American Journal of
Supply Chain Management
(AJSCM)

The Impact of Third Party Logistics Activities on Supply Chain Performance in Flour Mills of Nigeria PLC, Lagos

M.O. Gbededo, T.O. Salaam and R.O. Olorunnimbe

AJP

American Journal of Supply Chain Management
ISSN 2789-2204 (online)
Vol.9, Issue 3, pp 1 - 15, 2024

www.ajpojournals.org

The Impact of Third-Party Logistics Activities on Supply Chain Performance in Flour Mills of Nigeria PLC, Lagos

M.O. Gbededo[1,2*], T.O. Salaam[2] and R.O. Olorunnimbe[2]
[1]Flour Mills of Nigeria Plc. Lagos, Nigeria
[2]School of Transport and Logistics, Lagos State University, Ojo, Nigeria

Article history

Submitted 11.06.2024 Revised Version Received 19.07.2024 Accepted 22.08.2024

Abstract

Purpose: The aim of the study was to investigate the impact of Third Party Logistics (3PLs) activities on supply chain performance in Flour Mills of Nigeria (FMN) Plc, Lagos.

Materials and Methods: A descriptive research design with a target population of 350 consisting of men and women in various departments (top management, Logistics/warehouse, production, finance, and customers) in the supply chain were used while the sample size of 300 was selected which represent 85.7% of entire population. Questionnaires were administered in a structural manner using a Likert scale (1-5) and data collected was processed with SPSS Version 29 to establish the relationship between the independent variables which were the three 3PLs activities (supply relationship, Enterprise Resource Planning optimization and customer relationship) and dependent variables (revenue, cost and operational efficiency).

Findings: It was observed that 45.5% strongly agree that 3PLs activities drives supply chain performance while 37 % agree that 3PLs activities drives supply chain performance This sum up the total level of agreement to 82.4 % while the rest 17.6 were neutral and disagreed that there are no impacts. The 82% (approximately) justified the goal of the study that 3PLs activities have an impact on supply chain performance in FMN Plc. The hypotheses drawn up in the research questions were further validated through a two-tailed t-test by comparing the computed value in excel with theoretical critical t-values on table. The three respective at 5% significant level were 2.35305, 2.5468 and 2.68735. The three hypotheses were tested against the null hypotheses to further validates the hypothesis that there is significant impacts of 3PLs activities on supply chain performance in Flour Mills of Nigeria outsourced activities.

Implications to Theory, Practice and Policy: Resource based theory and Core competency theory may be used to anchor the future studies on investigating the impact of third party logistics activities on supply chain performance in Nigeria. Manufacturing companies have the ability to achieve and sustain competitive advantage if they possessed resources that are valuable, rare, imperfectly imitable, and nonsubstitutable. Therefore, firms should focus all resources that are strategically relevant within an organization and outsource its noncompetencies in order to reduce cost of production and improve its supply chain performance. The study further advanced the core competency model by evaluating areas of shortage of resources, skills and capacity of the flour milling companies that enables outsourcing drives higher performance efficiency, revenue, and cost optimization of the organization.

Keywords: *Third Party Logistics, Supply Chain, Customer Relationship, Operational Efficiency, Supply Relationship*

JEL code: L66

1.0 INTRODUCTION

Since the past six decades, several flour milling companies were established in Nigeria which includes the Flour mills of Nigeria (FMN), Dangote, Olam, Power Flour, SAB miller, Honeywell flour mills etc. The expansion of these flour operations was due to high dependence on consumption of wheat products coupled with an explosive increase in population from 45.1 million to 208.3 million within the past six decades. Unfortunately, over the years, a combination of power problems, poor infrastructure, and poor knowledge of supply chain management, policy inconsistencies especially on tariffs, poor customer satisfaction, delay in lead-time and response time, poor platform for microeconomic efficiency and unfavorable business environment led to the decline of Flour mill operations performance and general manufacturing declines [15]. The global trend in competition and sourcing forced several manufacturing companies including flour milling industries to analyze their strengths, weaknesses, opportunities, and threats through a well-structured environmental scanning.

The major problem that this study x-rayed is the persistent downward trends in the flour manufacturing industries since the past two decades in Nigeria. These negative trends continue with the last year exit of Honey well flour mills which was formerly one of the major competitors to Flour Mills of Nigeria Plc. The new reality is that the industry is currently marred by low profit margin as a result of decreasing discretionary income of the populace, high cost of production and poor economic growth. These changes in the market were expected because of the dwindling and unstable foreign exchange in the market with lack of strategic formulations for optimizing the backward integration framework already put in place by economic makers.

Recent research in manufacturing industries have provided more insights on how the manufacturing firms have adopted effective logistics management to address the new market reality to beat fierce competitive and remain profitable. An effective logistics management can provide major source of competitive advantage to a company by ensuring that it is able to continually respond faster, more efficiently than competitors to its customers' requirement on a global basis. The manufacturing function of a company, for example, interacts with and is impacted by the logistics functions as it must respond to the demands of the logistics system for replenishment of products in stock and must maintain their ability to respond to special or usual customer demand (Kimani, 2013).

