

Integration of the Supply Chain and its Impact on Performance among Retailers in Osogbo Metropolis, Nigeria

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Received: July 10, 2023

Revised: Aug 15, 2024

Accepted: Sep 09, 2024

Published: Sep 14, 2024

Abstract

Problem: The search examines the integration of the supply chain (SC) and its impact on performance among retailers in Osogbo metropolis, Nigeria. **Design/Methodology/Approach:** The triangulation method was adopted for this study. This study investigated the relationship between supply chain integration and supply chain performance. We employed the simple linear regression analysis method and utilized the ordinary least square technique in SPSS Version 26 to estimate the model parameters. **Findings:** The findings suggest that supply chain integration significantly predicts performance in the context of fast-moving consumer goods retailers in Osogbo. The results of the study indicate that enhancing supply chain management practices can lead to improved efficiency and efficacy within the industry. This is because effective supply chain management facilitates the coordination of activities among value chain partners, thus enabling businesses to realize their objectives. **Conclusion:** The study reveals explicitly that the success of fast-moving consumer goods (FMCG) enterprises is directly correlated to the success of their retail partners, who serve as their primary distribution channels.

Keywords: Supply Chain, Integration, Fast Moving Consumer Goods [FMCGs], Retailers, Performance.



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Introduction

For more than a decade, the significance of supply chain integration (SCI) among internal or external organizational processes has been emphasized in supply chain literature (Flynn, Huo et al. 2010). Researchers have described integration as the standard of a state of departmental collaboration that must attain unity of effort due to external expectations (Mitchell 2006, Eccles and Krzus 2014). An environment where supply chain participants cooperate and work collectively for improved performance and profitability while meeting customer demands (Kumar, Chibuzo et al. 2017) characterizes SCI. It has been determined that SCI enhances the effectiveness of the supply chain (Lim, Lee et al. 2022). According to a survey based on company searches in the UK, effective information exchange among supply partners promotes supply chain performance improvement (Sundram, Chhetri et al. 2020). According to the study's findings, Beheshti et al. (Beheshti, Oghazi et al. 2014) state that if suppliers and customers were well integrated with its competitive strategy, the business's operations would accomplish more and perform better. With a focus on comprehending the report on the influence of integrating supply chain on performance with emphasis on the UK consumer goods industry, Kumar et al. (Kumar, Chibuzo et al. 2017) used existing search to examine performance by integrating supply chain activities in the UK consumer goods sector. Extant research revealed that the integration of behavioral pattern measurement is a topic covered by various scholars Johnston et al. (Johnston 2014). Findings revealed that earlier researchers had created an outline to evaluate the association between integration and performance, which combines various integration-related factors explicitly accounts for the impact of market conditions, and empirically examines the association between integration and supply chain performance by surveying suppliers (Bagchi, Chun Ha et al. 2005, Lee, Kwon et al. 2007, Dubey, Gunasekaran et al. 2015, Park, Kim et al. 2022).

A series of well-practiced supply activities can increase competitiveness when comparing retailer performance to competitors. Jie et al. (Jie and Gengatharen 2019) reports that among the food retailing companies in Australia, effective practice of supply chain activities has helped provide augmented supply chain performance adeptness. According to

Otchere et al. (Otchere, Annan et al. 2013) and Ajayi et al. (Ajayi 2016), from the global industry players' perspective, SCI has been characterized by growth since the late twentieth century. However, such tremendous growth is lacking in the Sub-Saharan African (SSA) region. In an extant research, Otchere et al. (Otchere, Annan et al. 2013) report on the Ashanti Region of Ghana's cocoa industry implementation of supply chain integration and challenges. The researchers examined how supply chain integration challenges can be prevented to improve cocoa production in Ghana and how this product could reach the end-users when needed through the most accurate available channel to enhance performance. This article analyzed the effects of supply chain integration on supply chain performance to increase the competitiveness of retailers of fast-moving consumer goods (FMCGs) in Osogbo, Nigeria. Most FMCG retailers in developing nations struggle to manage their supply chain operations and seek solutions to these issues (Hosseini, Azizi et al. 2012). Therefore, this study aims to investigate the supply chain integration and its impact on Performance among retailers of FMCGs in Osogbo.

