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INFORMATION TECHNOLOGY PRACTICES AND SUPPLY CHAIN MANAGEMENT IN FOOD AND BEVERAGES SECTOR

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ABSTRACT
This study examined the impact of Information Technology (IT) on Supply Chain Management (SCM) in the Nigerian manufacturing industry, with a focus on the food and beverage sector. The research explored the relationships between key IT dimensions e-business, e-marketplace, and e-procurement and their effects on SCM performance. Using a cross-sectional survey design, data were collected from 200 managerial staff members of three leading Nigerian manufacturing firms: Guinness Nigeria PLC, Nigeria Breweries PLC, and Honeywell Flour Mill Nigeria PLC. The research employed descriptive and inferential statistical methods, including mean scores, standard deviations, relative importance index (RII), and Kolmogorov-Smirnov tests, to analyze the data. The findings revealed that e-business significantly enhances organizational corporate image and reduces business process costs, while e-marketplace improves efficiency in placing orders and announcing purchases. E-procurement was found to contribute to improved operational efficiency and reduced administrative costs. The study also highlighted on the critical role of IT in achieving faster time-to-market, improving consumer information, and enhancing internal and external communication within supply chains. The study concludeed that adopting IT tools in SCM can drive competitive advantage, operational efficiency, and customer satisfaction in Nigeria's food and beverage manufacturing sector.

Key words: *e-Business, e-Marketplace, e-Procurement, Information Technology, Supply Chain Management, Manufacturing Industry.*

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INTRODUCTION

Supply Chain Management (SCM) has evolved into a strategic cornerstone for manufacturing firms aiming to gain competitive advantage in today's globalized and highly dynamic markets. The increasing complexity of supply networks, particularly in fast-moving consumer goods (FMCG) industries such as food and beverages, underscores the necessity for digital integration to streamline operations and enhance responsiveness. Information Technology (IT) has emerged as a transformative enabler of SCM, driving real-time visibility, automation, data-driven decision-making, and collaboration across supply chain partners (Chong et al., 2023; Ivanov & Dolgui, 2022). In developing economies like Nigeria, manufacturers continue to face persistent supply chain challenges such as fragmented logistics networks, demand volatility, and inefficient procurement systems (Adewale & Ojo, 2023). These difficulties are

further compounded in the food and beverage sector, where firms must manage the perishability of goods, fluctuating consumer demand, and compliance with quality standards (Okon & Nkwocha, 2024).

Digital tools such as e-business, e-marketplaces, and e-procurement offer innovative pathways for addressing these challenges by reducing transaction costs, strengthening supplier collaboration, and enhancing customer responsiveness (Mwangi et al., 2023). Although empirical evidence from advanced economies strongly supports IT's positive influence on SCM performance (Zhu et al., 2022; Tsai et al., 2023), research within Nigeria's food and beverage sector remains scarce and fragmented. Previous studies have largely concentrated on sectors such as construction, healthcare, and retail, leaving a gap in understanding how IT adoption shapes SCM outcomes in food and beverage manufacturing (Adebanjo & Akinbode, 2022).

Existing findings also present mixed results, as barriers such as inadequate IT infrastructure, limited staff competencies, and high costs of implementation constrain effective deployment (Chinomona & Sandada, 2023). This study addresses this gap by examining the relationship between IT adoption and SCM performance in Nigeria's food and beverage industry. Specifically, it investigates three dimensions of IT e-business, e-marketplace, and e-procurement while focusing on leading Nigerian manufacturers including Guinness Nigeria Plc, Nigerian Breweries Plc, and Honeywell Flour Mill Plc.

Objectives

explored the relationships between key IT dimensions e-business, e-marketplace, and e-procurement and their effects on SCM performance. Specifically, the study:

1. examines the effect of e-business on SCM performance of selected manufacturing firms in Nigeria.
2. determines the effect of e-marketplace on SCM performance of selected manufacturing firms in Nigeria.
3. ascertains if e-procurement affects SCM performance of selected manufacturing firms in Nigeria.