Since the late 1980s, there has been a trend toward using outside companies to handle warehousing, shipping, and other logistics responsibilities. This outsourcing of some or all logistics operations is especially common among larger companies such as 3M, FedEx, and service-bound organizations. The most compelling reason to let another party take over logistics functions is the decision to focus on core competencies. Outsourcing of logistics requirements have greater potential to (i) improves business focus that allows both the company and its contractor to focus on what they do best. (ii) provides greater technological flexibility to adapt to different technologies used by the company's clients. This potentially expands the company's customer base at a reduced price (iii) enable third party offer variety of services to the company's customer, and (iv) make more efficient warehousing for rapid replenishment. It is cheaper to have third party Logistics (3PLs) warehouses than building or acquiring the company's own specifically because in a 3PL warehouse, there is only a cost for the space occupied by the company's products.

Statement of the Problem

Despite rapid growth in revenue within the past seven years in Flour Mills of Nigeria Plc (FMN Plc), there have been several challenges across the supply chain. Total cost of ownership has become cumbersome in the past decade due to complexity in the value chain of FMN Plc and many companies are facing fierce competition and inability to leverage the cost (from inception to delivery to customer). There is urgent need for manufacturing companies in Nigeria to focus on its core competencies while outsourcing its non-core competencies. This need cannot be overemphasized as it is essential to build successful partnership and create Collaborative, Planning, Forecasting, Replenishment (CPFR) system with a strategic win-win situation with Third Party Logistics (3PLs) providers. There have been several methodologies such as Just-intime, agility, mass production –all have fall short in addressing the current challenges in logistics and supply chain globalization (risks and profitability).

Additionally, outsourcing logistics saves a wealth of time and money that would otherwise be spent sourcing internally. Service firms or organization that chose to use 3PLs providers can eliminate the need to invest in warehouses, packaging, shipping, and general logistics. Third Party Logistics firms specialize in logistics and thus have a more extensive network than most manufacturing firms' supply chain function. They have exclusive relationships within the logistics sector and can have greater influence during negotiations. They can also help to offer greater volume discounts to clients. All of this can minimize overhead costs from production to final distribution of goods and services.

Due to this fact, this study intends to illustrate how manufacturing organizations can be able to determine the specific components of 3PLs that they can outsource in an effort to maximize firm's performance. FMN Plc has the largest conglomerate in Nigeria, will provide a foundation for this study and provide great insights to see to what extent will third Party logistics have on supply chain performance.

Research Justification

The purpose of this study is to illustrate how manufacturing organizations can be able to determine the specific components of third party logistics (3PLs) activities that they can outsource to maximize firm's performance. Flour Mills of Nigeria (FMN) PLC being the largest conglomerate in Nigeria, will provide a foundation for this study with great insights to see to what extent will third Party logistics have on supply chain performance.

The outcome of the study would encourage the activities of 3PLs within FMN Plc and in the manufacturing industries. It would further stimulate the government to improve on its policy on supply chain management. The study is expected to reveal areas where intervention could be required to enhance 3PLs and supply chain management in manufacturing industries in Nigeria.

2.0 LITERATURE REVIEW

This section examined past works written on the impact of third party logistics on supply chain performance in manufacturing and intend to identify the gaps on the subject matter.

Third Party Logistics (3PLs)

Third-Party Logistics (3PL) refers to outsourcing logistics service providers who engages in managing non-core activities of the organization [2]. In several manufacturing companies,

outsourcing was handing over one or many of the business processes to an outside vendor or the utilization of outside available services provided by third-party [6]. The third party logistics activities in Flour mills of Nigeria consists of the supplier relationship management, customer relationship management and enterprise resource planning optimization.

Supplier Relationship Management

Supplier Relationship Management is the relationship between company buyers and its suppliers. It is a mirror image of customer relationship management in the aspect that the same way the organizations strive to manage its relationship with its customers is the same way it should manage the relationship with its suppliers [13]. The main objectives of supplier relationship management are to ensure quality of supplies, timely deliveries, and better information flow which in return ensure proper planning in the organization. Globalization of markets has led to intensified competition not only between organization but also between supply chain and this has led to the need for organizations to adopt efficient and effective ways of providing goods and services that meet the customer requirements. Supplier-buyer relationship can be achieved in two different directions that is supplier captive and buyer captive. Supplier captive is when the supplier has only one customer who can buy from them hence dependent on their productivity while buyer captive has only one supplier who can supply the materials and no other substitute hence dependent on their effectiveness to supply. The shortterm objectives of supplier relationship management are to increase productivity and reduce inventory and cycle time while the long-term objectives is to increase market share and profit for all members of the supply chain.

