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ASSESSMENT OF REVERSE LOGISTICS MANAGEMENT TO MARKET SUSTAINABILITY: IMPLICATIONS TO SEVEN-UP NIGERIA PLC

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Abstract

Reverse logistics plays a major role in waste and cost reduction in today's manufacturing economy. To maintain competitive edge and sustainability in the present market environment, the organisation has to show competency in the area of reverse logistic management. The study examined the assessment of Reverse Logistics Management on organisational sustainability experience from Nigeria Seven-Up Bottling Plc. The study adopted descriptive research design. Data were collected through structured questionnaire from 109 employees as sample size using stratified sampling technique. Pearson correlation matrix and Regression analysis were used to analyse the data collected. The results revealed that reverse logistics reduce total logistics cost, boost market sustainability, enhance Business Expansion with positive correlation value with each construct (r=.59, r=.35,sig=.000). Based on the findings of the study recommends that for reverse logistics system to be successful in business expansion, top management must support the implementation reverse logistic management to achieve optimal results

Keywords: Business Expansion, Market Sustainability, Reverse Logistics Management

1. Introduction

Today's customers expect products to be delivered at the right time, quantity, quality, place and right price as a result of irregular income to minimise cost. A firm must be able to meet these increasing customers' requirements to gain competitive advantage and enhance profitability level. This can be done by reducing overall cost of operations. This reverse logistic is a key factor that management within the organisation needs to strategically manage to work as expected. In a competitive environment, the philosophy of accepting part of product sold creates a superior edge over other competitors as result of cost saved. The organisation has to show competency in the area of reverse logistic management such as: replacing defecting goods, repairing of used products, refurbishing the returned products, recycling of used product to reproduce another one. All these activities of reverse logistics hence can create customer value at a reduced cost.

The poor economic situation in the country has made reverse logistic to be one of the major focuses because of its strength in cost reduction. Consumers have been involving in short circuit cash flow system, where everyone since 2016 observed income shock and little cash available are used to pursue consumable goods. Therefore the need for better understanding of Reverse logistic is keen in our today's business environment. The concept has recently gained the attention of investors and researchers in the field of operations and management sciences. This has induced the researcher's mind to investigate the activities and nexus between the reverse logistic management and operations of Seven-Up Nigeria Plc. The growing number of articles on reverse logistics in the literature is an indication of the importance of the strategy and of its role in improving the competitiveness of an organization (Sriyogi, 2017).

The end process of management function in supply chain system is to get the products required by the end users across within the expected time with close monitoring and feedback for improvement. But reverse logistic concept take a step higher by returning part of what the company delivered for next production. In some companies, the refilling activities are ubiquitous, collection of empty bottles and collection of empty cylinders from consumers, these

activities need to be monitored in order not to create another bottleneck and bring about increase in production cost.

The possible results for not adequately managing the reverse logistics needs of any firm in the present business environment could be increased in operations cost, price of the products and failure to deliver to time, which indirectly affect the consumers and in the long run determine the sustainability of such organisation. Logistics is defined by The Council of Logistics Management (2013) as the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements.

Reverse logistics is an essential capability for any business that operates in today's global marketplace. It impacts customer relations and the firm's reputation. (Elmas & Erdoğmuş, 2021).Therefore, the development of effective reverse logistics capabilities and its integration are essential part of supply chain system. Managers need reliable and effective supply chain management systems, and metrics in order to keep costs down and remain competitive.

Reverse Logistics has become a necessity in the present day industrial cycle, due to poor economic growth, environmental issues, customer satisfaction and quality of service delivery. In other words, many companies are now looking into reverse logistics in order to optimize their return flows and gain momentum (Abdullah & Yaakub, 2014). Achieng (2011); Cullen, Bernon and Grost (2010) noted that, given the tightness of margins in many organisations, improved management of returns can have a significant impact on the bottom-line performance both business and logistical.

Reverse logistics is a focus worldwide new concept that has been widely accepted within a short period of time due to rising costs of materials, limited resources and economic situation in the country. Therefore, the study will help managers and practitioners in implementation of reverse logistics. It will enable the managers in identifying the factors which they need to work out for successful implementation.

However, organisations who does not incorporate reverse logistics into its system might likely be pushed out of the competitive market where the cost incurred in managing the movement of goods (inflow & outflow) is increasingly expensive thereby not fulfilling the cost minimization of every organisation and can also debar the sustainability of such organisation. Much has not been done in the area of reverse logistic, Hence, this research work tends to explore the cost minimization benefit of reverse logistics as a factor that contribute to the organizational sustainability and how its advantage can be fully optimized, leading to business expansion.

Objectives of the Study

The study focuses on these specific objectives;

i. To assess the commitment to sustainability through reverse logistics
ii. To identify the significant impact of reverse logistic management on business expansion

Research Hypotheses

The following hypotheses were set for the study;

i. H1: There is no significant relationship between the reverse logistic management and market sustainability.
ii. H2: Reverse logistic management does not have any significant effect on business expansion.

