

## Reverse Logistics and Marketing Effectiveness of Food and Beverages Firms in Nigeria

**Barasin, Tonye Felix**

Department of Marketing  
Rivers State University, Port Harcourt  
[felixtonye@gmail.com](mailto:felixtonye@gmail.com)

**Ihunwo Elvis**

Department of Marketing  
Rivers State University, Port Harcourt  
[elvisihunwo@gmail.com](mailto:elvisihunwo@gmail.com)

---

### **Abstract**

*The study examined the relationship between reverse logistics and marketing effectiveness of food and beverages firms in Rivers state, Nigeria. An extensive literature review was carried out covering the study independent and dependent variable. The study adopted cross-sectional survey framework. Fourteen (14) food and beverage firms in Nigeria, listed in the Nigerian Stock Exchange Facts Book of 2017/2018 constituted the population of our study. A self-administered, structured questionnaire was employed to obtain primary data and data was analyzed. The research hypotheses were tested with the Pearson product moment correlation statistical tool to establish the degree of relationship. The reliability of the research instrument was tested using the Cronbach's Alpha which revealed that all the scores of the variables satisfied the standard Cronbach's Alpha threshold of 0.7. With the aid of the statistical package of social sciences software (SPSS) version 20.0, frequencies were computed to establish the sample characteristics. The study found that; reverse logistics is positively and significantly related to marketing effectiveness. Based on the results of the analysis, the paper concludes that reverse logistics has a positive and significant relationship with marketing effectiveness. The paper therefore, recommends that; reverse logistics should be implemented by manufacturers to develop and dramatically improve the firms' marketing effectiveness.*

**KEYWORDS:** Reverse Logistics, Marketing Effectiveness, Technology

---

### **Introduction**

Increased globalization has greatly increased competition and this has brought about growing demand flexibility and cost-efficient systems by companies. In Nigeria, there is a growing level of industrialization and consumption, which has resulted in the increasing generation of solid waste. A significant number of solid wastes today come with packaging materials such as plastics bottles, aluminum cans and sachet waters, and when these packaging materials are not handled appropriately after consumption of the products, generate wastes to the environment. Through the management of wastes in reverse logistics and waste exchange, companies can enhance their competitiveness as their environmental efficiency is enhanced (Ashby *et al.* 2012).

Although reverse logistics deals with product returns, it presents one of the biggest operational challenges in the world of manufacturing since the activities involved are many and tends to be so varied. Some of these challenges include the problems of collecting returns, sorting the returned products; return abuse, having lost confidence in returns, credit

approval and repair activities, lengthy processing cycle times of returns and issues relating to the environmental sustainability. So, it is important to perform reverse logistics efficiently and effectively to obtain maximum benefits of its opportunities (Adebayo, 2012).

The supply chain flow of goods does not end with the consumer or industrial users (Atasu, Guide & Van Wassenhore, 2008; Berkowitz, Kerin, Hartley & Rudelius, 2000) thus, the enormous recognition currently being conferred to reverse logistics in the supply chain (Marien, 1998; Olugu, Wong, & Shadaroum, 2010). Reverse logistics is differently adopted by organizations, either as integrated logistic or separation logistics based on the services of 3rd party logistics providers (Atasu, Guide & Van Wassenhore, 2008; Chou, 2009; Agrawal, Atasu, & Van Ittersum, 2012; Jacobs and Subranabian, 2012).

Firms have become increasingly concerned over sustainability and environmental management. Reverse logistics has gained prominence due to its ability to provide solutions to this concern. In an online study conducted by the Nielsen Company (2015), 66% of worldwide respondents are willing to pay more for goods and services that come from companies that are committed to corporate social responsibility and environmental conservation, a rise from 55% in the year 2014, and 50% in 2013. Government and non-governmental bodies have acted as drivers to the adoption of reverse logistics through formulation and implementation of environmental acts, policies and agreements. Economic incentives have also contributed to the growth of reverse logistics. According to Ruiz-Benítez & Cambra-Fierro (2011), reverse logistics leads to reduced costs, improved customer service, increased productivity, increased facility output and improved service levels.