Customer Relationship Management

Ferrer-Estevez and Chalmeta [8] posited that Customer Relationship Management (CRM) is a change in the enterprise strategy that moves from a product-focused strategy to a customer focused one [4]. Previously, business strategies were focused on the product or service, and the goal of marketing was to convince customers to buy them. This change, together with the development of new information and communication technologies, and new forms of business organization has converged in what is currently known as CRM, which transforms the relationships between companies and clients [11]. The aim is to create value for customers, understand their needs and offer value-added services [12].

Enterprise Resource Planning

Enterprise Resource Planning (ERP) systems are changing the ways many businesses and governmental organizations' conduct their business processes by providing a means of connecting all the various departments together thus resulting in more accurate information for the company. ERP systems provide an organization with a single platform system responsible for the coordination and integration of key-business processes. ERP systems ensure the smooth flow of information within various levels of the organization thus leading to more focused and precise decisions for the company. Before the ERP system's implementation, organizations had several different information systems in place supporting various activities like Finance, HR, Logistics, Supply Chain, etc. without the integration of activities individually. These systems existed separately and did not support interconnectivity. With the implementation of ERP systems, all these systems mentioned above along with various other systems become integrated and it creates a backbone for the organization by providing a means of connecting all the different departments through a single system that is efficient enough to integrate all the

relevant information together and is able to present meaningful on-time data and results for the business.

Supply Chain Performance

Siti [20] posited that supply chain management (SCM) is an integrated management tool for information and materials/services flow among different facilities and stakeholders. Siti, [20] opined that the purpose of supply chain management is to improve trust and collaboration among supply chain partners, thus improving inventory visibility and the velocity of inventory movement. Njoku and Kalu [15] defined supply chain management as a major issue in many industries as firms realize the importance of creating an integrated relationship with their suppliers and consumers. As organizations strive to focus on core competencies and becoming more flexible, they reduce their ownership of raw materials sources and distribution channels. These functions are increasingly being outsourced to other firms that can perform the activities better or more cost effectively. The effect is to increase the number of organizations involved in satisfying customer demand, while reducing managerial control of daily logistics operations. Less control and more supply chain partners led to the creation of the concept of supply chain management with key focus on improving its performance [15].

Research findings revealed that managing the supply chain through outsourcing has become a way of improving competitiveness by reducing uncertainty of material handling and enhancing customer service. Some of the benefits are increased revenue, sales and reduction in total cost of ownership which has direct impact on supplier relationship activities. Other benefits are value as measured form the customer's perspective of money which comprises, effectiveness, efficiency, economy, and equity as well as improvement in transportation and warehouse management under the enterprise resource planning optimization.

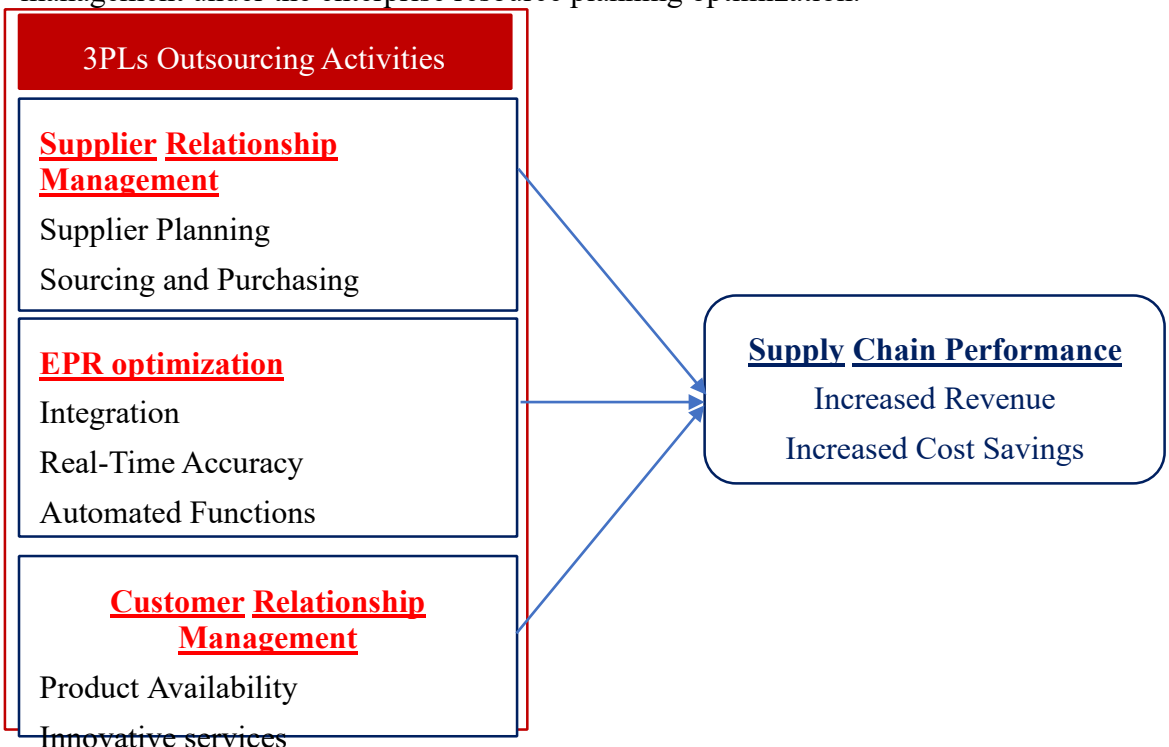

Figure 1: Conceptual Framework

Source: Fieldwork

Theoretical Review

This section examined two existing theories related to the study. They are:

Resource-Based View (RBV)

The resource based "examines the link between a firm's internal characteristics and performance". As the basis for a competitive advantage, the resource-based view considers the application of a bundle of tangible and intangible resources [3].

Resource-Based View argues that a firm has the ability to achieve and sustain competitive advantage if it possesses resources that are valuable, rare, imperfectly imitable, and nonsubstitutable. Not all resources are strategically relevant within an organization. The goal of an organization is to ensure it has access to and control of valuable resources by developing and securing all the relevant resources either internally or externally [3]. If a firm possesses critical resources that have strategic value, it is better to retain the activity in-house. On the contrary, if the strategic value of target activities is low and no internal resources are available to perform such activities, it is beneficial for the company to outsource them. For the sustainable competitive advantages firms are forced to rely on a multitude of outside suppliers for parts, software, know-how and sales and in doing so gain access to valuable resources and external capabilities.

Core Competency Theory (CCT): The theory was originally advocated by C. K. Prahalad and Gary Hamel. They suggested that firm activities should either be performed in house or by external service providers. It is based on make or buy decision [1]. Non-core activities should be considered for outsourcing to the best suited service providers who are experts in that field. However, some few non-core activities which have a big impact on competitive advantage should be retained in house. The process of outsourcing non-core competencies continues to gain importance as it transfers responsibilities such as maintenance and transport functions, in the hands of suppliers most capable of performing them most successfully.

Vendors' competence is an important factor that influences the success of an outsourcing arrangement. The proposition of this theory correctly fits the intentions of this study in the sense that, Organizations who leverage on core competencies and outsource their non-core competencies to the best suited service provider in the supply chain would improve their supply chain performance in terms of revenue, cost and operational efficiency. Outsourcing strategy will improve service delivery by reducing cost and risks.

Empirical Review of Literature

Mwilu [14] carried out a study on assessing the practices of supply chain management and performance in Kenya public institutions. The study comprised of three main objectives that established the extent to which implementing supply chain management practices in the public research institutions in Kenya, determined the impact of supply chain management (SCM) practices on the research institutions performance in Kenya and evaluated the challenges that are facing public research institutions when adopting SCM practices in Kenya. The outcomes from the data analysis from the above study were as follows. On the side of practices of SCM, the research study found out that adaptation of a number of SCM best practices and implementation to a great extent. However, involving suppliers in the planning process, which is a very important best practice had been implemented only to a small extent.

Likewise, Omale et.al, [17], examined the strategic impacts of supply chain innovation on firm's performance. The need to be proactive to customer's demand and the intensifying challenges from globalization and the rising cost of consumable goods necessitated the researchers desire to explore, strategic impacts of supply chain innovation on firms' performance. Findings revealed that supply chain innovation involved an integrative system of customers, suppliers, manufacturers, information technology, materials flows and movement and finance through physical and human resources for enhance performance. However, supply chains innovation requires array of interactions and different paths from which information and products pass which includes the warehousing services, transportation services, inventory controlling and management, packaging, product storage as well as regional or national distribution centers. Further to this, the study by Kimani, [10] on the Lean supply chain manufacturers, retailers, wholesalers, suppliers, distributors, third party service providers (3PLs) which proved that everyone that plays a part in the supply aimed at reducing and balancing the costs, improving distribution channels, managing time and good managing of inventories in order to remain profitable and meet the customers' expectations. The objective of the study explored lean supply chain management in the manufacturing sector in Kenya. However, it was observed that the practices were adopted as preventative maintenance and reduction in the preliminary finishing time which fall short of external customer perspectives.

Similarly, Osoro [18], investigated the factors affecting performance of supply chain system in the petroleum industries in Kenya to identify the various challenges that were affecting supply chain systems performance. He observed that the increase in fuel shortages by organizations brought the need for oil companies to reorganize their supply chain processes and systems with the aim of conducting good future forecasting. Fuel resources had been relied by the companies in the petroleum industry in Kenya in insuring that the companies offer quality services and products to their customers. The findings of the paper confirmed that oil companies need to implement supply chain systems as a continuous process to achieve sustainability in the supply chain processes. The study concluded that both national and international companies need to enhance the levels of implementing green supply chain practices in managing their operations. Okello and Were [16] investigated the influence of the supply chain management practices on performance of Nairobi Securities Exchange Listed food manufacturing companies. The study revealed that there was poor performance of manufacturing companies in Kenya and the companies face stiff competition from food supplies companies that were owned by oversea countries. This results from market dynamics together with complications within supply chain brought about so many challenges and risks in the food manufacturing industry in Kenya. However, it was necessary to note that product development stage, management of inventory, lead time management, technology and innovation had a high influence on the performance of food manufacturing companies in Kenya and it was important to address them as the success of such companies.

