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REVERSE LOGISTICS AND ORGANIZATIONAL PERFORMANCE OF PLASTIC MANUFACTURING FIRMS IN PORT HARCOURT

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Abstract

This study examined the relationship between reverse logisticand measures of organizational performance of plastic manufacturing firms in Port Harcourt. The study adoptedcross sectional survey design. The organizational scope of the study wereeight (8) functional plastic manufacturing firms in Port Harcourt. The choice of these firms were purposively selected out of registered plastic manufacturing firms in Port Harcourt However, the element of the study were the general managers, heads, senior staff and assistants of functional departments in each of the 8 plastic manufacturing firms, totaling 210. Furthermore, krejcie and Morgan sample size Table (1970) was adopted to determine the total sample size from the accessible population. The Pearson Product Moment Correlation was the statistical tool used for data analyses, with the help of Statistical Package for Social Sciences. The study found that,reverse logistics had a positive relationship with sales growth and market share of plastic manufacturing firms in Port Harcourt. This means increased use of reverse logistics contribute to the improvement of performance of plastic supply chains by increasing their product returns over time.The study therefore concluded that for performance of plastic manufacturing to be effective, reverse logistics practices must be in place, or gradually be adopted as a framework of best-practices.It was thus, recommended that, Plastic manufacturing firms should prioritize reverse logistics over any other form of strategic haven shown to have a positive and significant effect on sale growth and market shareand alsoensure that structures are established to encourage reverse logistics in order to make contribution towards firm performance.

Keywords:

Reverse Logistics, Organizational Performance,Sale Growth.Market Share, Plastic Manufacturing

Introduction

Environmental issues with a view to economics have been an existing concern due to its increasing importance. Despite the fact that this concern had been mentioned, it was of recent that ecological concerns stood a good chance in gaining more attraction to become an official topic (E.S.E.E, 2019). This recognitive progress lead to a remarkable increase in green awareness not only from government, customers but also from companies itself. Companies, as playing a key role in manufacturing, supplying, and transporting products in order to satisfy the supply-demand mechanism, were pushed to think more about greenness and take ecological impacts into sober consideration. This triggered a demand on quick adoption and complete operational transformation in all aspects, ranging from financial to marketing strategies. More importantly, logistics is not the exception. As a fast-growing sector of activities that holds accountable for raw material procurement and final product delivery, logistics and its relation to supply chain has been perceived as the most potential factor accounting for various environment-related issues, such as natural depletion, emission pollution, and ecological degradation. Thus, governments had put an excessive pressure on companies to improve greenness within their logistics activities through laws and legislations to yield optimal energy efficiency with minimum effects on environment. Green logistics term was created as a result of these ecological recognition progress and was expected to assist companies tackle these dilemmas. (Vidová, Babčanová, Witkowski & Saniuk, 2012)

According LogistiikanMaailma (2020) green logistics concerns about taking sustainable development into sober consideration, which refers to the practice of transforming transport chain to burden environment as minimal as possible. The mentioned transformation is expected to be seen through redesigning sourcing or distribution systems, managing efficient transportation movements, and eliminating unnecessary packaging. In greater details, green logistics covers different dimensions concerning to production planning, materials planning and physical distribution. Green logistics practices influence entire value chains, and it has become a requirement for firm performance.

The negative impact of firm activities globally has given rise to the formulation of various approaches for achieving sustainable methods of development. According to Chan, He, Chan, & Wang (2012) the goal of sustainable development is to address growing concerns about environmental issues while simultaneously responding to socioeconomic imperatives. Firms around the world are feeling pressure to implement green practices into their value-creation systems. This pressure emanates from growing environmental awareness on the part of consumers in many countries, as well as increasing prices for raw materials and energy, environmental legislation, and influence exerted by dominant actors in the value chain (Giovanni &Vinzi, 2012) The solutions that have been proposed and applied to respond to these trends cover entire value chains, from the reduction of raw material consumption and industrial contamination to cutting down on solid domestic residuals at the end-of-life of products and their reintegration into new value creating processes (Lysons&Farrighton, 2012). Green logistics practice concerns had led to the development of legislations along all these areas. Firms in their pursuit of green logistics, in which outbound logistics has been considered as the most important aspect to look at. How to effectively maintain green outbound logistics concerning physical product packaging, transportation, and reverse logistic management. While ensuring its capabilities in enhancing firm performance is still considered the most headache question for firms, (LogistiikanMaailma, 2020).