This study aims to examine the influence of reverse logistics on marketing effectiveness of food and beverages firms with respect to beverage containers of soft and alcoholic drink (plastic bottle waters, aluminum cans and polyethylene terephthalate (PET) plastic bottles) in Nigeria. This study will assist different parties involved in food and beverages manufacturing to achieve a practical summing up of reverse logistics implementation.

## **Literature Review**

### **Theoretical Implication**

#### **Resource-Based View Theory**

Resource-based view has been developed in work by Barney (1986), Teece (1988), and Teece & Pisano (1994), for analyzing firm behaviour and competitive strategy (Mowery, Oxley & Silverman, 1998). The RBV contends that the idiosyncratic resources and capabilities of firms are the key sources of sustained competitive advantage (Lynch, Keller & Ozment 2000). This premise appears to be supported by logistics and supply chain management research (Lynch et al., 2000).

The resource-based view theory regards the firm as a cognitive system, which is characterized by idiosyncratic and context-dependent competences that are core to strategic purposes. These are conditioned by hierarchical capabilities, or sets of routines, involved in the management of the firm's core business processes that help to create value. Competences typically involve the development of specialist expertise, and firms may become locked into a trajectory that is difficult to change effectively in the short to medium-term (Tushman & Anderson, 2006). The premises of the resource-based view is that successful firms develop distinctive capabilities on which their future competitiveness will be based; which capabilities are often idiosyncratic or unique to each firm, and may also be implied and intangible in nature.

Unlike the other approaches, the resource-based view suggests that firm performance is mainly determined by internal rather than external variables (Barney, 1991). Firms' follow heterogeneous historical paths and as a result, create different qualifications that affect their

capabilities in different ways (Wernerfelt, 1984). Successful firms in an industry are successful because they can access a range of resources and thus gain competitive advantages. In this context, “resources” refers to all tangible and intangible assets, such as cash, loans, capabilities and qualifications, organizational processes, firm attributes, information, and knowledge (Wernerfelt, 1984).

### **Concept of Reverse Logistics**

Reverse logistics was first published in 1992 by James R. Stock (Autry, 2005). There are many definitions of reverse logistics after the concept was redefined in Reverse Logistics Programs by Reverse Logistics Association. In general, logistics indicates the forward flow of products from producer to customer, while reverse logistics is in an opposite way (Autry, 2005). Reverse logistics mainly focus to recovery of the product through 3R (Reuse, Remanufacturing and Recycle) concepts.

Reverse logistics is an essential feature of manufacturing organizations for strategic marketing and effective customer relationship management (Autry, Daugherty & Richey, 2001; Krumwiede & Sheu, 2002; Mukhopadhyay & Setaputra, 2006) and environmental protection and sustainable development (Mitsumori, 1999; Krikke et al., 2001; Brito, Flapper & Dekker, 2003; Fernández 2003).

According to Council of Logistics Management (1993), the subject, reverse logistics is broad and related to the skills and activities involved in the management of waste, movement and disposal of products and packages. Sinnecker (2007) adopted the definition of Rogers & Tibben-Lembke (1999) as a process of planning, implementation and efficient and at low cost flow control of raw material process stock, finished product and related information, from the point of consumption to the point of origin, with the purpose of value retrieval or appropriate dispose to the collection and treatment of waste. However, De Brito & Dekker, (2003) and Bernon et al., (2011) argued that post-consumer products do not only return to their point of origin, they could also be channeled to designated recovery centers.

In the same line, the Reverse Logistics Executive Council (2012) states, that reverse logistics refers to the process of planning, implementing and controlling the efficiency and the cost effectiveness of the flow of raw materials, work in process, finished products and all related information, from the point of consumption to the point of origin in order to recapture value or to offer an appropriate disposal. The definition of reverse logistics executive council clearly addressed the issues of point of origin and the point of recovery that was raised by (De Britto & Dekker 2003) and (Rogers & Tibben-Lembke, 1998), and also accommodates the position of Pohlen & Farris (1992). The definition of reverse logistics by the Reverse Logistics Executive Council is considered the most suitable for this study.

### **Reason for Reverse Logistics**

Reverse logistics is an important part of supply chain management (Cater & Ellarm, 1998). According to Dekker & Van der Laan (2002) and Dekker & De Brito (2002) these reasons can be categorized into

- **Commercial Returns**

Commercial returns include products that are returned without fulfilling some or all of the claimed functionality and where a buyer or retailer returns a product to the manufacturer with a demand for a refund or replacement (Daugherty, Myers & Richey 2002; Lee 2002; Richey et al. 2004).