Kamau [9], established the effect of buyer-supplier relationships on organizational performance among large manufacturing firms in Kenya. The study had three objectives, to determine the extent to which large manufacturing firms in Kenya have adopted the concept of buyer-supplier relationships, to determine the challenges facing buyer-supplier relationships and to determine the effect of buyer-supplier relationships on organizational performance.The study confirmed that most manufacturing companies in Kenya had embraced the concept of buyer-supplier relationships as they had incorporated most buyer- supplier variables in their operations.

Subramanian, et al., [19] proved that 3PL providers have the beneficial functions of helping most companies achieved competitiveness and responsiveness in its operations. It also helps firms to improve the customer service level and reduce most logistics costs while Zhang and Okoroafo [21] believed that by using 3PL providers on logistics operations, transaction costs would be eliminated significantly. Nonetheless, there is limited research in the area of outsourcing practices in flour milling companies and evaluating the impact these activities could have on supply chain performance in manufacturing especially in developing countries like Nigeria. It is against this backdrop that this study intends to examine the impact of Third Party logistics activities on supply chain performance in Flour mills of Nigeria, PLC.

3.0 MATERIALS AND METHODS

This study used a descriptive research design appropriate with the use of case study because it give vivid examination by which events occurred as well as providing causative relationship on holistic approach to phenomena [7]. The population of the study comprised 350 respondents involving cross functional team members across three subsidiaries in FMN were studied. The team members comprise cross-functional teams from department of logistics, finance, warehousing, production, and customers (value is measured from customer's perspective). The population of 350 respondents from the three FMN subsidiaries in order to save money, energy and time. The study was conducted across three selected subsidiaries/divisions of Flour Mills of Nigeria Plc Lagos which were Apapa Bulk Terminal limited, Flour operations division and Golden sugar division. Purposive sampling technique was employed to select respondents in the subsidiaries of Flour Mills of Nigeria. Sample size 300 respondents involving cross functional team members across three subsidiaries in FMN were selected for the study. The team members were drawn from selected from top management, logistics, warehouse, finance, production, and the customers (value is measured from customer's perspective).

Table 1: Table Showing the Population and Sample Size

Department	**Target Population (N)**				**Sample Size**			
	A	**F**	**C**	**Total**	**A**	**F**	**G**	**Total**
Top Management	15	20	15	50	10	5	5	20
Logistics/Warehouse	50	44	56	150	40	30	30	100
Production	20	30	30	80	20	15	15	50
Finance	7	9	9	25	15	15	20	50
Customers	15	15	15	45	20	30	30	80
Total	**107**	**118**	**125**	**350**	**12**	**15**	**12**	**300**

Source: Field Survey by the Authors

From Table 1, A, represent Apapa Bulk Terminal Limited (ABTL) subsidiary; F, represent Flour operations subsidiary and G represent Golden sugar subsidiary.

Both primary and secondary data were used for this study. The source of primary data was obtained from structured questionnaire design to elicit responses from the selected respondents for the research while the secondary data was obtained from audited report from the Flour Mills of Nigeria Plc. The face validity of the designed questionnaire was established through a group of experts in research work. The experts examined whether the instruments appear right in terms of the design, format, language, length, and presentation for necessary correction. After which it was submitted to an expert in Tests and Measurement for further correction and all

corrections were duly affected. Items that were not relevant were removed. The data collected were analyzed using appropriate descriptive and inferential statistics. Specifically, data relating to the background information and items in the three research instrument were analysed using frequency, percentages, and percentile. SPSS version 29 was used for data processing. Data were tabulated and the mean percentage, standard deviation and t-test were used for test of hypothesis.

4.0 FINDINGS

The results were observed and presented in relation with the set objectives. A total of three hundred and fifty (350) questionnaires administered but only three hundred and two (302) were returned out of which two (2) were incomplete. The questionnaires were designed in line with the objectives of the study. T-test was used to further validate the hypotheses to confirm the impact of third party logistics activities such as supply relationship management, Enterprise Resource Planning (ERP) optimization and customer relationship management on respective supplier chain performance in terms of revenue, cost and operational efficiency.

Demographic Characteristics of Respondents

The respondents were selected from the various departments in Flour Mills of Nigeria Plc Apapa, Lagos with a total of 300 out of 350 permanent staff. The various men and women have varying degree of experience in logistics and supply chain as shown by their respective Job Classes (JCs) ranging from lowest from JC 8 (frontline supervisor) to highest JC 1 (General Manager/Director).

