to provide insight into the interactions between the variables covered here. The process of bringing members of a social system up to speed on a new development by communicating it to them in a certain way over a period of time through specific channels is known as "diffusion of innovation." Rogers (1995). The theory explains the steps involved in the innovation-decision process, the variables influencing adoption rates, and the various adopter types. The theory's goal is to forecast the likelihood that different categories of adopters would embrace a given innovation and the rates at which they do so. Innovation is the process by which some people are more likely than others to embrace a new concept, behavior, or product. It does not happen instantly in a social system; rather, it is a process (Rogers, 1995). The traits of people who accept a new technology quickly have been found to be distinct from those who adopt a new technology more slowly. When trying to convince a certain group of people to accept a new invention, it is critical to have a solid understanding of the features of the target audience and how those traits will either facilitate or impede adoption of the innovation.

3.2. TECHNOLOGY ACCEPTANCE MODEL (TAM)

To investigate how people use technology at work in connection to perceived usefulness and usability, the Technology Acceptance Model was created (Katke, 2021). According to the TAM, perceived ease of use and technology's usefulness are the most important determinants of acceptance. It asserts that although people are the primary variables, they are influenced by outside variables such as user characteristics and componentry (Ajibade, 2018). Attitudes toward the use of technology systems should be considered as part of a strategy for determining if the technology will be adopted, since attitudes influence people's willingness or inability to use it. The Technology Acceptance Model has been criticized for not taking into account outside factors such as economic constraints, the influence of competition, suppliers, and other factors when examining decision-making components. Because it covers all aspects of inventory management, including data recording, receiving goods, and the researcher felt that technology systems would be a good fit for this study.

The Technology Acceptance Model is one of the extensions developed by Fishbein and Ajzen's TRA. In order to explain and forecast whether users will embrace, reject, or adopt new technologies, Davis initially introduced the Technology Acceptance Model in 1986 (Davis, 1989). The Technology Acceptance Model's theoretical underpinnings are based on the idea that when consumers are presented with new technology, three main factors influence their choice of how and when to utilize it. Indirect influences from outside the system can affect a user's belief that they should utilize it. According to Erasmus et al. (2015), these elements include perceived utility and simplicity of use. Making a value judgment about whether a behavior is beneficial or negative is part of how one thinks about using the Technology Acceptance Model (Erasmus et al., 2015). Using the Technology Acceptance Model has a direct impact on a person's intention to utilize a technology. How someone thinks about utilizing something is influenced by both its perceived utility and ease of use (Guritno & Siringoringo, 2013). Two elements that can influence a person's behavioral intention to use are their attitude toward using it and their perception of its usefulness.

3.3. EMPIRICAL REVIEW

Information technology and inventory management in various business situations have been the subject of recent studies. Kariuki (2013) investigated the function of IT in Nairobi retail establishments and discovered that it improves operational efficiency in inventory management and lowers costs. Nevertheless, other merchants were unable to reap the rewards, indicating that stronger execution and alignment with corporate strategy are required. According to the report, information technology proficiency improves inventory operations and tactics while lowering the number of out-of-stock situations. The moderating influence of store format on the relationship between ICT, innovation, and sustainability in Spanish supermarket retailing was also evaluated by Marín-García, Gil-Saura, Ruiz-Molina, and Contrí (2021). Their empirical study, using partial least squares regression and multi-group analysis on data from 510 customers, concluded that ICT, particularly AI technologies like “Just Walk Out” systems, directly and indirectly promotes innovation and sustainability. The influence of ICT was more pronounced in hypermarkets and supermarkets than in discount stores, suggesting that store format plays a significant role in how ICT translates into competitive advantage.

There has also been a lot of discussion on the connection between inventory control and financial performance. Effective raw material inventory management has a major impact on Nigerian breweries' profitability, according to research by Eneje, Nweze, and Udeh (2012). Their analysis, which used OLS regression and annual reports from 2008 to 2017, highlighted how efficient raw material management results in long-term profitability. After researching strategic inventory management in Kenyan manufacturing companies, Kairu (2015) came to the conclusion that poor inventory controls, imprecise forecasting, and inefficient ICT deployment have a detrimental effect on performance. Reduced demand and subpar order fulfillment are the results of these inefficiencies, which eventually affect revenue. Using longitudinal data from the Egyptian stock market, Elsayed and Wahba (2016) found that the impact of the inventory-to-sales ratio on business success varies depending on the stage of the firm's life cycle. Specifically, during growth and rejuvenation phases, a higher ratio had a positive effect, while in the early and later stages, it was detrimental. Namgembe and Munene (2016) added that effective inventory management is

significantly linked with improved procurement processes in sugar manufacturing firms in the western sugar belt, reinforcing the importance of inventory control in supply chain efficiency.