The aim of this study is to empirically determine the effects of reverse logisticson performance of plastic manufacturing firms in Port Harcourt. However, the specific objective was toexamine the relationship between reverse logistics, sale growth and market share of plastic manufacturing firms in

Port Harcourt. Thus, it was postulated that, there is no significant relationship between reverse logistics, market share and sales growth of plastic manufacturing firms in Port Harcourt.

LITERATURE REVIEW

Theoretical Framework

The Resource Base View (RBV) Theory: RBV explains that the identification and possession of internal strategic resources contributes to a firm's ability to create and maintain a competitive advantage and improve performance (Barney 1991; Hart 1995; Crook et al. 2008). A resource is considered strategic if it meets certain criteria - valuable, non-substitutable, rare or specific, and inimitable in order to contribute to improving the performance of the firm (Barney 1991; Crook et al. 2008). Value refers to the extent to which the resources are aligned with the external environment to exploit opportunities and reduce threats. Substitutability is the extent to which competitors can create equivalent resources. Resource rareness refers to the perceived scarcity of the resource with factor markets. Inimitability is the extent to which competitors cannot obtain or replicate the resources, or can only do so at a significant cost disadvantage (Hoskisson et al. 1999).
Hart (1995) leveraged RBV's tenants to assert that environmental management in an organization is a strategic resource because it can lead to a higher firm performance (Hart 1995; Aragon-Correa and Sharma 2003; Vachon & Klassen 2008). Environmental management supports pollution prevention, product stewardship, and sustainable growth (Hart 1995; Sharma and Vredenburg 1998; Christmann 2000; Aragon-Correa and Sharma 2003). Firms incorporate continuous learning, innovation in environmental technologies, stakeholder integration, and the use of best practices in reducing the environmental impact of their operations. Historically, the RBV paradigm has been leveraged to understand the performance implications of the use of internal resources to the firm (Hart 1995). Sharma and Vredenburg (1998) argue that proactive business strategies which includes aspects of green practices and an environmental approach to business operations can be considered a valuable resource. Thus, the combination of outbound logistics and green practices may lead to better firm performance (Bowen et al. 2001). Furthermore, firms that use green practices in their supply chains and in the operations of the firm may be in a position to improve firm performance (Zhu & Sarkis 2004; Vachon & Klassen 2008).

The preceding discussion suggests that RBV is a logical choice for research in this area due to its emphasis on explaining how firms use green resources to improve firm performance. Firms are at a critical point today where the interaction between business activities and the natural environment are no longer seen as externalities to the firm, but as being inextricably tied (Hart & Dowell 2010). RBV, in the context of environmental responsibility, suggests that firms recognize and apply strategic resources and capabilities to create unique and difficult to imitate practices that simultaneously reduce the impact of the firm's operations on the natural environment and create value for the firm (Hart 1995; Aragon-Correa and Sharma 2003; Hart and Dowell 2010).

Conceptual Review

Reverse Logistics: It is evident that reverse logistics is a part of logistics, which handles issues relating to recycling, remanufacturing, refurbishing or disposal when finish products are being returned from customers to manufacturing sites. According to Rizki et al. (2022), Saini et al. (2023), the essence of Reverse Logistics is an effort to get value from products that are no longer used. When a product has lost its value,reverse logistics activities can recover the product to become a new product again by recycling some parts or components of the product. Reverse logistics includes all activities in which there is planning, processing, reduction, disposal of hazardous or non-hazardous

waste from the production, packaging and use of products. All of these activities include the process of reverse distribution. Since the movement of the flow of goods is opposite to the flow in a conventional supply chain, reverse logistics is often also called "backward logistics", where the forward flow of goods flows from suppliers to manufacturers and retailers to consumers. Reverse logistics deals with all the flows of goods and information necessary to collect product usage, packaging materials, production cancellations, and so on. Then take it to storage where it can be reused, remanufactured, recycled or destroyed. According to Gechevski et al. (2016), Lutfi et al. (2023), Liu et al. (2023)reverse logistics activities consist of several stages, including: product collection at collection points, sorting, reprocessing, and disposal of parts that cannot be reused. Management of reverse logistics activities at each stage needs to be handled properly, so that economic opportunities and environmental utilization from reverse logistics activities can be achieved.

