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Influence of Reverse Logistics on Performance of Food and Beverage Manufacturing Firms in Kenya

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Abstract

Purpose: The purpose of the study was to assess the influence of reverse logistics on performance of food and beverage manufacturing firms in Kenya with an aim of making recommendations on proper use of reverse logistics management practices in manufacturing companies.

Methodology: This research study adopted a descriptive research design approach. This study used probability sampling since the population and location of food and beverage manufacturing firms is known. Specifically, the study used stratified random sampling in order to account for the uneven distribution of firms in various towns. Based on distribution of firms in the 10 towns the study used proportions calculated in the population distribution to come up with a representative sample distribution. The proportions calculated give the number of firms to be included in the sample for each segment. Thereafter simple random sampling was used to select the names of food and beverage manufacturing firms in which data is to be collected. The study combined two methods in its data collection that is, questionnaires and key informant interviews. After data collection, quantitative data was coded using Statistical Package for Social Science (SPSS) version 20. Data was analysed through descriptive statistical methods such as means, standard deviation, frequencies and percentage. Inferential analyses were used in relation to correlation analysis and regression analysis to test the relationship between the four explanatory variables and the explained variable

Results and conclusion: The response rate of the study was 92%. R square value of 0.647 means that 64.7% of the corresponding variation in performance of food and beverage manufacturing firms in Kenya can be explained or predicted by (product returns management, recycling management, disposal management and product repackaging) which indicated that the model fitted the study data. The results of regression analysis revealed that there was a significant positive relationship between dependent variable and independent variable at ($\beta = 0.647$, $p=0.000 <0.05$).

The findings of the study concluded that product returns management, recycling management, disposal management and product repackaging have a positive relationship with performance of food and beverage manufacturing firms in Kenya.

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Unique contribution to theory, practice and policy: the study recommended that food and beverage manufacturing firms should embrace reverse logistics so as to improve performance and further researches should to be carried out in other sectors to find out if the same results can be obtained.

Keywords: *Product Returns Management, Recycling Management, Disposal Management, Product Repackaging*

1.1 INTRODUCTION

An effective and standardized reverse logistics process can give a firm the necessary competitive advantage to move above peers and competitors, and possibly capture larger market share within their industry because of their superior process and being able to meet the demands of the customers. Today's customer expects and demands 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. A firm that is able to meet these increasing customer requirements is going to gain customer loyalty and retain, and perhaps increase, their overall market share (Huscroft, 2010).

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 (Achieng, 2011). 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 (Lysons, 2010).

This is a main reason that reverse logistics processes and their management have increased in importance within the business community and academia (Rogers, 2010). Logistics is defined by Badenhorst (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.

On the other hand, reverse logistics encompasses all of the activities that are mentioned in the council's definition the only difference being that reverse logistics operates in reverse (Moturi, 2013). From this reverse logistics is defined 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 is an essential capability for any business that operates in today's global marketplace (Elmas & Erdogmus, 2011).

1.2 Problem Statement

According to the World Bank (2016), traditionally, 90% of organizations have focused on improving their forward logistics activities; most have not treated the reverse logistics process with the same care and diligence afforded to traditional areas of logistics. KNBS (2017) indicated that 65% of manufacturing firms in Kenya often focus on forward logistics and as a result, they tend

to overlook the importance of reverse logistics activities and its potential of improving the firm's and supply chain's performance.

Recently reverse logistics has received increasing attention from both the academic world and industries because of competition and marketing motives, it saved various firms over Kshs.70 Billion in the financial year (FY) 2016/2017, as well as strategic and managerial implications (Nyangweso, 2013). With legislative measures tightening up and a growing concern for the environment to use materials effectively and efficiently, organizations do not have any choice but to engage in reverse logistics practices.