Additionally, Lyndon and Paymaster (2016) looked into the connection between listed Nigerian brewing businesses' profitability and inventory cost management. Their analysis, which used secondary data from 2005 to 2014, demonstrated that work-in-progress inventories significantly increased profitability. In a similar vein, Okoye, Amahalu, Nweze, and Obi (2016) examined more than 52,000 businesses over a 25-year period and found a strong relationship between financial performance metrics like gross and operating profit and several kinds of inventories, including raw materials, semi-finished, and finished goods. According to their research, each inventory category has a distinct impact on performance. These findings were supported by Ryan's (2017) research on material management in Nigerian breweries, which revealed that storage and procurement procedures had a major impact on profitability. Effective materials inventory and interdepartmental coordination were seen as crucial contributors to financial success. Together, these studies confirm that inventory management, especially when supported by ICT and strategic planning, plays a pivotal role in improving both operational efficiency and financial outcomes across industries.

By examining the function of inventory management within the larger supply chain framework, the investigation into the Kenyan manufacturing sector is conducted. With a sample size of 56 workers selected from a population of 459 workers, they used a descriptive research approach and structured questionnaires to gather data. The results showed that supplier connections and inventory systems had a greater impact on business performance than order and warehouse management, which had a moderate effect on organizational outcomes. According to the study, effective inventory management systems facilitated strategic decision-making, decreased supply chain delays, and enhanced departmental communication. Software-based inventory techniques were demonstrated to be especially successful in optimizing economic order quantities, which supports these findings. For example, Hussain, Saber, and Habib (2018) found that Pakistani manufacturing firms using inventory management software experienced a 23% increase in EOQ calculation accuracy, which reduced stockouts and holding costs. Similarly, a case study of an Indonesian pharmaceutical distributor documented a 15% decrease in carrying costs and a 28% reduction in emergency orders after implementing EOQ software. These results underline the transformative impact of digital tools in improving inventory accuracy and operational efficiency.

4. METHODOLOGY

The survey research design was used for the study. Survey research was suitable because it helps in obtaining information about what a person knows, believes, or expects, feels or wants, intends or does or has done, and about his explanations or reasons for any of the preceding. A stratified random sampling technique was adopted in selecting a sample of 322 staff from the population that comprised all staff of the select oil and gas firms in South-South, Nigeria, who were stratified according to their organizations. The minimum total sample size of the study was derived through Taro-Yamane's (1976) estimation equation. The primary data was obtained through individual responses and opinions of existing staff of the selected oil and gas firms with the help of a well-structured questionnaire.

In order to validate the instrument, the instrument was given to two experts in research methods and statistics for criticism and to ascertain the relatedness of the items to the various hypotheses that the items were required to test. The criticisms of these experts were used to modify and improve the instrument for construct, face, and content validity. After due corrections and amendments, the instrument was used for the study. To ascertain that the research instrument measures consistently what it was designed to measure, the instrument went through a trial test, using fifty (30) subjects who were randomly selected outside the population under study. The data generated was analyzed to establish its internal consistency using the Cronbach coefficient alpha reliability estimates. This yielded a reliability coefficient, ranging between 0.814 and 0.902, which indicates that the instrument was reliable and, as such, was able to measure consistently what it was purported to measure. To test the hypotheses generated to guide the study, the Multiple Linear Regression Test statistic was adopted. The model specification for Multiple Linear Regression is as follows:

$$IM = \alpha + \beta 1US + \beta 2AI + \beta 3NA + \beta 4CY + \varepsilon$$

Where:

IM = Inventory Management
α = Constant Term;
β1, β2, β3 & β4 = Beta coefficients;
US = Use of software;
AI = Artificial Intelligence;
NA = Network Administration; and
CY = Cybersecurity
ε = Error term.