Logistics management is important in the supply chain, the purpose of the logistics system is the main logistics function and the main requirement for integrated supply chain management (supply chain management). According to Martínez et al. (2023) there are three driving factors that can lead to reverse logistics, namely

(1) Economy-Product returns can be used as a source for value recovery by reusing products, remanufacturing is a part that will be used as a reserve or recycled residue to recover material value.
(2) Legislation is meant where there is a regulation that requires companies to improve.
(3) Good-Corporate Citizenship emphasizes a value or principle where the encouragement of the organization or company involved is responsible for reverse logistics.

A company can be called good corporate citizenship seen from good behavior for the people around it. Reverse logistics is the process of sending products from the customer back to the original sender, or seller. Reverse logistics occurs when consumers want to return goods they have received. Typically, reverse logistics is divided into two processes, namely management of returns, and then repair or remanufacturing.

Firm Performance: According toKerning and Jaeger (1990)firm performance refers to how well an organization is performing. Good performance is an indicator of success and development of all organizations. Today best practices evaluate firm's performance in terms of sale growth, market share, products innovations, customer loyalty and people. Performance helps ensure organizational goals are being achieved.According toArmstrong (1987) performance is the ability to achieve organizational goals more effectively and efficiently.

Performance is a major concern to all organizations. It's the level at which an organization is placed in a particular industry. If an organization is to meet its goals effectively and efficiently,accurate measuringof performance must be implemented. The various measures used are sales growth, profit, market share, competitive advantage and customer rating. Performance of an industry in an economy could best be measured in terms of time taken to finish and costs incurred in relation to the original planned project duration and financial budget (Ubeku, 1983). According to Sultan (1997) firm performance can be measured by many indicators for instance asset base, market share, quality, customer satisfaction and profitability.He however contends that satisfaction with using financial measures to measurefirm performance has been expressed by some researchers based on the intensity and nature of criticism directed at the traditional accounting systems that are often harmful to the evaluation process.

Performance is also seen as how well one does a piece of work or activity and the ability to bring about desired results in the satisfactory manner. Good performance is an indicator of success and development. The perspective of firm's performance is considered as a function of organization ability to reach and maintain equilibrium with its environment.

Sales Growth: Sales growth is the pace at which the average sales volume of a company's products increases annually. Sales growth is a strong indicator of firm's performance; and business wellness by extension. It is an incremental change in the sales of a firm's product over a given time interval, often expressed as a percentage. The wellness of a business entity is evaluated by the rate at which its sales grow (Didia&Nwokah, 2015). Successful new products contribute to company's profits through sales growth. Sales growth is thus an essential index of financial performance of a firm (Patterson, 2007). It is an important indicator of business wellness and sustainability, and is closely associated with the marketing function (Morgan &Rego, 2006; Ambler, 2003).

Sales growth indicates a relative measure of change in sales volume over recorded periods; and is affected by price and other complex factors like seasonal variations, income level, quality, changes in taste, changes in technology and company's values, environmental factors (Didia&Nwokah, 2015). Sales growth is a key parameter of business wellness that firms must monitor over succeeding accounting intervals in order to have a fair grasp of trends because it is an essential component of forecasting and is instrumental in decision-making (Ateke& Kalu, 2016). Sales growth provides executives and sales directors with an assessment of the firm's health.

EMPIRICAL REVIEW

The study of Viola Noor and Kennedy (2021) on the adoption of logistics in commercial state establishments is an emerging phenomenon throughout the world. The purpose of this paper was to evaluate the influence of green purchasing practices on performance of state corporations in Kenya. Ten commercial state corporations in Kenya including Kenya Literature Bureau, Kenya Airport Authority, East African Portland Cement Company, Jomo Kenyatta Foundation, Kenya Broadcasting Corporations, Kenya Ordinance Factories Bureau, Kenya Railways Corporation, Kenya Seed Company, Chemelil Sugar Company and finally Kenya electricity generating company were selected for this study. The study adopted a descriptive design and used a sample of 175 respondents from ten state corporations. The respondents were selected through stratified sampling. The primary data collection method applied in this study constituted questionnaires both open-ended and closed. Results revealed that; considering corporations use of raw materials, the suppliers use of purchasing and the use of recycling of products or materials technologically had a positive impact on the performance. Results also revealed that considering commercial cooperation's use of responsive packaging also had an influence.

Another study Kazim and Gözde (2013) which aims to investigate the relationship between logistics practices and firm performance in healthcare organizations. For this purpose, empirical data from 240 hospital managers is obtained from hospitals operating in Turkey. While obtaining the data, logistics practices are categorized into three groups as (1) reverse logistics, (2) distribution and marketing, (3) purchasing and manufacturing practices. In addition, firm performance is measured with three indicators. These are operational, economic, and environmental performances. Analyses of empirical data indicate that two of logistics practices positively support firm performance in all three performance indicators for hospitals in Turkey. These logistics practices are (1) reverse logistics and (2) purchasing and manufacturing.