Demographic Description by Sex

There was a total of 170 men and 130 women drawn from various department in the various departments involved in the supply chain from inception of raw materials up to delivery to customers. The percentage of women and men were 43% and 57% respectively with slight difference in terms of gender bias.

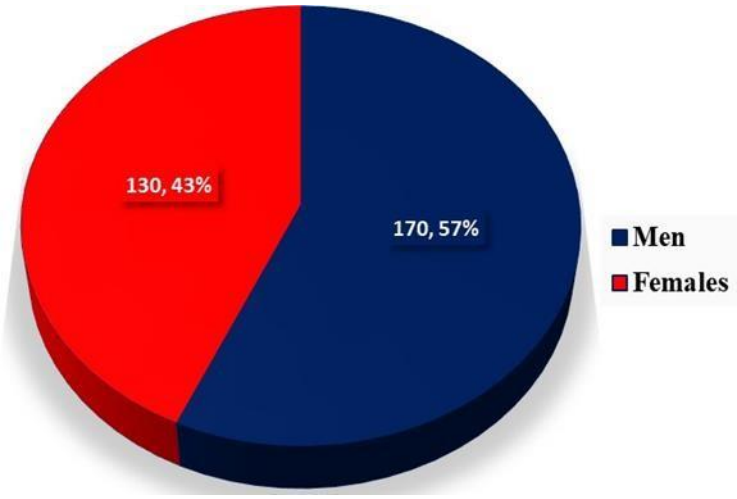

Figure 2: Demographic Distribution by Sex

Source: Field Survey by the Authors

Demographic Distribution by Job Class

The study focused on respondents from supervisors to general manager level who have adequate work experience in supply chain as demonstrated by their respective job classes in

the organization chart. The study observed that the largest respondents were majorly supervisors made up of 139 participants followed by Junior managers (officers) and mangers in that order with external customer made of just 10 participants.

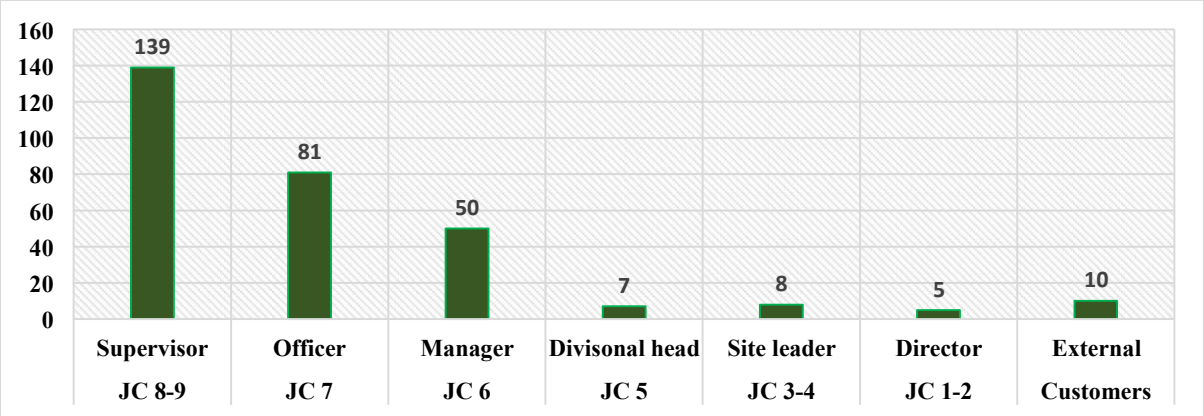

Figure 3: Demographic Distribution by Job Class

Source: Filed Survey by the Authors

Impacts of 3pls Supply Chain Relationship on Revenue

In the analysis of supplier relationship parameter, we observed that 46% of respondents strongly agree (SA) that 3PLs has impacts on Supplier chain performance, 34% of respondent agree (A) that 3PLs has impacts on Supply chain performance, 14% of respondents are neutral (N) while 3% only disagree (D) with remaining 2% strongly disagree. (SD).

Table 2: Impact of Supplier Relationship M (SR) on Supply Chain Performance

Parameter	Respondents	SA	A	N	D	SD	Total	Mean	STD
Supplier Relationship (SR)	Increased Revenue	145	111	33	6	5	300	4.283	3.848
	Reduced Cost	120	101	59	11	9	300	4.040	3.646
	Improved OP. Efficiency	150	95	35	14	6	300	4.230	3.820
% Total		**46%**	**34%**	**14%**	**3%**	**2%**	**100%**		

Source: Field Survey by the Authors

Impacts of 3pls ERP Optimization on Supply Chain Performance

It was observed that 49% of respondents strongly agree (SA) 3PLs has an impact on Supplier chain performance, 40% of respondent agree (A) 3PLs has an impact on Supply chain performance, 6% of respondents were neutral while 3% only disagree with remaining 2% strongly disagreed.