According to KIPPRA (2014), reverse logistics has become a necessity in the manufacturing industry; due to legislations and environmental concerns. Many firms look for new possibilities to create and improve their return systems in order to gain a competitive advantage. Companies are now looking into reverse logistics in order to optimize their return flows (OECD, 2017). Manufacturing firms in Kenya operate at a technical efficiency of about 39% compared to their counterparts in Malaysia that average about 84% (Achuora, Guyo, Arasa & Odhiambo, 2015) raising doubts about the sector's capacity to meet its goal of contributing to GDP by 15% (PPRA, 2015). Reverse logistics will come in handy to improve this performance

Several studies have been done internationally, Pollock (2017) did a study on reverse logistics, he concluded that reverse logistics accounts for 3% to 4% of a company's total logistics costs and argues that companies can save up to 10% from their annual logistics bill by implementing an efficient reverse logistics system. 20% of this amount is saved in labor costs and the remaining eighty percent is saved in lowered freight costs and reduced pipeline inventory.

Locally, Studies have also been done on reverse logistics Moturi (2015) noted that, given the tightness of margins in many organizations, the improved management of returns can have a significant impact on the bottom-line performance, both business and logistical. 80% of manufacturing firms are yet to incorporate reverse logistics which can be done by appreciating environmental issues and inculcating the same to their employees and suppliers.

All the above studies have been done in different contexts which are impacted on differently depending on the industry and the environment. It is against this back drop that this study seeks to examine the influence of reverse logistics on performance of food and beverage manufacturing firms in Kenya.

1.3 Objectives of the Study

i. To establish the influence of product returns management on performance of food and beverage manufacturing firms in Kenya.

ii. To find out how recycling management influences performance of food and beverage manufacturing firms in Kenya.

iii. To assess the influence of disposal management on performance of food and beverage manufacturing firms in Kenya.

iv. To determine the influence of product repackaging on performance of food and beverage manufacturing firms in Kenya.

2.0 LITERATURE REVIEW

2.1 The Stakeholder Theory

According to Harrison and Freeman (2009), they defined the concept of a stakeholder approach in relation to product repackaging management to include any individual or group who can affect the firm's performance or who is affected by the achievement of the organizations' objectives. The stakeholder theory is grouped into two: strategic stakeholder who emphasizes the active management of stakeholder interests and moral stakeholder interested in balancing stakeholder interests (Frooman, 2009).

Corporations should not focus narrowly their strategic management decisions on creating shareholder value; rather broaden their objectives to tackle the expectations and interest of a wide variety of salient stakeholders (Donaldson, 2015). Poor product repackaging management leads to poor company's relationship with its stakeholders. Consequently, shareholders and financial institutions perceive companies with a poor environmental record as riskier to invest in and may demand a higher risk premium (Henriques & Sadorsky, 2009).

Also, companies with a poor reputation of product repackaging management will find it harder to attract and retain highly qualified employees who may have a strong proactive environmental management (Reinhardt, 2009). From the above argument the success of companies aiming to develop product repackaging competencies strongly depend on the participation of their employees. Consumer awareness has led them to demand industry improvement on their environmental performance (Buysse & Verbeke, 2013).

Consumers can reject the products of companies with poor product repackaging management reputation (Greeno & Robinson, 2012). A firm with a reactive product repackaging management may face big loss of competitive advantage if proactive environmental management becomes a common practice among its competitors. From the above argument Freeman and Phillips, (2012) suggest that business should take a leadership role to improve the natural environment. In this study stakeholder theory has been adopted and linked to product repackaging variable.

2.2 Reverse Logistics

2.2.1 Product Returns Management

Product recovery and reselling of products is considered as a way of achieving sustainability in business achieving economic benefits. Lindahl (2002) considers products recovery as the process of reuse and recycling. Products recovery and reselling of products is aimed at retrieving the products value when a product ceases to fulfill the desired value. Gungor and Gupta (2009) define recall management as a combination of product returns management and product recovery.

They further point out that materials recovery is done to recover the economic value in materials and enhance solid waste management, to respond to market requirement and to comply with government regulations. According to Thierry (2015), the main objective of recovery is to regain

as much as possible the economic and ecological value of the products and materials. It enables the organization recover value that would otherwise be lost. A part from products and materials, wastes can also be recovered to enhance environmental responsiveness and performance.