Lameck and David (2016) study the effect of logistics practices on performance of supply chains in multinational organizations. The study was carried on 10 multinational organizations in Kenya, specifically focusing on the following departments; procurement, human resources, environment specialists, and administrators, where the study picked at least four senior officers from each. In developing countries like Kenya green logistic practices in paramount for tomorrow's energy ingesting. This study did pilot test to ascertain the reliability of the instruments. Objective: The study aimed at findings of remedial measures on performance of supply chain in multinational organizations in Kenya. This resulted to great significance of the study and a replication of the findings in the Kenyan context.

Thi Thuy Dung Tran (2021). Onduted a study on outbound logistics in e-commerce. Semi-structured interview with case companies was used, allowing the author to gain deeper insights on internal logistics operations. Meanwhile, background history and other relevant data was collected via its sustainability reports as the secondary source. The results indicate that both case companies perceive opportunities outweighing challenges brought by e-commerce, especially in green transportation and packaging. The use of renewable fuels, sustainable transportation vehicles and packaging material transformation into reusable cardboard, post-consumer recycled plastic are enhanced. Meanwhile, both companies have seen challenges in green packaging (questioning reliability of sustainable packaging materials during delivery) and customer communication (higher possibility of customers' purchasing decisions being negatively changed due to extra costs charged and disclosure of information regarding eco-impacts in different delivery options.

Lili,Laksito, Salmah, Devita, Nurul, Wursan, Risma and Nur (2023) conducted a study on performance of supply chain management. The purpose was to analyze the relationship between the performance of reverse logistics and supply chain management, to analyze the relationship betweenprocurement aspects and the performance of supply chain management. This research method is quantitative, the analysis of research data uses the partial least square structural equation model (SEM-PLS) with a statistical data processing tool, namely SmartPLS 4.0 software. The results indicate that reverse logistics has a positive and significant effect on the performance of supply chain management, procurement Aspects has a positive and significant effect on the performance of supply chain management. The novelty of this study is the relationship model between Reverse logistics variables, the performance of supply chain management and procurement in SMEs which was not found in previous studies.

However, none of these studies empirically examine the relationship between the predictor variable and measures of the criterion variable. Thus, the following hypotheses;

Ho_1 There is no significant relationshipbetween reverse logistics and sales growth of plastic manufacturing firms in Port Harcourt.

Ho_2 There is no significant relationshipbetween reverse logistics and market share of plastic manufacturing firms in Port Harcourt

METHODOLOGY

Research Design: The cross sectional survey design was used for this study.

Population for the Study: The organizational scope of this study was eight (8) functional plastic manufacturing firms in Port Harcourt. The choice of these firms were purposively selected out of registered plasticmanufacturing firms in Port Harcourt However, the assessible population of the

study were the general managers, heads, senior staff and assistants of functional departments in each of the 8 plastic manufacturing firms, totaling 210.

Sample and Sampling Techniques: Furthermore, krejcie and Morgan sample size Table (1970) was adopted to determine the total sample size from the accessible population.

Nature/Source of Data: The nature of the data was quantitative which was coded and keyed into a statistical package of social science (SPSS).

Method of Data Analysis: Pearson Product Moment Correlation Coefficient was used to test the hypotheses. All analyses was done with the aid of statistical package for social science (SPSS).

Validity of Instrument: Validity of the survey instruments was achieve through peer vetting assessment of research experts.
Reliabilityof Instrument: The researchers verified reliability outcomes through the use of Cronbach alpha.

Table 1: Result of Reliability Test

Variables	**No of items**	**Alpha value**
Reverse Logistics	3	0.912
Sale Growth	3	0.925
Market Share	3	0.850

RESULTS AND DISCUSSION

Table 2: Correlation Result ofReverse Logistics and Sales Growth

		Reverse Logistics	Sales Growth
Reverse Logistics	Pearson Correlation	1	.726**
	Sig. (2-tailed)		.000
	N	89	89
Sales Growth	Pearson Correlation	.726**	1
	Sig. (2-tailed)	.000	
	N	89	89

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2, present correlation results determining the relationship between reverse logistics and sales growth using 89 respondents. The result show that reverse logistics with (r = 0. 729) is strongly related to sales growth. Based on this empirical findings, the null hypothesis **H_{01}**as stated earlier that, there is no significant relationship between reverse logistics and sales growth of plastic manufacturing firms in Port Harcourt, is hereby rejected and the alternate hypothesis accepted. Thus, there is significant relationship between reverse logistics and sales growth of plastic manufacturing firms in Port Harcourt.