- **Warranty Returns**

Warranty returns include products that fail during use within a specified period (Barsky & Ellinger, 1999; Desai, Richards & Desai, 2003). It also includes goods damaged during

delivery from the manufacturer to the buyer. Product mismatch, safety concerns and manufacturer recalls are other reasons for commercial and warranty returns (Smith, 2005; Teng, Ho & Shumar, 2005).

- **End of Use Returns or End of Life Returns**

End-of-use or end-of-life returns also warrant reverse logistics management. End-of-use occurs when a product's scheduled life is complete, for example, at the end of a lease, business contract or agreement. End-of-life of a product occurs when the product life is over and it can no longer be used for its intended functionality (Brito, Flapper & Dekker, 2003). For end-of-use returns the challenge is in determining the match between demand for used products and supply. These can be impacted by time, quantity, and quality and can be managed by proactive management of returned goods information (Sarkis, Meade & Talluri, 2004).

### **Benefits of Reverse Logistics**

Effective reverse supply chain is believed to result in direct benefits, including improved customer satisfaction, decreased resource investment levels, and reductions in storage and distribution costs (Andel, 2007). Rodriguez & Marcojohn, 2004; Richey, Genchev & Daugherty, 2005; Mukhopadhyay & Setaputra, 2006; Srivastava & Srivastava 2006) identify benefits of reverse logistics to be economic gain, strategic and competitive advantage.

#### **i. Economic gains**

According to James, Thomas and Herbert (2002) some returned product can be resold at a higher price in a different market. Substantial economic gains can be achieved from the reuse of products, parts or recycling of parts from returned goods (Krikke, Jacqueline & Wassenhove, 2001; Brito, Flapper & Dekker, 2003; Inderfurth, 2005). This is evident in the USA where there are over 70,000 jet and car engines, auto parts and photocopier remanufacturing firms relying upon reverse logistics which supports a US \$53 billion turnover (Lund, 1998; Roy, 2003). Bowersox & Closs (2006) point that the benefits derived from reverse logistics include it being a source of competitive strategy, profit center, catalyst of customer satisfaction and acts as environmental and health safeguard. Hence effective reverse logistics management can add significantly to an organization's profitability (Mollenkopf & Weathersby, 2003).

#### **ii. Strategic and Competitive advantage**

Efficient management of reverse logistics adds strategic value to organizations (Blumberg 1999; Autry, Daugherty & Richey 2001). This idea is supported by Gilmour (1999) who stated that delivering customer value and maintaining core competency in reverse logistics can bring about strategic gains for organizations. A sustainable strategy accounts for all shareholders, and an effective reverse logistics strategy may help firms to utilize resources more efficiently, thus minimizing the toll on the number one shareholder and providing operational efficiency gains (Closs et al., 2011).

#### **iii. Customer retention**

One of the goals of almost every business is to offer such a high quality of goods/services to their customers that they will not move to another supplier (Jiang & Rosenbloom, 2005; Srivastava & Srivastava, 2006). There are many ways to make it difficult and unprofitable for customers to switch to another supplier. One is for a supplier to offer its customers the option of having unsold or defective merchandise taken back quickly and a timely credit offered to the customer (Rogers & Tibben-Lembke, 1998). Reverse supply chain can be a customer service leading to customer satisfaction (Autry, Daugherty & Richey, 2001; Daugherty, Myers & Richey, 2002; Daugherty et al., 2003; Smith, 2005). The process of managing

reverse logistics is an essential component in improving customer service through customer relationship management (Anton & Petouhoff, 2002).

### **Drivers of Reverse Logistics**

Organizations generally become involved in reverse logistics because they can profit from it or due to regulatory pressure, social pressure and customers/ stakeholders' pressure. (De Brito, 2004). Evolving financial, competitive and customer pressures as well as increasingly complex environmental regulations compel organizations to engage in reverse logistics processes (Partida, 2011). The drivers of reverse logistics can be divided into three different categories namely; economic drivers, corporate citizenship, legislations.