Literature Review

Through extant research, it was discovered that the study of supply chain integration has been fully-fledged over the years. Moreover, it was reported that many studies (Flynn, Huo et al. 2010, Ellegaard and Koch 2012) have been conducted globally on the discourse which examine the implementation of such practices and their effects on cost reduction, waste reduction, financial gain, partner collaboration, and effect of partner collaboration on performance and success of business activities (Wong, Lai et al. 2011). To improve performance through supply chain activities among FMCG retailers, this study contributes to the practice of related theory by ascertaining gaps in supply chain integration in Osogbo, Nigeria.

"Performance measurement is the process of evaluating the effectiveness and efficiency of the comparison that helps to identify a good supply chain," according to the definition of supply chain performance (SCP) measure. Several organizations comprise a supply chain, beginning with producers, transport logistics, wholesalers, retailers, and consumers. For each of these points, the supply chain partners need the proper number of products delivered in a high-quality, timely manner and at a reasonable price. The performance measures are classified into two categories: quantitative and qualitative. The numerically described is referred to as the quantitative performance metrics, while qualitative performance measures are those for which there is no direct numerical measurement (such as brand loyalty, customer satisfaction, product quality, and SC integration) (such as order-to-delivery lead time, supply chain response time, costs, inventory levels, and resource utilization). The supply chain structure, inventory management processes, information interchange, demand, forecasting, lead times, and duration of assessment periods are a few variables affecting SCP (Gupta, Drave et al. 2019, Ojo, Adeniyi et al. 2022).

A multi-dimensional approach that considers how an organization must provide services to various consumer expectations might improve the performance of a supply chain (Ojo, Adeniyi et al. 2022). According to academics, globalization, demanding customers, information technology advancement, difficult-to-predict environmental uncertainty, and changing technology all add to the complexity of designing and managing the supply chain in today's competitive business environment (Gawankar and Kamble). They also claim in their study that SCP significantly impacts quality, lead times, inventory levels, and delivery timeframes in the retail sector. Specific goals for SCP development include meeting customer needs and fostering sustainable corporate performance, it is widely agreed that any model created to calibrate SCP must be capable of measuring several essential factors (Hassan, Nadzim et al. 2015). Although there is no universally accepted way to measure SCP among scholars in the field (Shahbaz, Rasi et al. 2018, Goel, Saunoris et al. 2021). These include production costs, production capacity, schedule adherence, product quality, channel member responses, lead time, customer satisfaction, and customer feedback (Shahbaz, Rasi et al. 2018, Goel, Saunoris et al. 2021). SCP is critical to the smooth operation of economies, and flaws can result in bottlenecks that negatively impact economic productivity and growth (Goel, Saunoris et al. 2021).

In the food retail sector/industry, Richey et al. (Richey Jr, Morgan et al. 2016) also looked at how supply chain integration affected businesses' financial and operational performance. According to the research's demographic findings, supply chain integration is practiced among Turkish merchants, and most businesses employ supply chain managers. Additionally, the research's findings showed that the exterior integration of food is closely tied to the internal integration of merchants. Sukati et al. (Sukati, Hamid et al. 2012) studied the impact of supply chain management strategy and practices on supply chain performance in another study on supply chains and performance. The results demonstrated a statistically significant association between supply chain performance and management strategies. Additionally, based on the Indonesian retail sector, Sutanto et al. (Sutanto and Japutra 2021) examined the effects of supply chain integration and trust on supply chain performance. The study's conclusion states that entire supply chain integration, including supplier integration, significantly influences performance both partially and simultaneously.

The hunt for better means of acquiring a benefit to stay relevant or outsmart rivals is evolving due to the rising degree of worldwide economic rivalry. Managers and industry experts have been considering integration as a potential technique recently, as a tool for developing strategic coalitions in performance enhancement, cutting costs, and shortening lead times (Malakouti, Rezaei et al. 2017). A review by Hamid et al. (Hamid and Ibrahim 2015) on the connection between the practice of supply chain management and effective supply chain performance. The report from the empirical results indicates that three of the five dimensions of SCMP have a significant positive effect on performance efficiency. In another study on supply chain and performance. This study has adopted collaboration and integration theory to explain supply chain integration and its impact on performance among retailers in Osogbo Metropolis, Nigeria. This theory is cognizant of the basis for cooperation, which specifies "the link between individual participants' self-interest and the collective interests of all parties involved in the collaborative coalition" (Wood and Gray 1991). Solutions were adopted for the conditions that enabled collaboration and the convener's function, expressed through cooperative development, forecasting, and replenishment through the Association of Supply Chain Professionals (Mathu, 2019). FMCG companies' success is directly related to the effectiveness of the leading retailers, the primary supply source. According to recent research by Mathu et al. (Mathu 2019), the supply chain of the top South African food FMCGs and the associated retail shops were examined to determine that partnership and inclusion improved the response to the consumers' demand.