Table 3: Impact of Enterprise Resource Planning Optimization (ERP) on Supply Chain Performance

Parameter	Respondents	SA	A	N	D	SD	Total	Mean	STD
ERP	Increased Revenue	175	101	10	8	6	300	4.437	3.995
	Reduced Cost	120	128	31	13	8	300	4.130	3.718
	Improved Op. efficiency	142	135	14	6	3	300	4.357	3.897
% Total		**49%**	**40%**	**6%**	**3%**	**2%**	**100%**		

Source: Filed Survey by the Authors

Impacts of 3pls Customer Relationship Management on Supply Chain Performance The result of analysis was presented in table 4. CR represents customer relationship parameters. It was observed that 45% of respondents strongly agree (SA) 3PLs impacts on supply chain relationship, 39% of respondent agree (A), 3PLs has an impact on supply chain performance 7% of respondents were neutral (N) while 5% only disagree (D) with remaining 4% strongly disagree (SD).

Table 4: Impact of 3pls Customer Relationship on Supply Chain Performance

Parameter	Respondents	SA	A	N	D	SD	Total	Mean	STD
Relationship Customer (CR)	Increased Revenue	98	143	43	10	6	300	4.057	3.627
	Reduced cost	140	113	28	14	5	300	4.230	3.808
	Improved Op. efficiency	131	115	27	15	12	300	4.127	3.738
% Total		**45%**	**39%**	**7%**	**5%**	**4%**	**100%**		

Source: Field Survey by the Authors

Testing of Hypothesis

This section explained the testing of hypotheses at the level of significance α. The following conditions were appliable:

(i). A two-tailed test was used and computed results in excel were compared to the theoretical t-values from T-table. (ii) H_0: Null hypothesis means (no significant impact between 3PLs and supply chain performance). (iii) H_1: Research hypothesis (investigator's belief that there is a significant impact between 3PLs and supply chain relationship); α =0.05. (iv) For a two-sided test, find the column corresponding to 1-α/2 and reject the null hypothesis if the absolute value of the test statistics is greater than the value of t1-α/2, df in the table below.

Testing of Hypothesis 1

H_{01}: There is no significant relationship between supplier relationship on Supply chain performance in Flour Mills of Nigeria Plc.

From Table 5, absolute value of the test 2.35305 is greater than critical value 2.048 in t- test, we reject the null hypothesis. Meaning that there is a significant relationship between Supplier relationship management and supply chain performance of Flour mills of Nigeria Plc.

Table 5: T-Test Table Showing the Result of Level of Significance between Supplier Relationship Management and Revenue

Source of relationship	df	Computed t	Critical t value	Decision @H0, α=0.05	Interpretation
Supplier relationship	298	2.35305	1.968	Reject	Significant
Supply chain performance					

Source: Field Survey by the Authors

Testing of Hypothesis 2

H_{02}: There is no significant relationship between enterprise resource planning optimization on supply chain performance in Flour Mills of Nigeria Plc.

From Table 6: Since absolute value of the test 2.54680 is greater than critical value, 2.048 in ttest, we reject the null hypothesis. Meaning there is a significant relationship between enterprise resource planning and supply chain performance of Flour mills of Nigeria Plc.

Table 6: T-Test Table Showing the Result of Level of Significance between ERP Optimization and Supply Chain Performance

Source of relationship	df	Computed t	Critical t value	Decision @H0, α=0.05	Interpretation
ERP	298	2.54680	1.968	Reject	Significant
Supply chain performance					

Source: Field Survey by the Authors

Testing of Hypothesis 3

H_{03}: There is no significant relationship between customer relationship on supply chain performance in Flour Mills of Nigeria Plc.

From Table 7; Since absolute value of the test 2.6875 is greater than critical value 1.968 in ttest, we reject the null hypothesis. Meaning there is a significant relationship between customer relationship management and Supply chain performance in Flour Mills Plc.

Table 7: T-Test Result Showing the Level of Significant between Customer Relationship and Economy

Source of relationship	df	Computed t	Critical t value	Decision @H0 , α=0.05	Interpretation
Customer relationship	298	2.68735	1.968	Reject	Significant
Supply chain performance					

Source: Field Survey by the Authors

5.0 CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The study investigated the impact of third-party logistics (3PLs) activities on supply chain performance of Flour Mills of Nigeria (FMN) Plc. The following findings were reached:

i. It was established that 45.5% strongly agree that 3PLs activities drives supply chain performance while 37 % agree that 3PLs activities drives supply chain performance. This sums up the total level of agreement to 82%.

ii. However, the rest 17.6 were neutral and disagreed that there are no impact.

iii. The 82% justified the goal of the study that 3PLs activities have an impact on supply chain performance in FMN Plc.

iv. The t-test conducted on the three core activities of 3PLs on supply chain performance shows a positive and significant relationship between 3PLs activities and supply chain performance in FMN Plc.