2. Literature Review

2.1 Conceptual Issues

Concept of Reverse Logistics Management

The Council of Supply Chain Management (2013) defined reverse logistics as the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal.

Reverse Logistics Management and Market Sustainability

Ndu and Nkamnebe (2018) conducted a study on Reverse Logistics Management and Environmental

Sustainability Drive in Nigeria". The study generated data on the operations of firms in the food and drink industries and the marketing intermediaries and customers of the firms. These data were analyzed based on hypotheses using analysis of Variance and Pearson correlation coefficient statistical tools. Findings based on the firms operating in the food and drinks industries in Nigeria are technologically biased in area of product quality for enhanced corporate efficiency and shareholders' welfare at the expense of reverse logistics programmes to the detriment of the health standard of the general and specific target markets. The study recommends efficient social responsibility policies to improve the operations of reverse logistic management among the manufacturing firms in Nigeria.

2.2 Theoretical Review

Theory of Reverse Logistics Management

Transaction Cost Economic (TCE) Theory: This study adopted the Transaction Cost Economic Theory of Reverse Logistics Management. This has been an established theory for analysing how an organization economises on transaction costs by selecting governance structures that minimise cost (Williamson, 2015). If a transaction occurs when a good or service is transferred across a technologically separable interface; the critical dimensions for describing transactions are: uncertainty, frequency, and asset specificity (Vijayasarathy, 2019).

Supply chain efficiency can be used to operationalize the processing stage since supply chain partners reduce transaction costs in this stage (Blome, Schoenherr, and Eckstein, 2020). On reconfiguring stage, partners assess their supply chain performance and attempt to improve it by redefining their supply chain strategy and reshaping the nature of relation via cultivating a culture of collaboration than competition. The characteristic of this stage is the long-term orientation of transactions that necessitate the development of supply chain strategy and its integration with the business strategy since long-term business relations impact upon the boundaries of the firm (Williamson, 2015). Technological uncertainty stems from the lack of resources, information or intelligence to allow firms to ascertain the concurrent decisions and actions of their trading partners, can be reduced with the strategic collaboration around emerging technologies (Vijayasarathy, 2019). Therefore, this study supports the Transaction Cost Economics Theory because the theory focuses on minimization of cost and therefore, organisations like Seven-Up Bottling Company, by reusing, remanufacturing or recycling returned bottles, are extracting potential value of bottles returned. That is, in many cases for an organisation like Seven-Up Bottling Company, it may cost less to produce an item from reprocessed materials than from raw material.

3. Methodology

The study adopted descriptive survey research design. Research design is a blue print of activities or specification of procedures and strategies to follow so as to obtain the most valid answers to research questions. The research design therefore is made up of carefully articulated set of suggested instructions for the effective execution of the research project. It involves the entire scope of activities following the identification of research problems to and including data analysis. Descriptive, Regression and Pearson Correlation Matrix were used in the study since the aim is to determine the evaluation of reverse logistic management on organisational sustainability. The population of the study is 436 employees which is the total number of workers in Seven-Up Bottling Plc, Kano as at the time of the investigation (Seven-Up Bottling Company Kano, 2023). Sample size of 109 was arrived through stratified random sampling.

Table 1:Sampling Size comprises of the Staff from various Departments in Seven-Up Bottling Plc, Kano:

Department	No of Respondents Captured	Percentage (%)
Production	30	28
Marketing	44	40
Logistics	26	24
Research and Development	9	8
TOTAL	109	100

Source: Author computation, (2023)

In this study, stratified random sampling technique was used to select the sample size of concern staff from different departments. The research Instrument that was used for the collection of primary data in this study was the structured questionnaire. Validity test used in conducting the pre- test of this research work conform and was similar with the general results of this analysis. The reason for testing reliability of research work is to ensure variability of the generalisation of the conclusion. All the scale used in this study was tested and revealed through Cronbach alpha scale > 0.82, meaning that the data were very reliable.

The research instrument used primary data only. Structured questionnaire was used as the method of gathering information. The questionnaire was divided into two sections namely; section A and section B. The first section dealt with the demographic characteristics of respondents, while the second section elicited data on reverse logistics and organisational sustainability. The questionnaires were distributed by the researcher personally to the respondents who were the staff of Seven-Up Bottling Company Plc, Kano. The 5-Point Linkert Scale was used in the study as followe: Strongly Agree (SA), Agree (A), Undecided (UD), Disagree (D), and Strongly Disagree (SD), in which the respondents were asked to make a choice among the options provided.