2.2.2 Recycling Management

Reuse is where the customers return unused product back to the seller, normally the retailer. When this happens, the products are reintroduced into the supply chain. Reuse also includes return of reusable repackaging materials. When products are returned to retailers, the products return to the organization through reverse logistics (Nyangweso, 2013). Remanufacture on the other hand involves repair, refurbishing and overhauling an item to revive the original product.

Normally, only products that are not in their usable state or are beyond repair are remanufactured. Organizations with properly managed supply chain activities can use remanufacturing to enhance their economic performance since they are able to create value in products that had already lost value. It brings back life in a dead product (Mwangi, 2013). Recycle is the third component of reverse logistics and involves recovering all returned materials and products to reintroduce value into the products.

2.2.3 Disposal Management

Waste is defined as any substance or article which constitutes a scrap material or an effluent or other surplus substance arising from application of any process (Environmental Protection Authority, 2010). Waste management is an overall approach to prevent waste and it combines a range of collection and treatment methods to handle all materials in the waste stream in an environmentally effective, economically affordable and socially acceptable way (McDougal, 2011). the basis of improvement that will be measured for continuous improvement (Morgan, 2006).

2.2.4 Product Repackaging Management

Repackaging is the science, art, and technology of enclosing or protecting products for distribution, storage, sale, and use. Repackaging refers to the process of design, evaluation, and production of packages for products that had been packaged before. Basic objectives of repackaging include; physical protection, barrier protection, containment or agglomeration, information transmission, marketing, security anti-counterfeiting repackaging and convenience portion control. Repackaging can be divided in primary, secondary and tertiary type. Labelling is any written, electronic, or graphic communications on the repackaging or on a separate but associated label (Tukamuhabwa, Eyaa & Derek, 2011).