However, from the many adoption examples, (Thienen et al., 2014; Abdullah et al., 2014) opined that regulatory pressure or legislation is the main driver of reverse logistics.

### **Marketing Effectiveness**

The purpose of marketing effectiveness is to optimize marketing spending for the short and long term in support of, and in alignment with, the brand strategy by building a market model using valid and objective marketing metrics and analytics (Powell, 2008).

Marketing effectiveness has attracted a great deal of attention in academic and managerial circles (Kotler 1977; Dunn et al., 1994; Ghosh et al., 1994; Appiah-Adu et al., 2001; Vorhies & Morgan 2003; Homburg et al., 2007). According to Connor & Tynan (1999), the majority of studies of marketing effectiveness have relied essentially on the use of one or more of three key approaches developed by Kotler (1977), Hooley & Lynch (1985) & Carson (1990). Marketing effectiveness calls for managers to have sufficient information for the purposes of planning and effective resource allocation to varying markets, products and territories. Marketing effectiveness is also contingent upon the adeptness of managers to deliver profitable strategies from their philosophy, organization and information resources. Ultimately, marketing effectiveness depends on the ability to implement marketing plans successfully at various levels of the organization (Adu et al, 2001).

There are four basic dimensions of marketing effectiveness (Nwokah, 2006; Nwokah & Ahiauzu, 2008):

(1) Corporate - A company's budget, size and ability to make organizational changes determine its bounds which operate within.

(2) Competitive - A company which operates in a certain category is not alone and it is monitored by many other companies.

(3) Customers - Information of customers' behaviour such as making purchasing decisions can help marketers to enhance their marketing effectiveness. Customers who have similar needs act in the same way which causes their segmentation. Customers of each segment make their choices in relation to product values and characteristics in return for the price they paid. Customers also build brand value through information they receive from advertising, word of mouth and any other company promotional actions.

(4) Exogenous factors - Corporate, competitive and customer environmental factors can influence marketing effectiveness. Interest rate, weather, government regulations are examples of external factors that affect marketing effectiveness.

There are five factors driving the level of marketing effectiveness that marketers can achieve (Nwokah, 2006; Nwokah & Ahiauzu, 2008):

(1) Marketing strategy - Marketing strategy is important for achieving organizational goals. It draws insights from market research and focuses on positioning a product mix correctly.

(2) Marketing creative - Creative marketing can improve company's outcomes even without a change in its strategy. Creative directly connected to growth rate. Consequently, the introduction of a new creative can increase it.



(3) Marketing execution - Marketers can improve marketing effectiveness by improving how they go to market. For example, optimization of the way they enter a market can achieve great results without making any changes in the marketing strategy or marketing creation.

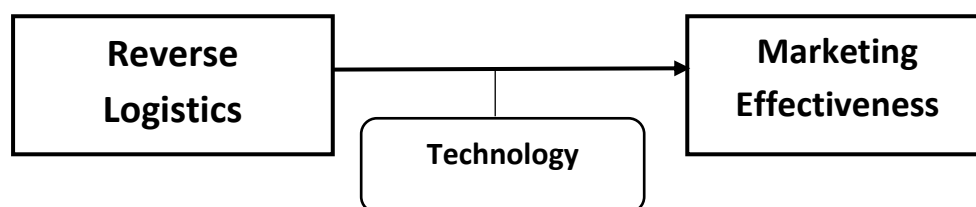
(4) Marketing infrastructure - Improving marketing creates a competitive advantage for each company and organization and can lead to significant gains for them.

(5) Exogenous factors - Marketers have to take advantage of the environmental factors which affect marketing effectiveness. Opportunities that have been drawn from monitoring these exogenous factors can help marketers to improve the effectiveness of their marketing activities.

However, Kotler (1977) and Webster (1995) argue that marketing effectiveness has a strong association with many valuable organizational outcomes such as stable long-term growth, enhanced consumer satisfaction, a competitive advantage, and a strong marketing orientation. According to Kotler (1977), marketing effectiveness of a business concern is determined by the extent to which the business exhibit the five attributes of marketing orientation, Customer Philosophy, Integrated Marketing Organization, Adequate Marketing Information, Strategic Orientation and Operational Efficiency. Appiah-Adu et al. (2001) cited in Nwokah & Ahiauzu (2008) operationalized marketing effectiveness as combination of five components: customer philosophy, integrated marketing organization, adequate marketing information, strategic orientation and operational efficiency.