4.1. TEST OF HYPOTHESIS

There is no significant effect of Information Technology in terms of use of software, Artificial Intelligence, Network

Administration, and Cyber security on Inventory Management in the oil and gas sector in South-South, Nigeria. The independent variable in this hypothesis was Cyber Security, while the dependent variable was Re-order Level in the oil and gas sector in South-South, Nigeria. The simple linear regression analysis test statistic was employed in testing the data for this hypothesis. The results of the analysis were presented in the tables below.

TABLE 1 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	440.381	4	110.095	101.154	.000[b]
	Residual	345.019	317	1.088		
	Total	785.401	321			

a. Dependent Variable: Inventory management
b. Predictors: (Constant), Cyber security, Use of software, Network administration, Artificial intelligence

Results of analysis in Table 1 show the predictive composite effect of Information Technology in terms of use of software, Artificial Intelligence, Network Administration, and Cyber security on inventory management in the oil and gas sector in South-South, Nigeria. The results indicate that the calculated f-value of 101.154 is greater than the critical f-value of 3.841 at the 0.05 level of significance with 1 and 320 degrees of freedom. This means that there is a significant effect of information technology (use of software, Artificial Intelligence, Network Administration, and Cybersecurity) on inventory management in the oil and gas sector in South-South, Nigeria. By these results, the alternate hypothesis is accepted and the null hypothesis rejected.

TABLE 2 Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.749[a]	.561	.555	1.04326	1.311

a. Predictors: (Constant), Cyber security, use of software, Network administration, Artificial intelligence
b. Dependent Variable: Inventory management

The R^2 of the simple linear regression in Table 2 measures the degree of determination coefficient of predictors (use of software, Artificial Intelligence, Network Administration, and Cyber security) on inventory management in the oil and gas sector in South-South, Nigeria. It predicts that 56.1% of the variation in inventory management in oil and gas sector in South-South, Nigeria is explained by the variation of predictors (use of software, Artificial Intelligent, Network Administration and Cyber security), While 43.9% of the variations in the inventory management in oil and gas sector in South-South, Nigeria is explained by other variables which are extraneous to the study.

TABLE 3 Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	8.636	1.197		7.217	.000
Use of software	.117	.012	.365	9.466	.000
Artificial intelligence	.152	.034	.177	4.415	.000
Network administration	.256	.033	.295	7.651	.000
Cyber security	.176	.017	.429	10.660	.000

a. Dependent Variable: Inventory management

The coefficients in Table 4.21 show the effect of Information technology in terms of the use of software, Artificial Intelligence, Network Administration, and cybersecurity on inventory management in the oil and gas sector in South-South, Nigeria, and this could be explained using the equation: IM = 8.638 + .117US + .152AI + .256NA + .176CS + E.

Where:

IM - the dependent variable (Inventory Management)
US - Use of Software
AI - Artificial Intelligence
NA - Network Administration
CS - Cybersecurity
E - Error

The Beta weights show the relative effect of each predictor variable. Use of software (β = 0.117; t=9.466, p<0.05) shows that 1% increase in the use of software, while other variables are held constant, would lead to a 11.7 percent increase in inventory management in the oil and gas sector in South-South, Nigeria. Artificial intelligence (β = 0.152; t=4.415; p<0.05) shows that 1% increase in the use of Artificial Intelligence, while other variables are held constant, would lead to a 15.2 percent increase in inventory management in the oil and gas sector in South-South, Nigeria. Network Administration (β= 0.256; t =7.651, p<0.05) shows that 1% increase in the use of Network Administration, while other variables are held constant, would lead to a 25.6 percent increase in inventory management in the oil and gas sector in South-South, Nigeria. Cyber security (β =0.176; t=10.660, p<0.05) shows that 1% increase in the use of Cyber Security, while other variables are held constant, would lead to a 17.6 percent increase in inventory management in the oil and gas sector in South-South, Nigeria. The four variables predicted inventory management in the oil and gas sector in South-South, Nigeria. This is because β has a significant t-value at <0.05.