Table 3: Correlation Result ofReverse Logistics and Market Share

		Reverse Logistics	Market Share
Reverse Logistics	Pearson Correlation	1	.750**
	Sig. (2-tailed)		.000
	N	89	89
Market Share	Pearson Correlation	.750**	1
	Sig. (2-tailed)	.000	
	N	89	89

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3, present correlation results determining the relationship between reverse logistics and market share using 89 respondents. The result show that reverse logistics with (r = 0. 750) is strongly related to market share. Based on this empirical findings, the null hypothesis **H_{02}**as stated earlier that, there is no significant relationship between reverse logistics and market share of plastic manufacturing firms in Port Harcourt, is hereby rejected and the alternate hypothesis accepted. Thus, there is significant relationship between reverse logistics and market share of plastic manufacturing firms in Port Harcourt.

Table 4: Decision Summary

Hypothesis	**Decision**	**Basis for decision**	**Remark**
$H_{01:}$ There is no significant relationship between reverse logistics and sales growth of plastic manufacturing firms in Port Harcourt.	The null hypothesis was rejected	Relationship was significant (r=0.726).The probability of correlation (ρ = 0.01<0.05)	Strong positive relationship
$H_{02:}$ There is no significant relationship between reverse logistics and market share of plastic manufacturing firms in Port Harcourt.	The null hypothesis was rejected	Relationship was significant. (r =0.750). The probability of correlation (ρ = 0.01<0.05)	Strong positive relationship

Discussion of Findings

The findings of the test of hypothesis 1, established that, there is a significant relationship between reverse logistics and sales growth. The results marked a positive as well as significant relationship between reverse logistics and sales growth. The correlation statistic ($r = .0.726$, $p < 0.001$) shows that reverse logistics can explain. 52.71% of changes in sales growth. This is an indication of a positive relationship between the variables. In term of strength of the relationship, the result show that reverse logistics with ($r = 0. 726$) is strongly related to sales growth.

The findings of the test of hypothesis 2, established that, there is a significant relationship between reverse logistics and market share. The results marked a positive as well as significant relationship between reverse logistics and market share. The correlation statistic ($r = .0.750$, $p < 0.001$) shows that reverse logistics can explain. 56.25% of changes in market share. This is an indication of a positive relationship between the variables. In term of strength of the relationship, the result show that reverse logistics with ($r = 0. 750$) is strongly related to market share.

These result tally with those ofLili,Laksito, Salmah, Devita, Nurul, Wursan, Risma and Nur (2023) conducted a study on performance of supply chain management. The purpose was to analyze the relationship between the performance of reverse logistics and supply chain managementto analyze the relationship between procurement aspects and the performance of supply chain management. The data was analyzed with partial least square (SEM-PLS) with a statistical data processing tool, namely SmartPLS 4.0 software. The results indicate that Reverse Logistics has a positive and significant effect on the performance of green supply chain management, have a positive and significant effect on the performance of supply chain management.

Conclusions

The purpose of this study was to provide useful insight to the future prospects of reverse logistics practices. The findings showed that,reverse logistics have a positive relationship with sales growth and market share of plastic manufacturing firms in PortHarcourt. This means increased use of reverse logistics contribute to the improvement of performance of plastic supply chains by increasing their product returns over time. From the foregoing, it is noteworthy that logistics practices significantly influence performance of plastic manufacturing firms, most notably through the adoption of reverse logistics. The study therefore concludes that for performance of plastic manufacturing to be effective, reverse logistics practices must be in place, or gradually be adopted as a framework of best-practices.

Recommendations

Based on the discussion and conclusion above, the following recommendations were hereby made:

1. Plastic manufacturing firms should prioritize reverse logistics over any other form of strategic haven shown to have a positive and significant effect on sale growth and market share.
2. Management of plastic manufacturing firms should ensure that structures are established to encourage reverse logistics in order to make contribution towards firm performance.

Contribution to Knowledge

The findings of this study have greatly added to the stock of knowledge in marketing discipline as it filled the gap of scanty empirical studies on logistics practices and performance of plastic manufacturing firms in Port Harcourt. Owing to the empirical statistical results obtained, this study seem to critically examine the relationship between the predictor variable and the study measures.

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