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2.2 Conceptual Framework

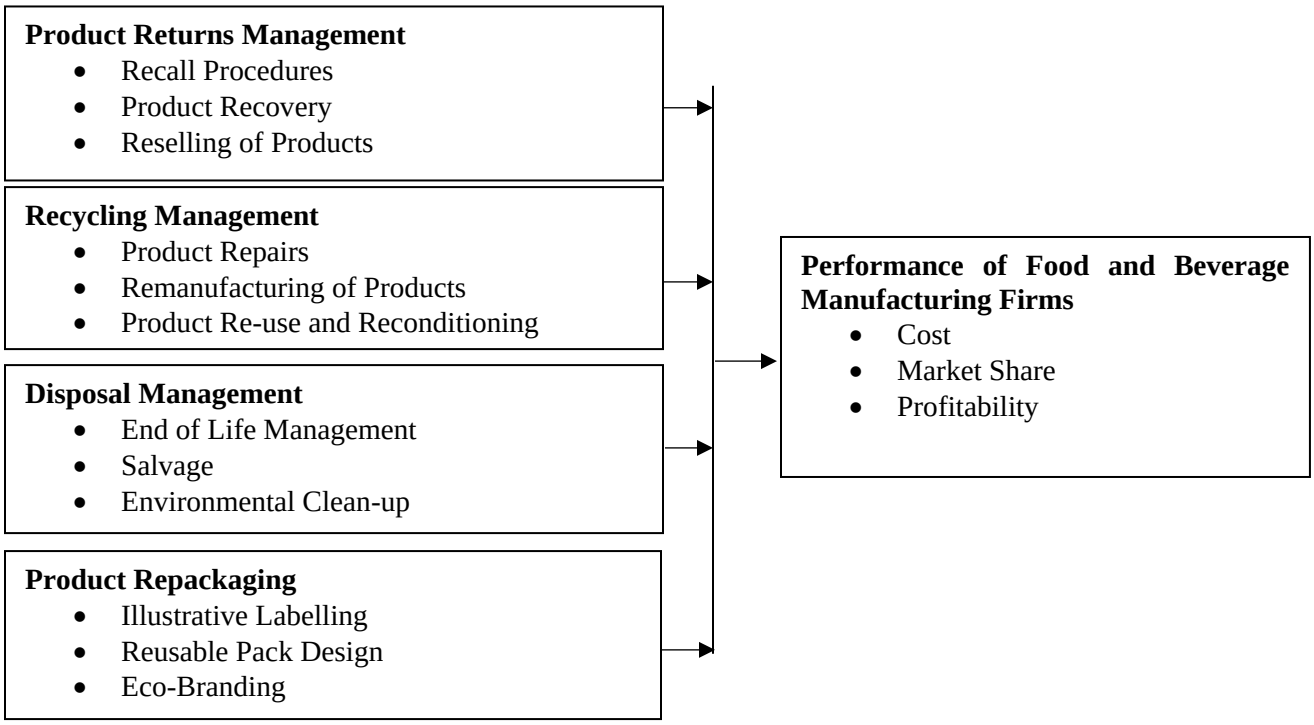

Figure 1: Conceptual framework

3.0 METHODOLOGY

This research study adopted a descriptive research design approach. The researcher preferred this method because it allowed an in-depth study of the subject. The target population was heads of procurement in the food and beverage manufacturing firms in Kenya. Using Crochan's formula a sample of 132 food and beverage manufacturing firms was arrived at out of a total of 197 food and beverage manufacturing firms. This study used probability sampling since the population and location of food and beverage manufacturing firms is known. Specifically, the study used stratified random sampling in order to account for the uneven distribution of firms in various towns. Based on distribution of firms in the 10 towns the study used proportions calculated in the population distribution to come up with a representative sample distribution.The proportions calculated give the number of firms to be included in the sample for each segment. Thereafter simple random sampling was used to select the names of food and beverage manufacturing firms in which data is to be collected. The study combined two methods in its data collection that is, questionnaires and key informant interviews. After data collection, quantitative data was coded using Statistical Package for Social Science (SPSS) version 20. Data was analyzed through descriptive statistical methods such as means, standard deviation, frequencies and percentage. Inferential analyses were used in relation to correlation analysis and regression analysis to test the relationship between the four explanatory variables and the explained variable.

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4.0 RESULTS FINDINGS

4.1 Introduction

This chapter presents results arising from the analysis of data collected using questionnaires.

4.2 Response Rate

A sample of respondents were interviewed using questionnaires that allowed the researcher to drop the questionnaire to the respondents and then collect them at a later date when they had filled the questionnaires. A total of 132 questionnares were distributed to heads of procurement. Out of the population covered, 122 were responsive respresenting a response rate of 92%. This was above the 50% which is considered adequate in descriptive statistics according to (Dunn, 2010).

Table 1: Response Rate of Respondents

Response	Frequency	Percentage
Actual Response	122	92
Non-Response	10	08
Total	**132**	**100%**

4.3 Pilot Study

The cronbach's alpha was computed in terms of the average inter-correlations among the items measuring the concepts. The rule of thumb for cronbach's alpha is that the closer the alpha is to 1 the higher the reliability (Isaac & Michael, 2010). A value of at least 0.7 is recommended. Cronbach's alpha is the most commonly used coefficient of internal consistency and stability. Consistency indicated how well the items measuring the concepts hang together as a set. Cronbach's alpha was used to measure realibilty. This was done on the four objectives of the study. The higher the coefficient, the more reliable is the test.

Table 2 Reliability Results

Variable	No. of Items	Respondents	α=Alpha	Comment
Product Returns Management	9	13	0.893	Reliable
Recycling Management	9	13	0.987	Reliable
Disposal Management	9	13	0.974	Reliable
Product Repackaging	9	13	0.976	Reliable

4.4 Demographic Information

4.4.1 Distribution of Respondents by Gender

The study determined the gender distribution of the respondents. The results summarized in the figure below. The results revealed that majority of the respondent (56%) indicated that they were male, while only (44%) of the respondent indicated that they were female. The percentages may raise the issue of gender equity in food and beverage manufacturing firms, but that is outside the

scope of this study. A study on UK companies found that women and men do not differ in their ability to perform operational tasks, but rather bring a different perspective to reverse logistics (John & Johnson, 2012).