### Conceptual Framework

The conceptual framework for this study illustrates remanufacturing reverse logistics as its independent variable and marketing effectiveness as the dependent variable.



**Figure 1: Conceptual Framework showing relationship between Reverse Logistics and Marketing Effectiveness**

### Reverse Logistics and Marketing effectiveness

The overall objectives of reverse logistics are to achieve a target level of customer service at the lowest possible total cost. An effective system of reverse logistics contributes immensely to the achievement of the business and marketing objectives of a firm. It creates time and place utilities in the product and thereby helps in maximizing satisfaction to consumers. It helps the company bring down the cost of carrying inventory, material handling, transportation and other related activities of distribution. The general objectives of reverse logistics can be summarized as reduction of costs, reduction of capital and service improvement.

In recent years reverse logistics has become a major issue for scholarships and companies (Kotler, 1994; Rogers & Tibben-Lembke, 1999; Lambert & Burduroglu, 2000; Chang et al., 2005; Srivastava & Srivastava, 2006; Banomyong et al., 2008; Chan & Chan, 2008). Reverse logistics is “the process of planning, implementation and efficiently control of the flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin with the purpose of recovering the primary value or

dispose of them properly " (Rogers & Tibben-Lembke, 1999:43). Gradually firms give more importance to this aspect, mainly due to 3 reasons (Srivastava & Srivastava, 2006):

- I. First aspect is the growing importance of environmental issues and their impact on public opinion (Kotler, 1994; Rogers et al., 1999; Porter, 2002; De Brito et al., 2004),
- II. Second is a benefit that the company gains by improving their return processes such as image enhancement, improved efficiency and effectiveness in management of returned materials, it allows getting new profits (Lambert & Burduroglu, 2000; Stock et al., 2002; De Brito et al., 2004).
- III. Third one is a new and growing environmental regulation (Stock et al., 2002; De Brito et al., 2004).

Thus, it is drawing a new situation for many companies, in which producers are responsible for the entire life cycle of a product. This is a key factor as to why management within a firm needs to focus necessary resources on the reverse logistics process and properly monitor and measure their reverse logistics processes. The possible penalties for not adequately addressing the reverse logistics needs of the firm could be increased transportation costs, increased inventory and warehousing costs, increased repair costs of returned products, and lost secondary value of defective products or materials due to processing delays in the reverse logistics process. This is main reasons that reverse logistics processes and their management has increased in importance within the business community and academia (El-Nakib, 2012; Rogers et al., 2012).

Considering this, it is safe to say that one of the most important current reverse logistics business success guarantors is the quality of the provided services, especially knowing that a service is an impalpable act or process (Chen, Chang & Lai, 2009; Huang, Wang & Xue, 2012), therefore it is closely related to the satisfaction of the clients' needs. According to Gorla, Somers & Wong (2010) expectations' manifestation depends on how customers perceive and interpret the environmental factors influencing the formation of expectations.

An organization can define its own operating objectives and use them to evaluate their effectiveness. Some of the measures it can use include: Activity ratios evaluate how efficiently the company manages its business. The asset turnover measures how effectively the company puts its assets to work. The inventory turnover evaluates how efficiently the company manages its inventory. A higher turnover means better effectiveness for both ratios. Value added is calculated as the difference between the operating result and the cost of capital of the average net assets. Alternatively, the value added can be determined by using the main value drivers: return on sales and net assets. Return on sales is of particular importance for assessing profitability. The combination of return on sales and net assets' productivity results in return on net assets (RONA). If RONA exceeds the cost of capital, value is created for our shareholders (Huselid, 1995).

Until recently logistics systems supported only processes carried out in classical material flow from producer to final user. Recently it has been a remarkable growth of interest in optimizing logistics processes that supports recapturing value from used goods. 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 is called reverse logistics. Reverse logistics has become one of the logicians' key areas of interest. It enjoys ever-increasing interest of many industrial branches.