The theoretical viewpoint supports this study that an effective and efficient supply chain is crucial for FMCGs and retail chains. Mathu et al. (Mathu 2019) explains that a supportive system of shared information can aid in planning interactions between suppliers and retailers. This study is based on the theory of collaboration and integration and uses a quantitative research methodology. The survey research design was used, and questionnaires were administered to the retailers selected from the brokerages selected through balloting. The data collected was analyzed and explained using a satisfaction assessment. This theoretical perspective is critical to an effective and efficient supply chain for FMCG retailers, and the evaluation was conducted in this study. It is necessary to employ all of the resources and parts from the supply chain. Creating successful products and distributing them to end customers is much simpler when everything is integrated into a single system. Although supply chain integration (SCI) advantages have been extensively studied, the essential factors for enhancing performance have not yet been fully established, according to (Lim, Lee et al. 2022). Moreover, there have been conflicting findings on whether SCI leads to better supply chain performance. Therefore, this study also aims to analyze the supply chain integration and its impact on performance among chain members. It is important to note that most of these previous studies are in developed nations. This study will also fill an essential gap in carrying out the study in a city within a developing nation.

Methodology

This paper adopted appropriate statistical procedures, such as the Ordinary Least Square (OLS) method, ANOVA, and serial correlation were used to examine the association between a dependent (criterion) variable and one or more independent (predictor) variables and test the difference between two or more means. All the time series data were processed electronically using a statistical package for social science software (SPSS) version 25.

Model Specification and Analysis

Ordinary Least Square techniques were used for analyzing the data. To achieve the stated objective, the model is at this moment specified in line with the under-listed null hypotheses (H04): Supply chain performance among retailers is not significantly predicted by supply chain integration.

These hypotheses were tested at a 5% level of significance.

However, the simple linear regression model is used to specify this relationship: Supply Chain Performance = f (Supply Chain Integration)

$$SCP = \beta_0 + \beta_1 SCI + e$$

Where,

β_0, β_1 = model parameters e = error term

Assessment of the Measuring Model

A linear regression model was used to show the relationship between integration and performance. While the OLS technique was used to estimate the model parameters.

Results

Analysis of Data and Interpretation Table 1 Model Fit

Model	R	R ²	Adjusted R ²	Standard Error of the Estimate	Durbin-Watson
1	0.323a	0.105	0.102	0.475	2.448

a. Predictors: (Constant), Supply Chain Integration

b. Dependent Variable: Supply Chain Performance

Source: SPSS Version 26 (2022)

Table 2: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8.309	1	8.309	36.881	0.000b
	Residual	71.188	316	0.225		
	Total	79.497	317			

a. Dependent Variable: Supply Chain Performance

b. Predictors: (Constant), Supply Chain Integration

Source: SPSS Version 26 (2022)

Table 3: Parameter Estimates

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.016	0.245		12.3	0.00
	Supply Chain Integration	0.325	0.054	0.323	6.073	0.00

a. Dependent Variable: Supply Chain Performance

Source: SPSS Version 26 (2022)

A simple linear regression model employed to analyze the objective was used to specify the relationship between supply chain integration and supply chain performance, while the OLS technique was used to estimate the model parameters. The R values in Table 1 indicate a positive but weak association between supply chain integration and performance. The R-squared value suggests that supply chain integration only explained 10.5 percent of the variations in supply chain performance. In addition, the Durbin-Watson statistics fall within the acceptable range of 1.5 – 2.5, indicating that the variables do not have a serial correlation problem. Table 2 shows the ANOVA results of the model effect of the variables. They indicated that the F-statistic of the model ($F = 36.88$) is statistically significant at the 5% level ($p=0<0.05$), implying a good model fit. Moreover, Table 3 reveals the estimates of the parameters of the model. They showed that the regression coefficient ($\beta = 0.325$) is positive and statistically significant at the 5% level ($p=0<0.05$). This suggests a direct and significant relationship between supply chain integration and supply chain performance. The parameter estimates result in Table 3 also shows a p-value, which is statistically significant at the 5% level. The result of the test reveals a significant level of $0.00 < 0.05$. Therefore, the null hypothesis is rejected, and it is concluded that integration of the supply chain significantly predicts performance among retailers of FMCGs in Osogbo.