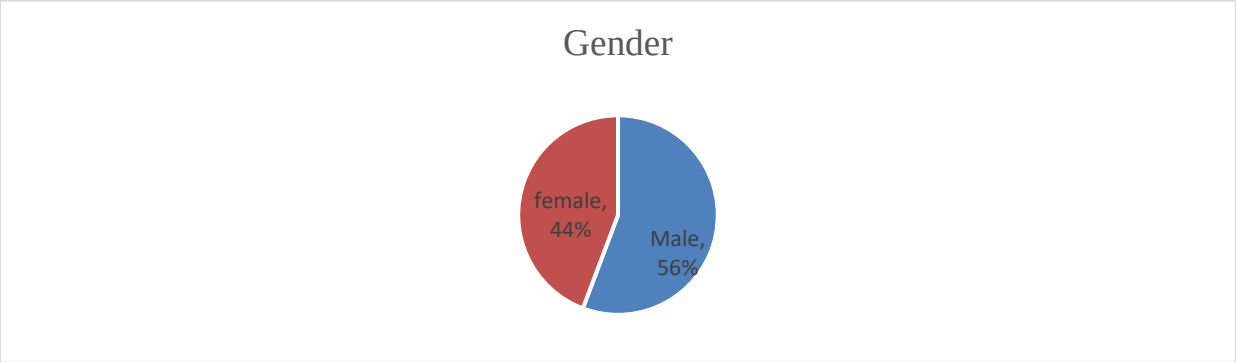

Figure 2: Distribution of Respondents by Gender

4.4.2 Distribution of Respondents by Age

The study determined the distribution of respondents by age. The results summarized in the table below. The results revealed that majority of the respondent (43%) were 31-40 years old, (24%), were above 50 years old, while (24%) were between 41-50 years. The findings are in agreement with those of Kasomo (2014) who established that there are two natural age peaks of the early 30s and mid 40s which correlated to employee performance and consequently influencing firm performance.

Table 3: Distribution of Respondents by Age

Years	Frequency	Percent
31-40 Years	52	43
41-50 Years	29	24
50 Years and above	41	34
Total	122	100.00

4.4.3 Distribution of Respondents by Level of Education

The respondents were asked to state their highest level of education and the results revealed that majority of the respondent (51%) indicated that their academic qualification was up to master's level. The result further revealed that (49%) of the respondent indicated that their academic qualification was up to degree level. With majority responsdents having degree and above, it is expected that their level of understanding of performance of food and beverage manufacturing firms is good. This is an indication that the results obtained from respondents interviewed in the present study can be relied upon.These findings concur those of Kaynak (2010) who established that majority of who run food and beverage manufacturing firms are highly educated and that there is evidence linking education and performance in food and beverage manufacturing firms.

Table 4: Distribution of Respondents by Level of Education

Education Level	Frequency	Percent
Undergraduate	60	49
Post-Graduate	62	51
Total	**122**	**100.00**

4.4.4 Distribution of Respondents by Length of Service

The study determined the number of years the respondents had worked in their current office. The respondents were asked to indicate their work duration. The result showed that (31%) of the respondent indicated that their work duration was 3-5 years. The result revealed that majority of the respondents (40%) indicated that their work duration was 6-8 years. The result also showed that (29%) of the respondent indicated that their work duration was 9 and above years above. The findings of the study are in tandem with literature review by Kennedy and Brian (2009) who indicated that a duration and experience of employee helps him or her to have better knowledge and skills which contribute to performance of food and beverage manufacturing firms.