LITERATURE REVIEW

Supply Chain Management

The concept of Supply Chain Management (SCM) emerged as firms recognized the critical influence that both suppliers and customers exert on operational efficiency and overall

competitiveness. Organizations depend on suppliers not only to minimize costs but also to enhance product quality, ensure reliability, and strengthen service delivery. Likewise, customers rely on effective collaboration with suppliers to reduce expenses, improve service levels, and achieve greater efficiency. This interdependence underscores the centrality of SCM as an integrative framework that links firms, suppliers, and customers into a cohesive system (Van Weele, 2010; Ivanov & Dolgui, 2022). SCM is widely acknowledged as a cooperative strategy that extends beyond a single enterprise to encompass multiple stakeholders across the value chain. Such collaboration fosters improvements in product quality, shorter lead times, higher agility, cost reductions, and stronger customer satisfaction (Bennett & O'Kane, 2006; Humphreys et al., 2007; Lockstrom et al., 2009; Chowdhury et al., 2022). Van Weele (2010) emphasizes that SCM should be viewed holistically, where inefficiencies in one segment often stem from weaknesses elsewhere. For instance, poor information sharing can result in excessive inventory levels, whereas transparent demand forecasting and planning data exchange enhance supply chain responsiveness.

Since its development in the 1980s, SCM has evolved significantly from being synonymous with logistics to becoming a broader strategic discipline. While logistics traditionally focused on the movement and storage of goods from suppliers through production to final consumers (Russell, 2011; Waters, 2008), contemporary SCM integrates additional dimensions such as marketing, product development, finance, sustainability, and customer relationship management (Queiroz et al., 2022; Agyabeng-Mensah et al., 2023). Today, effective SCM is increasingly linked to digital transformation, resilience building, and sustainability objectives, particularly in volatile and uncertain global markets (Chowdhury et al., 2022; Awan et al., 2023).

Information Technology (IT)

The adoption of information technology (IT) has revolutionized business operations, services, and customer expectations, particularly in terms of speed, accuracy, and efficiency of information exchange. Advances in information and communication technology (ICT), especially internet-based platforms, have significantly strengthened inter-firm collaboration by enabling seamless integration of IT infrastructure across organizations. In today's highly competitive global environment, IT is regarded as a critical enabler of organizational performance, enhancing information flow, improving supply chain visibility, and building resilience without compromising efficiency (Ivanov & Dolgui, 2022; Khan et al., 2023).

Over the past two decades, IT applications in supply chain management (SCM) have expanded rapidly as firms seek to increase their competitiveness in dynamic global markets. Digital technologies such as cloud computing, blockchain, artificial intelligence (AI), and the Internet of Things (IoT) provide opportunities for greater collaboration among suppliers, partners, and customers, facilitating real-time data sharing and co-creation of value (Queiroz et al., 2022; Awan et al., 2023). Evidence suggests that synchronized IT systems enable supply chain members to align operations and achieve efficiency gains that would not be possible in isolation (Frohlich & Westbrook, 2002; Grover & Kohli, 2012; Gunasekaran et al., 2023).

A well-known example is the use of Collaborative Planning, Forecasting, and Replenishment (CPFR) systems, which allow firms to optimize inventory levels and reduce excess stock by integrating suppliers and retailers in joint decision-making processes (Cederlund, 2007). More recently, global supply chains have adopted advanced digital platforms to achieve similar outcomes in demand forecasting, supplier coordination, and logistics optimization (Chowdhury et al., 2022; Mwangi & Kariuki, 2024). However, the assumption that greater IT investment automatically translates into superior business value should be treated with caution. Carr (2003) argued that IT alone may not guarantee sustainable competitive advantage, as basic IT functions such as data storage, processing, and transmission have become commoditized. Recent research reinforces this cautionary perspective, noting that the strategic benefits of IT are realized only when investments are aligned with organizational strategy, human capability development, and supply chain integration (Chinomona & Sandada, 2023; Tsai et al., 2023).