In analysing and assessing the evaluation of reverse logistic management on organizational sustainability. Descriptive, Regression and Correlation Matrix analysis were used to analyse the data obtained with the aid of SPSS 20 (Statistical Package for Social Science). The statistical tool was used to determine the extent of effect of predictors' on criterion variables.

4. Result and Discussions

4.1 Hypotheses Testing and Analysis

Hypothesis One: Reverse Logistic Management does not have any significant effect on Business Expansion.

Table 2: A Summary of the Multiple Regression Analysis of the Interaction (Relationship) between Reverse Logistic Management and Business Expansion.

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	.592	.350	.337	1.115

*p<0.05 a. Predictors :(Constant), Reverse Logistic Management

The model summary Table 2 gives R^2 value = (0.350). This shows that Reverse Logistic Management through re-cycling of items have positive influence on Business expansion. Thus, this model is predicting 35.0% of the variance in the level of production process pooling all factors together simultaneously; meaning that 35% of the variance is determined by the predictors captured in this model. Business Expansion and sustainability can be predicted from the Reverse Logistic Management.

Table 3: Multiple Regression Analysis Showing Significance of Predictors on the Reverse Logistic Management

Model	Sum of Square	df	Mean Square	F	Sig
Regression	31.529	1	31.529	1.4832	.000[b]
Residual	58.471	102	1.244		
Total	90.000	103			

*p<0.05 a. Dependent Variable: Business Expansion.

Table 3 shows that RLM (recycling of items)variables used in the selected study area significantly predicted the extent of business expansion, F (1,48) = 31.529, p > 0.05 **F** – statistical indicates that the overall regression model is highly statistically significant in terms of its goodness of fit since the value of F_{tab} (1, 48) >F_{cal} (31.529). Therefore, null hypothesis is rejected. The study concludes that Reverse Logistic Management have significant effect on Business Expansion in the selected area.

Table 4: Contribution of Predictor variable (Reverse Logistic Management variable)

Model	Un-standardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	5.412	.532		10.175	.000
Construct of RLM merged	-.824	.164	-.592	-5.034	.000

a. Dependent Variable: Business Expansion
Source: Author's Computation using SPSS 20.0, (2023).

Table 4 shows the contribution of the predictors; In this case, RLM contributes with Beta value = -.592, p < .05 and t-value = -5.034. The contribution is statistically significant to the Business Expansion. Hence, the null hypothesis is rejected and the study concludes that Reverse Logistic Management (RLM) have significant effect on Business Expansion in the selected area.

Table 5: Correlations Matrix of the Relationship between Reverse Logistic Management and Business Expansion

		1	2	3	4	5
Business Expansion (BEvar). **1**	Pearson Correlation	1				
Organization strives to extract value from the bottles of the products returned **2**	Pearson Correlation	.140*	1			
	Sig.	.038				
Returned bottles of your organization product help to reduce the cost of operations **3**	Pearson Correlation	.546	.134*	1		
	Sig.	.001	.047			
Your organization generates more value from items returned to reproduce another one **4**	Pearson Correlation	.257*	.104	.146*	1	
	Sig.	.000	.003	.001		
The prices of bottles of 7-Up, Teem, Mirinda are reduced compare to plastic ones due to reverse logistic	Pearson Correlation	.108	.171*	.363	.434	1
	Sig.	.002	.001	.004	.001	

system. **5**						
*. Correlation is significant at the 0.05 level (2-tailed).						
**. Correlation is significant at the 0.01 level (2-tailed).						

Source: Author's Computation using SPSS 20.0, (2023).

As shown in Table 5, Organization strives to extract value from the bottles of the products returned shows positive relationship with Business Expansion (BEvar), .140. Meaning that management of returned bottle has positive relationship with Business Expansion. Returned bottles of the organization product help to reduce the cost of operation shows significant positive relationship with Business Expansion (BEvar) .047. Your organisation generates more value from items returned to reproduce another one indicates significant relationship with Business Expansion .257, The prices of bottle of 7-Up, Teem, Mirinda are reduced compare to plastic ones due to reverse logistic system shows significantly positive relationship with Business Expansion (BEvar), .108. The above correlations were significant at either the 0.01 or 0.05 levels of significance as indicated under the Table 5. Based on these, Null hypothesis is rejected and the study concludes that there is significant relationship between reverse logistic management and Business expansion in the selected organisation.

Hypothesis Two: There is no Significant Relationship between Reverse Logistics Management and Market sustainability.

Table 6: Correlations Matrix of the Relationship between Reverse Logistic Management and Market Sustainability.

		1	2	3	4
Commitment to Sustainability through Reverse Logistic (Organizational Sustainability) **1**	Pearson Correlation	1			
Organization strives to extract value from the bottles of the Product returned **2**	Pearson Correlation	.423	113		
	Sig.	.094			
Organization gains more market competitiveness than other counterparts **3**	Pearson Correlation	.449**	.244	1	
	Sig.	.000	.123		
Prices tag on Products expands their market compare to others as a result of used bottles returned. **4**	Pearson Correlation	.497	.471*	.334	1
	Sig.	.350	.211	.618	
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

Source: Author's Computation using SPSS 20.0, (2023).