Table 5: Distribution of Respondents by Length of Service

Length of Service	Frequency	Percent
3-5 Years	38	31
6-8 Years	49	40
9 Years and above	35	29
Total	**122**	**100.0**

4.5 Descriptive Statistics

4.5.1 Product Returns Management

The first objective of the study was to assess the influence of product returns management on performance of food and beverage manufacturing firms in Kenya. The respondents were asked to indicate to what extent product returns management had an influence on performance of food and beverage manufacturing firms. Results indicated that majority of the respondents 27% agreed that it was to a very effective, 25% said that it was effective, 29% said it was somehow effective, while ineffective was at 19%.

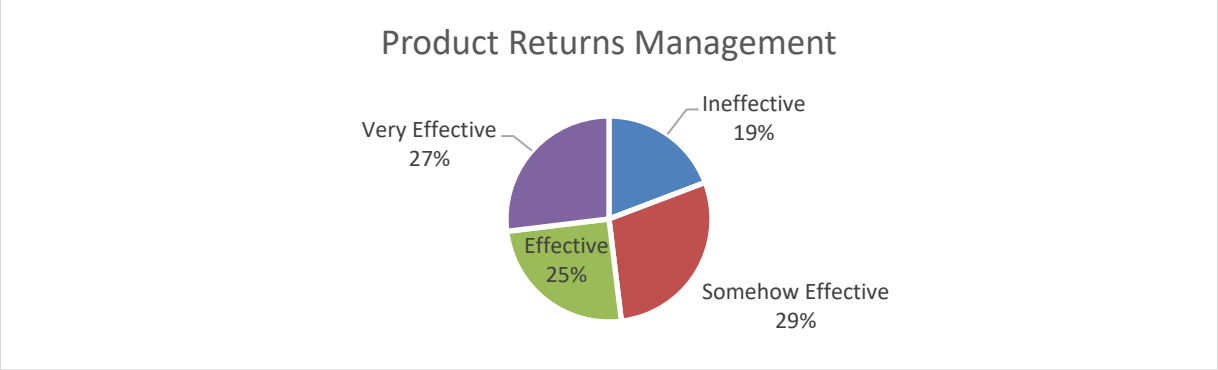

Figure 3: Product Returns Management

The respondents were also asked to comment on statements regarding product returns management on performance of food and beverage manufacturing firms in Kenya. The responses were rated on a Likert scale and the results presented in Table 4.6 below. It was rated on a 5 point likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The scores of 'strongly disagree' and 'disagree' have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'neutral' has been taken to represent a statement agreed upon, equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly agree' have been taken to represent a statement highly agreed upon equivalent to a mean score of 3.5 to 5.

The respondents were asked to indicate their responses on influence of product returns management on performance of food and beverage manufacturing firms in Kenya. The results revealed that majority of the respondent with a mean of (4.13) agreed with the statement that recalls policy plays a significant role in cost reduction. The measure of dispersion around the mean of the statements was 0.94 indicating the responses were varied. The result revealed that majority of the respondent as indicated by a mean of (4.27) agreed with the statement product recovery plays a significant role in cost reduction. The standard deviation for was 0.968 showing a variation. The result revealed that majority of the respondent (4.55) agreed with the statement that reselling of products play a significant role in cost reduction. The results were varied as shown by a standard deviation of 0.5.

The average response for the statements on recalls policy plays a significant role in attaining higher market share was (4.22). The results were varied as shown by a standard deviation of 0.955. The average response for the statements on product recovery plays a significant role in attaining higher market share was (4.4). The results were varied as shown by a standard deviation of 0.704. The result revealed that majority of the respondent with a mean of (4.46) agreed with the statement that reselling of products play a significant role in attaining higher market share. The measure of dispersion around the mean of the statements was 0.787 indicating the responses were varied.

The result revealed that majority of the respondent as indicated by a mean of (4.44) agreed with the statement recalls policy plays a significant role in improving profitability. The standard deviation for was 0.786 showing a variation. The result revealed that majority of the respondent (4.21) agreed with the statement that product recovery plays a significant role in improving

profitability. The results were varied as shown by a standard deviation of 0.942. The average response for the statements on reselling of products plays a significant role in improving profitability was (4.01). The results were varied as shown by a standard deviation of 0.81.