e-Procurement

Procurement constitutes a foundational element of supply chain management (SCM), as decisions taken at this stage have cascading effects on all subsequent links in the chain. Because it accounts for a large proportion of supply chain expenditures, even modest efficiency gains in procurement can significantly enhance profitability, with small reductions in cost producing disproportionately large impacts on overall firm performance (Kothari, Hu, & Roehl, 2005). In the digital era, e-procurement has become a transformative tool that leverages internet technologies and digital platforms to modernize purchasing processes and improve organizational outcomes (Zheng et al., 2022). Originally, e-procurement was implemented primarily to automate routine processes such as order placement, invoicing, and payment processing, particularly in areas like Maintenance, Repair, and Operations (MRO) supplies (Presutti, 2003). However, the scope has since expanded to include supplier selection

and evaluation, online catalogs, real-time bidding, and performance monitoring, allowing organizations to reduce transaction costs while increasing transparency and accountability (Klein et al., 2022).

Recent developments highlight collaborative procurement models, where suppliers are engaged in co-design and product development activities. These arrangements often supported by cloud-based and AI-driven platforms facilitate faster time-to-market and improve product innovation by integrating supplier expertise earlier in the value chain (Lee & Kim, 2023). At the same time, blockchain-enabled e-procurement systems are being adopted to strengthen traceability and trust, ensuring data integrity and reducing risks of fraud or supplier opportunism (Kumar et al., 2022). Contemporary e-procurement is increasingly recognized not just as a cost-saving mechanism but as a strategic enabler of resilience and sustainability. By enabling more efficient supplier collaboration, transparent pricing mechanisms, and real-time information sharing, e-procurement supports firms in managing risks, achieving regulatory compliance, and pursuing sustainable sourcing objectives (Ntayi et al., 2023; Ali & Rahman, 2024). Nevertheless, challenges remain in developing economies, where limited digital infrastructure, resistance to organizational change, and insufficient staff competencies continue to hinder full adoption (Bashir & Aliyu, 2023).

e-Market Place

The advent of internet technologies has fundamentally reshaped business operations by introducing digital marketplaces that enable seamless electronic transactions between multiple buyers and sellers. These e-marketplaces are essentially markets enhanced by information technology, serving as dynamic platforms for trading goods, services, and information in real time (Bakos, 1998; Zheng et al., 2022). Defined as many-to-many digital hubs, e-marketplaces facilitate not only purchasing and sales but also collaborative activities such as joint forecasting, product design, and supply planning, thereby creating more efficient and transparent supply chains (Li et al., 2023). The core objective of e-marketplaces is to simplify complex business processes and reduce transaction costs by aggregating buyers and sellers within a centralized platform. This aggregation generates benefits such as improved economies of scale, greater market liquidity, and enhanced convenience through faster and more cost-effective transactions (Klein et al., 2022). Beyond operational efficiency, e-marketplaces have empowered firms to transcend geographical constraints and access previously inaccessible global markets, unlocking new growth and profit opportunities (Sánchez-Flores et al., 2023).

Business-to-business (B2B) e-marketplaces, in particular, have become strategic enablers of supply chain integration. These platforms act as technology-driven trading ecosystems where firms can exchange product specifications, negotiate pricing, and execute transactions. Unlike traditional enterprise systems such as ERP or EDI which often rely on proprietary infrastructure and involve high costs modern e-marketplaces are frequently hosted on cloud-based or blockchain-enabled platforms, offering greater scalability, flexibility, and inclusivity for both large corporations and small enterprises (Nguyen & Simkin, 2022; Kumar et al., 2022). By fostering transparency, efficiency, and inclusivity, e-marketplaces not only improve communication across supply chains but also strengthen supplier relationships and facilitate innovation. As a result, they are increasingly regarded as strategic digital infrastructures that support competitiveness, resilience, and sustainability in global supply chains (Ali & Rahman, 2024; Ntayi et al., 2023).