### **Technology as Moderating Effect of Reverse Logistics and Marketing effectiveness**

Technology allows the most difficult tasks to become seamlessly easy and more efficient. Barak (2005) quoted from Encyclopedia Britannica (2005) technology is the "Application of

knowledge to the practical aims of human life or to changing and manipulating the human environment. Technology includes the use of materials, tools, techniques, and sources of power to make life easier or more pleasant and work more productive". Technology impacts reverse logistics where representatives are prepared in new advancements keeping in mind the end goal to procure new learning and attention to have the capacity to relate decidedly with customers. Technological effect on reverse logistics is predicated on solutions to perceived problems on work place.

Accordingly, Wonacott (2001) state that technology consists of all the modifications humans have made in the natural environment for their own purposes (Dugger, 2001). Inventions, innovations, and changes intended to meet our wants and needs, to live longer, more productive lives. Such a broad definition of technology includes a broad spectrum of artifacts, ranging from the age-old (flint tools, wheels, levers) to the high-tech (computers, multimedia, biotechnologies). In shortly, if humans thought of it and made it, it is technology. Burgelman et al. (1996) refer technology as the theoretical and practical knowledge, skills, and artifacts that can be used to develop products and services as well as their production and delivery systems.

### Methodology

This study adopted a cross-sectional survey and a correlation investigation to establish the relationship between reuse and marketing effectiveness of food and beverages firms in Nigeria. The target population for this study was fourteen (14) firms in Nigeria, listed in the Nigerian Stock Exchange Facts Book of 2017/2018, and a sample of eighty-four (84) respondents were drawn from the staff of the selected firms under our study. A structured questionnaire was used to collect primary data; and the questionnaire was designed in Likert scale five point form- ranging from Strongly Disagree (SD) to Strongly Agree (SA). The testing of hypotheses was done using Spearman Rank Order Correlation Coefficient Statistical Tool and with the statistical package for social sciences software SPSS version 20.0; frequencies were computed to show the sample characteristics.

**Table 1 Correlation Analysis showing the relationship between Reverse Logistics and Marketing Effectiveness**

Correlations				
Type	Variables1	Statistics	Reverse Logistics	Marketing Effectiveness
Spearman's rho	Reverse Logistics	Correlation Coefficient	1.000	.847 **
		Sig. (2-tailed)	.	.000
		N	75	75
	Marketing Effectiveness	Correlation Coefficient	.847**	1.000
		Sig. (2-tailed)	.000	.
		N	75	75

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

**Source: SPSS 20.0 Output (based on 2021 field survey data)**

The information in table above shows that the estimated correlation coefficient is 0.847\*\*, based on the categorisation above, the value is very high indicating that a very strong relationship exists between reverse logistics and marketing effectiveness. The correlation coefficient is positive implying that a positive relationship exists between them, i.e. increase in reverse logistics is associated with increase in marketing effectiveness. The table also



showed that the probability/significant value is 0.000, this value is less than 0.05 level of significance hence the researcher concludes that a significant relationship between reverse logistics and marketing effectiveness.

**Table 2 Partial Correlation Analysis showing the Moderating Influence of Technology Relationship between Reverse Logistics and Marketing Effectiveness**

			Correlations		
Control Variables	Variables	Statistics	Reverse Logistics	Marketing Effectiveness	Technology
-none- <sup>a</sup>	Reverse Logistics	Correlation	1.000	.909	.536
		Significance (2-tailed)	.	.000	.000
		df	0	73	73
	Marketing Effectiveness	Correlation	.909	1.000	.558
		Significance (2-tailed)	.000	.	.000
		df	73	0	73
	Technology	Correlation	.536	.558	1.000
		Significance (2-tailed)	.000	.000	.
		df	73	73	0
Technology	Reverse Logistics	Correlation	1.000	.871	
		Significance (2-tailed)	.	.000	
		df	0	72	
	Marketing Effectiveness	Correlation	.871	1.000	
		Significance (2-tailed)	.000	.	
		df	72	0	

<sup>a</sup>. Cells contain zero-order (Pearson) correlations.

**Source: SPSS 20.0 Output (based on 2021 field survey data)**

Table 2 reveals that a very strong, significant and positive relationship exists between reverse logistics and marketing effectiveness ( $r = 0.909$ ,  $PV = 0.000 < 0.05$ ).