The average mean of all the statements was 4.01 indicating that majority of the respondents agreed on product returns management having an influence on performance of food and beverage manufacturing firms. However, the variations in the responses were varied as shown by a standard deviation of 0.81. These findings imply that product returns management were at the heart of the organizations. The findings agree with Lembke (2012) that using product returns management as a reverse logistics tool is a smart move and can reduce expenses significantly.

Table 6: Product Returns Management

Statements	Mean	Std. Deviation
Recall procedures plays a significant role in cost reductions	4.10	0.94
Product recovery plays a significant role in cost reductions	4.27	0.968
Reselling of products plays a significant role in cost reductions	4.55	0.5
Recall procedures plays a significant role in expanding the market share	4.22	0.955
Product recovery plays a significant role in expanding the market share	4.41	0.704
Reselling of products plays a significant role in expanding the market share	4.46	0.787
Recall procedures plays a significant role in improving profitability	4.44	0.786
Product recovery plays a significant role in improving profitability	4.21	0.942
Reselling of products plays a significant role in improving profitability	4.11	1.096
Average	**4.01**	**0.81**

4.5.2 Recycling Management

The second objective of the study was to establish the influence of recycling management on performance of food and beverage manufacturing firms in Kenya. The respondents were asked to indicate to what extent recycling management influenced performance of food and beverage manufacturing firms in Kenya. Results indicated that majority of the respondents 25% agreed that it was to a very great extent, 27% said that it was to a great extent, 35% said it was moderate, while little extent and not all were at 5 and 8% respectively.

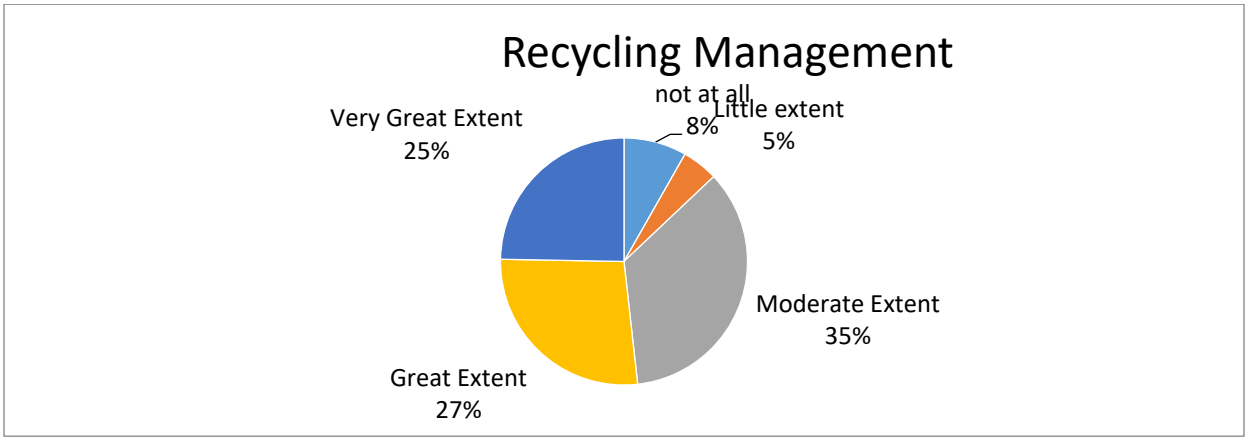

Figure 4: Recycling Management

The respondents were also asked to comment on statements regarding recycling management on performance of food and beverage manufacturing firms in Kenya. The results revealed that majority of the respondent with a mean of (3.58) agreed with the statement that product repairs plays a significant role in cost reduction. The measure of dispersion around the mean of the statements was 1.0 indicating the responses were varied. The result revealed that majority of the respondent as indicated by a mean of (3.63) agreed with the statement remanufacturing of products plays a significant role in cost reduction. The standard deviation for was 0.9 showing a variation. The result revealed that majority of the respondent (3.6) agreed with the statement that product re-use and reconditioning plays a significant role in cost reduction. The results were varied as shown by a standard deviation of 0.7.