As shown in Table 5, Organization strives to extract value from the bottle of the product returned shows positive relationship with Commitment to Sustainability through Reverse Logistic (Organizational Sustainability), .113. Meaning that Organizational Sustainability have positive relationship with organization extraction of value from the bottle returned. Organization generates more value from items returned to reproduce another one shows significant positive relationship with Commitment to Sustainability through Reverse Logistic (Organizational Sustainability) .244, Prices tag on Products reduced compare to related ones due to reverse logistic system shows significantly positive relationship with Commitment to Sustainability through Reverse Logistic (Organizational Sustainability), .497. The above correlations were significant at either the 0.01 or 0.05 levels of

significance as indicated under the table 5. Based on these, Null hypothesis is rejected and alternative hypothesis is accepted. The study concludes that there is significant relationship between reverse logistic management and organisation sustainability in the selected company.

4.2 Discussion of Findings

The result of hypothesis one shows that there is significant relationship between Reverse Logistic and Business Expansion (BEvar).This means that from the analysis shown above, it can be seen that most organizations that incorporated reverse logistics strives to extract value from the bottle of the product returned which in turn helps to reduce the cost of operation of such organisation. The finding reveals that the factors militating against reverse logistic are: Lack of Strategic Planning and Structure, lack of in-house facilities or limited forecasting and planning, and personnel resources. This means that the factors mentioned above are insufficient for the implementation of reverse logistic.

The result of Hypotheses two shows that commitment to sustainability has a positive relationship through reverse logistics. Meaning that the sustainability of an organisation is based on customers satisfaction coupled with market share which in turn brings about business expansion.

5. Conclusion and Recommendations

The findings of the study revealed that, the manufacturing firm can be driven to reverse logistics practices to gain economically. The firm would reap benefits of cost reduction of packaging materials, recover value of returned bottles as well gain green image in reduction of packaging materials, recover value of returned bottles as well gain green image in the eyes of all stakeholders. This would in turn improve the relationship with the customers leading to increased sales and profits. The study revealed that a company would protect itself from stiff competition by adopting reverse logistics practices, cost reduction and value added recovery gains were very important in the decision to engage in reverse logistics thereby leading to business expansion. This could be attributed to the fact that, the company is a profit making enterprise, and therefore reducing cost of packaging materials would contribute positively to the profit margin. Therefore, this research provides useful insight to the future prospect of the Seven-Up Bottling Plc, Kano, if reverse logistic management is handed as a total concept.

The study shows that there is a positive relationship between reverse logistic management and organizational sustainability. Through reverse logistic management, organisations have competitive advantage to move above peers and competitors; and positively capture larger market share within their industry because of their superior process and be able to meet the demands of the customers because today's customers expect and demand to be able to return a defective or unwanted product smoothly and quickly and receive a refund or correct order as fast and as inexpensive as possible. The firm that is able to meet these increasing requirements is going to gain customer loyalty and retention; and perhaps increase their overall market share. The study support the conclusion of (Elmas and Erdogmus, 2019) that firms increase in value, market share depends on how they manage their resources in reverse logistic. Also, the study supports the conclusion of David and Shalle (2020); Shomuyiwa and Adebayo (2018) that reverse logistic has positive effect on cost reduction.

In overall reverse logistics performance, the surveyed companies were revealed to have been most effective in using reverse logistics to improve customer satisfaction, achieving compliance with organizational regulations as well as in extracting and recovering raw materials for use in the production of new products but moderately effective in achieving reverse logistics objectives related to cost containment and improved profitability. These findings are supported by the work Dekker and Brito (2019). The research findings indicate that adequate strategic planning or organizational structure, availability of in-house facilities and personnel resources influences a company to adopt or implement reverse logistic.

Based on the findings, the following recommendations are offered to the management to better their chances in a competitive business environment.

i. Organisations should adopt the use of current technologies or in-house facilities with special features and programmes for re-cycling and re-using bottles especially in the areas of residues collection and transportation.
ii. For reverse logistics system to be successful, top management must guide and support the implementation and also recognize the fact that reverse logistics can be strategically manage to improve business continuity.
iii. Generally, in this present business environment, organisation that needs to sustain their market operations must be ready to make product available to the end users at affordable cost and make it optional in term of sizes and prices and this can be achieved through good customer relationship by accepting return, feedback and complaint from the customers.
iv. For organisations to experience business expansion and quality consumer satisfaction in term of price advantage, firms in Nigeria must put in place reverse logistic principle and practice because returned item to the organisation helps to reduce the cost of operations and enhance quantity of product supplied.

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