e-Business

Over the past two decades, e-business has emerged as a transformative paradigm in global commerce, attracting significant attention from both scholars and practitioners. Initially coined by IBM in 1997, the term was defined as the modernization of essential business processes through internet technologies (IBM & Ariba, 2000). Amor (2000) later expanded this definition to emphasize e-business as a secure, adaptable, and integrated approach that merges organizational systems and processes, thereby enhancing efficiency and creating new value opportunities. At its core, e-business leverages internet connectivity to strengthen relationships with customers, suppliers, and partners, while simultaneously optimizing internal business processes. E-business adoption has been particularly pronounced in industries with rapidly evolving consumer demand, short product life cycles, and accelerated order fulfillment requirements. By enabling the integration of enterprise systems into universally compatible formats, e-business allows for seamless information exchange and digital transactions across supply networks (Li et al., 2022).

This transformation has supported practices such as dynamic pricing models, collaborative procurement alliances, and direct-to-consumer (D2C) online sales channels (Zhang et al., 2023). While often conflated with e-commerce, the two concepts are distinct. E-commerce focuses primarily on online buying and selling transactions, whereas e-business encompasses the broader integration of digital tools for information exchange, coordination, and collaboration across all business functions (Nguyen & Simkin, 2022). Standards underpinning

e-business have redefined industry operations by eliminating the long-standing trade-off between information depth (e.g., personalization, interactivity, and customization) and audience reach (Graham et al., 2004).

In supply chain contexts, e-business plays a pivotal role in ensuring information visibility and coordination. Effective information sharing enables accurate demand forecasting, reduces the bullwhip effect, and minimizes excess inventory buffers (Cooper, Lambert, & Pagh, 1997). Modern digital networks such as cloud platforms, IoT-enabled systems, and AI-driven communication tools have further enhanced this visibility, ensuring real-time coordination of orders, inventory, and logistics (Agyabeng-Mensah et al., 2023; Chowdhury et al., 2022). Consequently, e-business and supply chain integration are mutually reinforcing, as both prioritize transparency, collaboration, and the smooth flow of accurate information to sustain competitiveness in volatile markets.

Theoretical Review

Technology Acceptance Model (TAM)

Among theoretical frameworks in information systems research, the Technology Acceptance Model (TAM) has been most frequently referenced. Developed by Davis in 1989, this conceptual model seeks to anticipate and clarify user behavior regarding information and communication technology (ICT) adoption specifically examining why potential users either embrace or resist technological solutions. TAM builds upon the foundational Theory of Reasoned Action (TRA), introducing two key psychological factors that fundamentally influence technology adoption decisions: perceived usefulness and perceived ease of use. These cognitive assessments shape users' overall attitudes toward a system, ultimately determining their likelihood of adoption. Davis (1989) precisely defines these core constructs: perceived usefulness represents "the extent to which an individual believes utilizing a specific system would improve their work performance," while perceived ease of use indicates "the degree to which a person anticipates that system usage would require minimal effort." These twin perceptions serve as primary drivers in the technology acceptance process, mediating between system characteristics and actual usage behavior.

Diffusion of Innovations (DOI)

Ranking as the third most frequently referenced theoretical framework is the Diffusion of Innovations (DOI) theory. This influential concept was originally presented in Rogers and Shoemaker's seminal 1971 publication "Diffusion of Innovations." The theory provides a

comprehensive framework for understanding how novel concepts propagate and gain acceptance within social systems, specifically examining the roles of communication networks and influential figures in the adoption process. In their foundational work, Rogers and Shoemaker (1971) introduced a pioneering five-stage model that outlines the organizational implementation and adoption process for innovations. Building upon this theoretical foundation, Moore and Benbasat (1991) adapted DOI principles to create a specialized measurement tool. Their instrument was specifically designed to assess individual perceptions regarding the adoption of information technology innovations. This measurement tool served as an important research instrument for investigating both the initial acceptance and subsequent spread of technological innovations within organizational contexts.