Recommendations

The study recommends that the manufacturing companies in Nigeria could drive more synergy along the value chain with appropriately selection of a 3PLs providers that align to its corporate objectives. The main theoretical contribution of this study to knowledge is the impact of

outsourcing policy on supply chain performance in manufacturing companies in Nigeria. The study further advanced the core competency model by evaluating areas of shortage of resources, skills and capacity of the flour milling companies that enables outsourcing drives higher performance efficiency, revenue, and cost optimization of the organization.

In addition, the study provided an indispensable contribution to exiting body of knowledge on outsourcing practices in relation with service delivery in the manufacturing sector which will re-emphasize the reasons why manufacturing companies such as Flour milling should outsource its non-core competencies in order to achieve excellence service delivery to the society. Since there are limited resources available in developing countries on outsourcing in flour milling companies, it will further address the gaps in literature. The study will serve as indispensable source of reference to future researchers and academicians in collecting empirical data as it relates to outsourcing in private enterprises especially in Nigeria and other developing world economies.

REFERENCES

[1]Agburu J.I., Nyianshima C.A., and Akuraun, S.I. (2017). Effect of outsourcing strategies on the performance of small and medium scale enterprises (SMEs): Journal of Global Entrepreneurship Research. 7(26), pp.1-10.

[2]Asamoah K.A. (2016). The effect of outsourcing logistics to third party providers on performance of health care delivery; a moderating role of information technology. Kwame Nkrumah university of science & technology A thesis submitted to the Institute of Distance Learning institute of distance learning. Kumasi.

[3]Barry, J. B., David, J., and Mike (Jr), W. K., (2021). Resource-Based Theory and The Value of creation Journal of Management, 47(70, pp. 1936-1955.

[4]Cierna, H. and Sujova, E. (2022), "Differentiated customer relationship management -a tool for increasing enterprise competitiveness", Management Systems in Production Engineering, 30 (2), pp. 163-171.

[5]Child, J. (1972), Organizational structure, environment and performance: the role o strategic choice, Sociology, 6, pp. 1-22

[6]David, B. (2010). Supply Chain Best Practices. 2nd Edition. New York: John Wiley and Sons.

[7]Durrheim (2014). Research design and methodology. University of Pretoria Financial Times & Pitman Publishing.

[8]Ferrer-Estevez M. & Chalmeta R. (2023) Sustainable customer relationship management. Marketing Intelligence & Planning. Emerald Publishing Limited, 2(1), pp. 244-262.

[9]Kamau, I. N. (2013). Buyer-supplier relationships and organizational performance among large manufacturing firms in Nairobi, Kenya (Doctoral dissertation, University of Nairobi).

[10]Kimani, M. W. (2013). Lean Supply Chain Management in Manufacturing Firms in Kenya. Unpublished MBA project, University of Nairobi.

[11]Lokesh, S., Menaga, A. and Vasantha, S. (2022), "Influence of customer relationship management towards customer loyalty with mediating factor customer satisfaction in insurances sector",23 (187), pp. 169-173. [12]Meha, A. (2021), "Customer relationship management": Quality-Access to Success, Vol. 22 , pp. 15-20

[13]Mwashegwa F. M. & Nondi R. (2019). Effects of supplier relationship management on procurement performance at Kenya pipeline company limited. International Journal of Management and Commerce Innovations. 6(2), pp.112-122.

[14]Mwilu, J. M. (2013). Supply chain management practices and performance among public research institutions in Kenya (Doctoral dissertation, University of Nairobi).

[15]Njoku M. E. & Kalu A. O. U. (2015). Effective supply chain management: a strategic tool for performance. The Economist Books, 1st Edition. New York: Bloomberg Press. 32(5), 339-361.

[16]Okello J. O. and Were S. (2014). Influence of the supply chain management practices on performance of Nairobi Securities Exchange Listed food manufacturing companies International Journal of Social Sciences and Entrepreneurship, 1(11).

[17]Omale S, Oyenuga M., Odunmaiya E. W., & Chima K.O. (2017). Strategic impacts of supply chain innovation on firm performance: European Journal of Logistics, Purchasing and Supply Chain Management3(5), pp.34-40.

[18]Osoro A. (2015). Factors Affecting Performance of Supply Chain Systems in the Petroleum Industries in Kenya. International Journal of Scientific and Research Publications, 5(4), pp. 173-183.

[19]Subramanian N., Gunasekaran, A., Papadopoulos, T., and Nie, P. (2016). "4th party logistics service providers and industrial cluster competitiveness: collaborative operational capabilities framework," Industrial Management & Data Systems, 116(1) pp. 1303-1330.

[20]Siti, S. R (2017). The Factors That Influence Supply Chain Performance, A publication of Social Science Research Network, Faculty of Business Management, UiTM Puncak Alam.

[21]Zhang, H., and Okoroafo, S.C. (2015). "Third-party logistics (3PL) and supply chain performance in the Chinese market: a conceptual framework," Engineering Management Research, vol. 4, p.38.

License