The result can be presented thus: The R values in Table 1 indicate a positive but weak association between supply chain integration and performance. The R-squared value suggests that supply chain integration only explained 10.5 percent of the variations in supply chain performance. In addition, the Durbin-Watson statistics fall within the acceptable range of 1.5 – 2.5, indicating that the variables do not have a serial correlation problem. Table 2 shows the ANOVA results of the model effect of the variables. The F-statistic of the model ($F = 36.88$) is statistically significant at the 5% level ($p=0<0.05$), implying a good model. Table 3 reveals the estimates of the parameters of the model. The regression coefficient ($\beta = 0.325$) is positive and statistically significant at the 5% level ($p=0<0.05$). This suggests a direct and significant relationship between supply chain integration and performance. Which establishes the relationship between supply chain integration and supply chain performance among retailers of FMCG.

Discussion of Results

The study is mainly to investigate the relationship between Supply Chain Integration and Supply Chain Performance among retailers of FMCGs in Osogbo. The hypothesis tested for the objective states that Supply Chain Performance among retailers will not be significantly predicted by Supply Chain Integration. From the global industry players' perspective, SCI is characterized by growth, starting from the late twentieth century (Alexander et al., 2013; Ajayi, 2016). After examining various studies, it was discovered that there are conflicting opinions on whether integrating the

supply chain enhances its performance in developing nations. However, this present investigation has bridged that gap and confirmed the findings of previous research (Hamad 2013, Huo, Qi et al. 2014, Govindan, Mangla et al. 2017), which reveal that supply chain integration has a significant influence on business operations and performance. Also, the findings of this present work corroborate the report of Sarma et al. (Sarma, Kumar et al. 2023) on the Modelling of resilient fashion retail supply chain strategies to mitigate the COVID-19 impact. It was established from the findings that there is a positive relationship between supply chain integration and supply chain performance. This implies that the better the interaction and bonding among supply chain members, the higher the level of performance among participants of the supply chain collaboration.

It has been determined from previous searches that SCI enhances the effectiveness of the supply chain (Vicas et al., 2017), according to a report from the study on firms in the UK, it was discovered that SCI and information exchange enhance the effectiveness of the supply chain performance. Kumar et al., (2017) studied the impact of SCI on performance in the United Kingdom consumer goods sector with a focus on understanding the impact of SCI on the performance of the UK consumer goods sector. Johnston et al., (2014) address integration to measure patterns of behaviour. From the search, it was discovered that earlier researchers had developed a methodology for evaluating the link between integration and performance that integrates many facets of integration, explicitly accounts for the influence of market conditions, and empirically researches the link between supply chain integration and performance by surveying suppliers. This study also align with a previous study by Sutanto et al., 2021, on the impact of Supply Chain Integration and Trust on Supply Chain Performance: Evidence from Indonesia Retail Sector. The finding of the study reveals that all supply chain integration are supplier integration (SI), customer integration (CI), process integration (PI), and trust (TR), both partially and simultaneously are stated to have a significant effect on supply chain performance (SCP).

Conclusion and Recommendations

The study concludes that integration of the supply chain significantly predicts performance among retailers of FMCGs in Osogbo. This is due to the critical role that supply chain management plays in guiding business success through harmonized activities of the value chain partners. FMCG companies' success is directly correlated with the success of the retailers, who serve as their primary distribution channels.

Based on the findings, it is recommended that future supply chain researchers should choose to reevaluate and adjust their operational models and incorporate the best integration of the supply chain methods into FMGC retailers' operations to assist in enhancing the operation of supply chain integration. Furthermore, it will also aid in comprehending the flaws in various supply chains' integration with FMGC retailers' performance. Moreover, to increase performance, organizations must also create timely, accurate, complete, adequate, and dependable ways to give and receive information from trading partners.

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