Theoretical Framework

This research employed the Diffusion of Innovation (DOI) theory (Rogers & Shoemaker, 1971) as its conceptual foundation. Building upon this framework, Zhu and Kraemer (2005) have demonstrated how e-procurement implementation influences supply chain management practices. The DOI theory, originally developed by Rogers and Shoemaker (1971), provides a systematic explanation of how innovations propagate through communication networks within social systems over time. Fundamentally, DOI offers a comprehensive model for understanding the dissemination and acceptance of novel concepts within communities or organizations, with particular emphasis on how influential figures affect adoption patterns. Moore and Benbasat (1991) subsequently adapted this theoretical model to create a measurement tool specifically assessing individual perceptions regarding the adoption of technological innovations in information systems.

Empirical Review

Sundarakani, Tan, and Van Over (2012) investigated the role of information technology in enhancing supply chain performance among firms in Dubai. Their structured survey, which examined organizational objectives, IT utilization, and anticipated adoption, revealed that although firms recognized IT's potential benefits, immediate performance improvements were not guaranteed. The study emphasized the importance of executive training and capability development in fully leveraging IT systems for supply chain optimization.

In South Africa, Nguegan and Mafini (2017) explored supply chain challenges within the food processing sector and their implications for business performance. Surveying 303 supply chain professionals in Gauteng, their analysis identified seven major problem areas workforce

management, technological infrastructure, operational facilities, supplier relations, customer relations, compliance, and distribution networks. These findings highlighted how structural and infrastructural barriers constrain SCM effectiveness in developing economies.

Sukati et al. (2014) focused on Malaysia's food and beverage industry, examining the influence of IT adoption on supply chain agility. Despite relatively low response rates, the study found a strong positive relationship between IT implementation and supply chain responsiveness, demonstrating that strategic digital adoption improves flexibility and adaptability in volatile markets. Similarly, Gichuru, Iravo, and Arani (2015), in a case study of Del Monte Kenya, established that collaborative practices, particularly information and resource sharing, positively affected organizational performance. They recommended deeper collaboration between food manufacturers and their supply partners as a means to strengthen competitiveness. Kariithi (2016), analyzing Nairobi-based food processors, further supported this by showing that supply chain integration and collaboration were significant drivers of competitive advantage, based on evidence from quantitative regression analysis.

In Kenya's logistics sector, Wilson et al. (2015) observed relatively low levels of IT adoption, with more than half of surveyed firms failing to integrate digital tools into their operations. This finding underscored a substantial opportunity for modernization and digital transformation in East Africa's supply chain landscape. Recent studies have reinforced and expanded on these insights. For instance, Chowdhury et al. (2022) argued that digitalization is a key enabler of resilience in global supply chains, helping firms respond effectively to disruptions. Agyabeng-Mensah et al. (2023) demonstrated that the adoption of digital technologies in African supply chains strengthens both integration and performance, provided that firms overcome infrastructure and skill-related barriers. Likewise, Ali and Rahman (2024) highlighted the role of e-procurement platforms in supporting sustainable sourcing and operational efficiency in emerging economies. Together, these empirical findings show that while IT adoption and collaborative practices significantly enhance supply chain performance across contexts, challenges related to infrastructure, human capital, and institutional readiness continue to constrain their impact in developing economies such as Nigeria.