5. DISCUSSION OF FINDINGS

The hypothesis investigated the effect of Information Technology in terms of use of software, Artificial Intelligence, Network Administration, and Cyber security on Inventory Management in the oil and gas sector in South-South, Nigeria. The results of analysis using multiple regression test statistics show that there is a significant effect of information technology (use of software, Artificial Intelligence, Network Administration, and Cyber security) on inventory management in the oil and gas sector in South-South, Nigeria. By these results, the alternate hypothesis is accepted and the null hypothesis rejected. The R^2 predicts that 56.1% of the variation in inventory management in oil and gas sector in South-South, Nigeria is explained by the variation of predictors (use of software, Artificial Intelligent, Network Administration and Cyber security), While 43.9% of the variations in the inventory management in oil and gas sector in South-South, Nigeria is explained by other variables which are extraneous to the study. The coefficients show the effect of Information technology in terms of the use of software, Artificial Intelligence, Network Administration, and cybersecurity on inventory management in the oil and gas sector in South-South, Nigeria. The Beta weights show the relative effect of each predictor variable: Use of software (β =0.117; t=9.466, p<0.05) shows that 1% increase in the use of software, while other variables are held constant, would lead to a 11.7 percent increase in inventory management in the oil and gas sector in South-South, Nigeria. Artificial intelligence (β =0.152; t=4.415; p<0.05) shows that 1% increase in the use of Artificial Intelligence, while other variables are held constant, would lead to a 15.2% percent increase in inventory management in the oil and gas sector in South-South, Nigeria. Network Administration (β=0.256; t =7.651, p<0.05) shows that 1% increase in the use of Network Administration, while other variables are held constant, would lead to a 25.6 percent increase in inventory management in the oil and gas sector in South-South, Nigeria. Cyber security (β =0.176; t=10.660, p<0.05) shows that 1% increase in the use of Cyber Security, while other variables are held constant, would lead to a 17.6 percent increase in inventory management in the oil and gas sector in South-South, Nigeria. The four variables predicted inventory management in the oil and gas sector in South-South, Nigeria. This is because β has a significant t-value at <0.05. Several of these were in agreement, and some among them were Mongare and Nasidai's (2014), whose research was to look into the impact of technology on inventory control systems in Kenya ferry services. The collected data were analysed using descriptive statistics. According to the study, technology has had a greater impact on inventory control in terms of efficiency, ease of access to information, and accuracy, affecting organizational performance. According to the study, modern inventory control systems should be well implemented because they provide a platform for easily evaluating risk in areas where the organization invests a lot of money in purchasing inventory.

6. CONCLUSION AND RECOMMENDATIONS

Based on the research findings, the study concludes that there is a significant effect of information technology (use of software, Artificial Intelligence, Network Administration, and Cyber security) on inventory management in the oil and gas sector in South-South, Nigeria. That is, these means that the four variables of information technology (use of software, Artificial Intelligence, Network Administration, and Cyber security) predicted inventory management in the oil and gas sector in South-South, Nigeria. Based on the findings of this study, it was recommended that regulatory authorities and industry stakeholders should support these efforts by providing guidelines, funding incentives, and training programs that promote the effective use of information technology across the oil and gas sector, through the strategic integration of software, AI, network administration, and cyber security, oil and gas firms in South-South Nigeria can achieve more accurate, efficient, and resilient inventory management systems. Also, given the growing reliance on digital platforms for inventory tracking, procurement, and supply chain communication, oil and gas firms must ensure that their systems are protected against cyber threats that could disrupt inventory data, delay order processes, or compromise decision-making accuracy.

CONTRIBUTION TO KNOWLEDGE

This study contributes significantly to the body of knowledge by empirically establishing the effect of information technology in terms of the use of software, artificial intelligence (AI), network administration, and cybersecurity on inventory management in the oil and gas sector of South-South Nigeria. Unlike previous studies that treated information and technology components in isolation or focused on general supply chain impacts, this research provides a holistic and context-specific analysis, revealing that these four dimensions of information and technology collectively account for 56.1% of the variation in inventory management performance in oil and gas, South-South, Nigeria.

The findings highlight the strategic importance of integrating diverse information and technology tools to enhance inventory accuracy, responsiveness, and security in a high-stakes, resource-intensive sector. Moreover, the study contributes new insights by quantifying the individual predictive power of each information and technology variable, thereby offering evidence-based direction for organizational investment and policy prioritization. By demonstrating the direct and statistically significant influence of these technologies within a developing economy context, the research fills a gap in empirical literature and serves as a valuable reference for future academic inquiry, industry practice, and policy formulation. It also provides a foundation for comparative studies across sectors and regions, thereby expanding the global discourse on digital transformation in inventory and operations management.

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