The table also shows that technology also had a significant and direct relationship with reverse logistics ( $r = 0.536$ ,  $PV = 0.000 < 0.05$ ) and with marketing effectiveness ( $r = 0.558$ ,  $PV = 0.000 < 0.05$ ) the positive sign of the  $r$  value is an indication that when technology improves, reverse logistics and marketing effectiveness also improves.

#### **Decision Rule for Partial Correlation;**

If the difference between the Zero Order Partial Correlation (ZPC) and the Controlled Partial Correlation (CPC)  $> 0.01$ , conclude a significant moderating Influence

Zero Order Partial Correlation (ZPC) = 0.909, Controlled Partial Correlation (CPC) = 0.871. The difference between the Zero Order Partial Correlation (ZPC) and the Controlled Partial Correlation (CPC) ( $0.909 - 0.871 = 0.038 > 0.01$ ) hence the researcher rejects the null hypothesis and conclude that technology significantly impact on the relationship between reverse logistics and marketing effectiveness.

The positive sign of the difference is an indication that technology asserts a positive impact on the relationship between reverse logistics and marketing effectiveness

#### **Discussion**

This study examined the relationship between reverse logistics and marketing effectiveness of food and beverages firms in Nigeria. It was hypothesized that there is no relationship between reverse logistics and marketing effectiveness. However, the result from the Pearson product moment correlation analysis shows that a significant relationship exists between

them. Based on that, the null hypotheses were rejected and the alternate hypotheses were accepted.

This is in tandem with the views of Elmas & Erdoğan (2011) that reverse logistics is a significant competence for any business that operates in today's global marketplace. It influences customer relationship and the organization's prestige. Therefore, the development of effective reverse logistics capabilities and its integration throughout the supply chain should be considered managerial priorities. To ensure that the processes are operating as they should and producing results that impact the goals of the firm, performance metrics are necessary to gauge and make adjustment to changes as the uncertainty of the reverse logistics process creates unexpected returns (Rogers et al. 2012). Managers need reliable and effective supply chain management processes, systems, and metrics in order to keep costs down and remain competitive.

### **Conclusion**

The result of the data analysis anchored on review of related literature reveals that reverse logistics has a positive, significant relationship with marketing effectiveness. Therefore, the study concludes that reverse logistics has a substantial, affirmative relationship with marketing effectiveness. Reverse logistics should be implemented by manufacturers to develop and dramatically improve the firms' marketing effectiveness. It is thus noted that the Nigerian food and beverages industry will have better competitive advantage if they continue to exhibit the needed penchant to discover marketing opportunities, epitomized by actions of organizational members, opportunity efficiency will significantly increase.

Conclusively, though reverse logistics as a concept has been extensively researched by academia and business practitioners, examining its impact on marketing effectiveness and other performances in different industry and different countries, which results show that, firms that practice reverse logistics help the companies to identify and forecast into the future and factor consumers' desires into their future planned action. Though the concept of reverse logistics has been extensively researched, little or none has been published on its nexus with marketing effectiveness as dependent variable. This apparently perceived gap in literature that this study has bridged. To this extent, one important factor this study had unveiled is that reverse logistics is essential to support marketing effectiveness.

### **References**

- Adu, K. A., Fyall, A. & Singh, S. (2001). Marketing effectiveness and business performance in the financial services industry, *Journal of Services Marketing*, 15 (1), 18-34.
- Elmas G. & Erdoğan F., (2011). The importance of reverse logistics. *International journal of business and management studies* Vol 3, No 1, and 2011 ISSN: 1309-8047.
- Rogers et al., (2010). Creating Value through Product Stewardship and Take-Back, *Sustainability Accounting, Management and Policy Journal*, 1 (2), 133-160.
- Ahiauza, A. I. (2010). *The Relevant Basic Elements of the Theory and Philosophy of Knowledge*. An unpublished Ph.D lectures paper on advance social research methods. Rivers State University of Science and Technology, Port Harcourt.
- Amemba, S. C., Nyaboke, P. G., Osoro, A. & Mburu, N. (2013). Elements of green supply chain management. *European Journal of Business and Management*, 5 (12), 2222-2839.