MATERIALS AND METHOD

This study utilized a cross-sectional survey design, as the data collection occurred at a single point in time. The research focused on managerial personnel from selected food and beverage manufacturing companies listed on the Nigerian Stock Exchange, specifically Guinness

Nigeria Plc, Nigerian Breweries Plc, and Honeywell Flour Mill Nigeria Plc. These organizations were selected based on their established adoption of Information Technology systems, making them appropriate sources for the required study. The food and beverage sector was chosen due to its unique characteristics, including the substantial volume of products requiring regular distribution and the industry's constant pressure to reduce costs while enhancing operational quality and efficiency. The sample consisted of 200 managerial staff members conveniently selected from various departments (production, purchasing, quality control, warehousing, and distribution) across the three companies. A convenience sampling approach was employed because the complete population elements were not formally documented. This non-probability sampling method involves selecting participants based on their likelihood of providing relevant information (Agbonifoh & Yomere, 1999). Primary data was collected through questionnaire administration. For instrument reliability assessment, the study employed Cronbach's Alpha coefficient analysis using data from completed questionnaires. This reliability index ranges from 0 to 1, with values between 0.7 and 0.9 indicating acceptable internal consistency among the questionnaire items, as demonstrated in the subsequent analysis.

Table 1: Reliability scores

S/N	Variables	Reliability Score	Source
1.	E-business	0.972	**Adapted: Al-bayati (2011)**
2	E-marketplace	0.945	**Adapted: Al-bayati (2011)**
3	E-procurement	0.893	**Adapted: Kingori (2013)**
4	**Supply chain management**	**0.983**	**Adapted: Al-bayati (2011)**

Source: Researcher's compilation, 2024

The study used primary data. The data will be obtained with the help of questionnaire which will be administered to all the managerial staff members in the companies.

SCM = *f* (EB, EMP, EP) …… Eqn 1.

This can be written in explicit econometric form as:

$SCM_i = \beta_0 + \beta_1 EBi + \beta_2 EMP_i + \beta_3 EP_i + \varepsilon i$ …….. Eqn 2.

Where,

SCM = Supply chain management EB = E–business

EMP = E–marketplace EP = E–procurement

i represents the cross-sectional dimension β= constant or intercept

β1 - β3 = coefficients to be estimated ε = Error term

Our apriori expectation is stated as: β1>0, β2>0, β3 >0

This can be written in explicit econometric form as:

β1>0: increase in e-business will lead to increase in supply chain management.

B2>0: increase in e-marketplace will lead to increase in supply chain management.

B3>0: increase in e-procurement will lead to increase in supply chain management.

The partial regressions coefficient represents the change in the dependent variable is changed by one unit and other dependent variables are held constants. Descriptive statistics, correlation analysis, and multivariate panel data analysis techniques were used to analyze the effect of inventory management on the profitability of quoted food and beverage firms in Nigeria.

ANALYSES AND RESULTS DISCUSSION

Descriptive Statistics

The basic descriptive statistics for each IT dimension (e-business, e-marketplace, e-procurement) and SCM across all companies are presented below in table 1.

Table 2: Descriptive Statistics

Variable	N	Mean	Std Dev	Min	Max	Range
E-business	200	4.27	0.31	3.8	4.9	1.1
E-marketplace	200	4.00	0.31	3.5	4.7	1.2
E-procurement	200	4.44	0.31	3.9	5.0	1.1
SCM	200	4.28	0.31	3.7	4.9	1.2

Source: Researcher's computation (2024)

Table 2 contains descriptive statistics of the sample variables used for the research models. Among the companies analyzed, Guinness Nigeria PLC demonstrates the highest mean scores across all IT dimensions and SCM, with Nigeria Breweries PLC and Honeywell Flour Mill following closely behind. E-procurement emerges as the most developed IT practice, with consistently high mean scores across all firms, ranging from 4.25 to 4.63. The relatively low standard deviations (0.25-0.31) suggest that respondent answers are tightly clustered around the mean values, indicating strong agreement in perceptions. While all minimum scores remain above 3.5 on a 5-point scale reflecting generally favorable views there is notable variation in the strength of respondents' perceptions regarding these IT practices.

Correlation matrix

The correlation coefficient between the variables is presented in the correlation matrix in table 3. This is to avoid inconsistency in the regression analysis as the substitutability of the variable is established. As a result, they provide a useful guide in the specification of the models.

Table 3: Correlation Matrix

Variables	E-business	E-marketplace		E-procurement
E-business	1			
E-marketplace	0.872**	1		
E-procurement	0.915**	0.894**	1	
SCM	0.942**	0.901**	0.963**	1

Source: Researcher's computation, (2024)

The correlation analysis reveals significant relationships between IT dimensions and SCM performance. E-procurement demonstrates the most robust association with SCM (r = 0.963), highlighting its pivotal role in supply chain operations. This finding aligns with the study's focus on digital procurement's transformative potential. The substantial intercorrelations among IT dimensions indicate that organizational capabilities in these areas tend to develop concurrently. However, these strong interrelationships (all exceeding r = 0.8) warrant careful consideration when examining their individual contributions in the regression model, as they may influence coefficient interpretation due to shared variance.

Regression model output

Table 4: Regression output

Variable	Coefficient	Std Error	t-value	p-value	VIF
(Constant)	0.214	0.072	2.972	0.003	-
E-business	0.352	0.058	6.069	0.000	4.872
E-marketplace	0.211	0.061	3.459	0.001	5.126
E-procurement	0.487	0.063	7.730	0.000	6.342

R = 0.971

R^2 = 0.943

Adjusted R^2 = 0.942

F = 1087.42 (p < 0.001)

Durbin-Watson = 1.892

Source: Researcher's computation, (2024)

The regression results in Table 4 demonstrate a highly effective model, accounting for 94.3% of the observed variation in SCM performance. Each IT dimension emerges as a statistically significant contributor to supply chain management outcomes, with e-procurement exerting the most substantial influence (β = 0.487). The relative impact of these predictors follows a consistent pattern, where e-business (β = 0.352) and e-marketplace (β = 0.211) show progressively smaller but still meaningful effects. While these findings confirm the importance of all three technological dimensions, the elevated VIF values (exceeding 4) reflect the anticipated multicollinearity stemming from their interrelated nature. The Durbin-Watson statistic (1.892) provides assurance regarding the independence of residuals, validating the model's underlying assumptions.

Analysis of variance (ANOVA)

This section examines whether there are significant differences in SCM performance between the three companies.

Table 5: Analysis of variance

Source	SS	df	MS	F	p-value
Between Groups	4.217	2	2.108	28.742	0.000
Within Groups	14.423	197	0.073		
Total	18.640	199			

Source: Researcher's computation, (2024)

Table 6: Post-hoc Tests (Tukey HSD)

Comparison	Mean Difference	p-value
Guinness - Nigeria Breweries	0.19	0.002
Guinness - Honeywell	0.33	0.000
Nigeria Breweries - Honeywell	0.14	0.012

Source: Researcher's computation, (2024)

The analysis of variance yields important insights about organizational differences in supply chain management performance as shown in Table 5. With a highly significant F-statistic of 28.742 ($p<0.001$), we can confidently conclude that meaningful performance variations exist among the three studied companies. Further examination through Tukey's post-hoc comparisons in Table 6, reveals a clear hierarchical pattern in SCM effectiveness. Guinness Nigeria PLC demonstrates superior performance compared to both Nigeria Breweries PLC (mean difference = 0.19, $p=0.002$) and Honeywell Flour Mill (mean difference = 0.33, $p<0.001$).

Additionally, Nigeria Breweries maintains a statistically significant advantage over Honeywell Flour Mill (mean difference = 0.14, p=0.012). This graduated performance pattern - where Guinness leads, followed by Nigeria Breweries, and then Honeywell - corresponds directly with the observed mean scores in our descriptive analysis, confirming the robustness of these organizational differences in supply chain management capabilities. The findings suggest that while all three companies operate in the same industry sector, they have developed distinct levels of SCM proficiency, likely reflecting differences in their technological adoption strategies, organizational resources, or management approaches to supply chain optimization. The consistent statistical significance across all pairwise comparisons strengthens our confidence in these observed performance differentials. These results provide empirical validation for the initial descriptive patterns while offering more precise quantification of the performance gaps between these industry players.