- Appiah-Adu, K., Fyall, A. & Singh, S. (2001). Marketing Effectiveness and Business Performance in the Financial Services Industry, *Journal of Services Marketing*. 15, (1), 18-34.
- Barak, M. (2005). *Engineering and Excellence: An Old-New Agenda for Technology Education in Israeli High Schools*. PATT -15 Technology Education And Research: Twenty Years In Retrospect. Haarlem.
- Burgelman, R. A., Maidique, M. A. & Wheelwright, S. C. (1996). *Strategic Management of Technology and Innovation*. (2<sup>nd</sup> ed.). Chicago: I. L, Irwin
- Carson, D. (1990). Some exploratory models for assessing small firms' marketing performance (A qualitative approach), *European Journal of Marketing*, 24, (11), 5-49.
- Chung, C. J. & Wee, H. M. (2010). Green-product-design value and information technology investment on replenishment model with remanufacturing. *International Journal of Computer Integrated Manufacturing* 23 (5), 466–548.
- Connor, P. & Tynan, C. (1999). In sickness and in health: Exploring and redeveloping a measure of marketing effectiveness, *Journal of Marketing Management*. 15, 733-756.
- Dugger, W. E. (2001). New media and standards for technological literacy. New media in technology education proceedings PATT-11 *Conference* (3) 8-13,
- Dunn, M. G., Norburn, D. & Birley, S. (1994). The impact of organizational values, goals, and climate on marketing effectiveness, *Journal of Business Research*. 30, (2), 131-141.
- Eltayeb, T. K., Zailani, S. & Ramayah, T. (2011). Green supply chain initiatives among certified companies in Malaysia and environmental sustainability: Investigating the outcomes. *Resources, Conservation and Recycling*, 55 (5), 495-506.
- Fleischmann, M., Bloemhof-Ruwaard, J. M., Dekker, R., Van der Laan, E. A., Van Nunen, J. A. E. E. & Van Wassenhove, L. N. (1997). A review of quantitative models for reverse logistics: *European Journal of Operational Research*, 103, 1-17.
- Ghosh, B. C., Schoch, H. P., Taylor, D. B., Kwan, W. W. & Kim, T. S. (1994). Top performing organizations of Australia, New Zealand and Singapore: A comparative study of their marketing effectiveness, *Marketing Intelligence and Planning*. 12, (7), 39-48.
- Hazen, T. B. & Hanna, J. B. (2011). Diffusion of green supply chain management. *The International Journal of Logistics Management*, 373-389.
- Homburg, C., Grozdanovic, M. & Klarmann, M. (2007). Responsiveness to customers and competitors: The role of affective and cognitive organizational systems, *Journal of Marketing*. 71, (3), 18-38.

- Hooley, G. J. & Lynch, J. E. (1985). Marketing lessons from the UK's high-flying companies, *Journal of Marketing Management*, 11, (1), 65-74.
- Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38(3), 635-672.
- Kotler, P. (1977). From sales obsession to marketing effectiveness, *Harvard Business Review*, 55, (11/12), 67-75.
- Matos, S. & Hall, J. (2007). Integrating sustainable development in the supply chain: The case of life cycle assessment in oil and gas and agricultural biotechnology. *Journal of Operations Management*, 25 (6), 1083-1102.
- Nwokah, N. G. & Ahiauzu, A. I. (2008). Managerial competencies and marketing effectiveness in corporate organizations in Nigeria, *Journal of Management Development*, 27, (8), 858-878.
- Nwokah, N. G. (2006). Marketing effectiveness and business performance, *Nigerian Journal of Business and Society*, 3 (2), 15-26.
- Powell, G. R. (2008). *Marketing Calculator: measuring and managing return on marketing investment*, (1<sup>st</sup> ed) Singapore, John Wiley & Sons.
- Rogers, D. S. & Tibben-Lembke, R. S. (1998). *Going Backwards: Reverse logistics trends and practices*, Center for logistics management, reverse logistics council, The University of Nevada, Reno, United States.
- Vorhies, D. W. & Morgan, N. A. (2003). A configuration theory assessment of marketing organization fit with business strategy and its relationship with marketing performance, *Journal of Marketing*, 67, (1), 100-115.
- Webster, C. (1995). Marketing culture and marketing effectiveness in service firms, *Journal of Services Marketing*, 9 (2), 6-21
- Wonacott, M. E. (2001). Technological Literacy Clearinghouse on Adult, Career, and Vocational Education ERIC Digest, 233.