The findings of this study align closely with several established theories and prior research on IT adoption in supply chain management. The Technology Acceptance Model (TAM) (Davis, 1989) provides a useful insight for interpreting the strong influence of e-procurement and e-business on SCM performance. TAM posits that perceived usefulness and ease of use drive technology adoption, which is consistent with the study's findings that IT tools like e-procurement were widely adopted due to their tangible benefits in reducing costs and improving efficiency. The high mean scores for these IT dimensions suggest that managers perceive them as valuable, supporting TAM's assertion that utility drives adoption.

Similarly, the Diffusion of Innovations (DOI) theory (Rogers & Shoemaker, 1971) helps explain the variations in IT adoption across the surveyed firms. Guinness Nigeria PLC's superior SCM performance, compared to Nigeria Breweries PLC and Honeywell Flour Mill, reflects DOI's emphasis on organizational readiness and innovation diffusion. Firms with greater resources and strategic focus on IT integration (like Guinness) likely represent "early adopters," while others may lag due to barriers such as cost, knowledge gaps, or resistance to change a finding consistent with prior studies (Kikaro, 2013; Nguegan & Mafini, 2017).

The study's results also corroborate earlier empirical research. For instance, the strong positive relationship between e-procurement and SCM efficiency mirrors findings by Croom & Brandon-Jones (2005), who highlighted how digital procurement reduces administrative burdens and enhances supplier coordination. Likewise, the role of e-business in improving communication and corporate image aligns with Amor's (2000) definition of e-business as a

tool for integrating core processes and fostering external collaboration. However, the study diverges slightly from Carr's (2003) skeptical view of IT's strategic value; here, IT's impact on SCM is unequivocally positive, likely due to sector-specific needs in the fast-moving food and beverage industry. Furthermore, the study contradicts Carr's (2003) argument that IT is a commoditized resource with diminishing returns. In Nigeria's manufacturing context, IT adoption remains a critical differentiator, likely due to the sector's early-stage digital transformation. Additionally, the high multicollinearity among IT dimensions suggests that their effects are interdependent a nuance not fully addressed in earlier studies like those of Bayraktar et al. (2009), which treated IT practices as isolated factors.

CONCLUSION AND RECOMMENDATIONS

In conclusion, this study examined the impact of Information Technology (IT) on Supply Chain Management (SCM) in Nigeria's food and beverage manufacturing sector, focusing on three key IT dimensions e-business, e-marketplace, and e-procurement. The findings confirm that IT adoption significantly enhances SCM performance, with e-procurement emerging as the most influential factor, followed by e-business and e-marketplace. These results align with the Technology Acceptance Model (TAM) (Davis, 1989), as managers perceived these IT tools as highly useful in reducing costs, improving efficiency, and fostering collaboration across supply chains. Additionally, the Diffusion of Innovations (DOI) theory (Rogers & Shoemaker, 1971) helps explain the varying levels of IT adoption among firms, with Guinness Nigeria PLC leading as an early adopter, while others lag due to resource or knowledge constraints. The study's empirical results support prior research (Croom & Brandon-Jones, 2005; Amor, 2000) on the benefits of IT in SCM, particularly in streamlining procurement and enhancing communication. However, it also highlights contextual challenges, such as the need for greater IT infrastructure investment and workforce traininga gap noted in earlier studies (Kikaro, 2013; Nguegan & Mafini, 2017). While the findings contradict Carr's (2003) argument that IT offers diminishing strategic returns, they reinforce the idea that in emerging economies like Nigeria, IT remains a critical driver of competitive advantage.

In view these findings, the study highlights on the need for industry practitioners to invest in integrated IT solutions (e-business and e-marketplace platforms) to enhance real-time data sharing and operational transparency, prioritize e-procurement systems to reduce administrative costs and improve supplier coordination and address adoption barriers through training programs and phased digital transformation strategies, particularly for firms lagging in IT integration.

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