The average response for the statements on product repairs plays a significant role in attaining higher market share was (3.45). The results were varied as shown by a standard deviation of 1.2. The average responses for the statements on remanufacturing of products plays a significant role in attaining higher market share was (3.5). The results were varied as shown by a standard deviation of 1.0. The results revealed that majority of the respondent with a mean of (3.61) agreed with the statement that product re-use and reconditioning plays a significant role in attaining higher market share. The measure of dispersion around the mean of the statements was 0.6 indicating the responses were varied.

The result revealed that majority of the respondent as indicated by a mean of (4.17) agreed with the statement product repairs plays a significant role in improving profitability. The standard deviation for was 0.8 showing a variation. The result revealed that majority of the respondent (3.63) agreed with the statement that remanufacturing of products plays a significant role in improving profitability. The results were varied as shown by a standard deviation of 0.8. The average response for the statements on product re-use and reconditioning plays a significant role in improving profitability was (3.66). The results were varied as shown by a standard deviation of 1.

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The average mean of all the statements was 3.77 indicating that majority of the respondents agreed on recycling management having an influence on performance of food and beverage manufacturing firms in Kenya. However, the variations in the responses were varied as shown by a standard deviation of 1.134. These findings agree with Maghanga (2011) that through recycling management, companies can improve competitive positioning.

Table 7: Recycling management

Statements	Mean	Std. Deviation
Product repairs plays a significant role in cost reductions	3.58	1.0
Remanufacturing of products plays a significant role in cost reductions	3.63	0.9
Product re-use and reconditioning plays a significant role in cost reductions	3.6	0.7
Product repairs plays a significant role in expanding the market share	3.45	1.2
Remanufacturing of products plays a significant role in expanding the market share	3.5	1.0
Product re-use and reconditioning plays a significant role in expanding the market share	3.61	0.6
Product repairs plays a significant role in improving profitability	4.17	0.8
Remanufacturing of products plays a significant role in improving profitability	3.63	0.8
Product re-use plays a significant role in improving profitability	3.66	1.0
Average	**3.77**	**1.134**

4.5.3 Disposal Management

There was also need to establish influence of disposal management on performance of food and beverage manufacturing firms in Kenya as the third objective. Results indicated that majority of the respondents 47% agreed that it was to a very great extent, 45% said that it was to a great extent, 2% said it was moderate; little extent was 2% and not all at 4%.

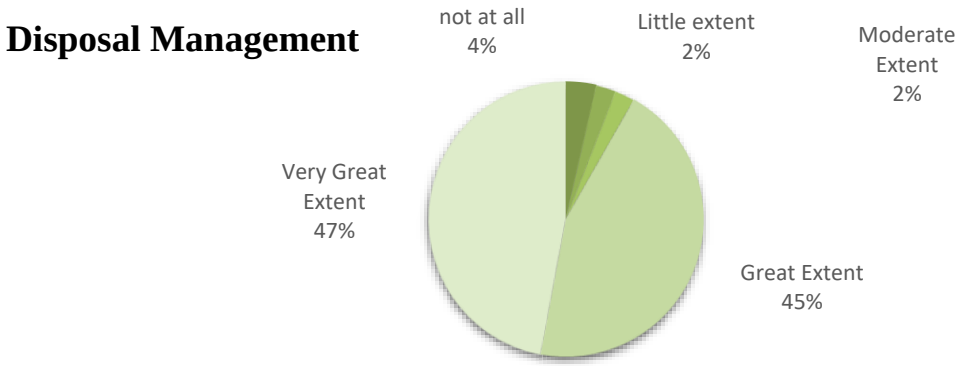

Figure 5: Disposal Management

The respondents were asked to indicate their levels of agreement on statements regarding disposal management. The results revealed that majority of the respondent with a mean of (3.8) agreed with the statement that end of life management play a significant role in cost reduction. The measure of dispersion around the mean of the statements was 0.9 indicating the responses were varied. The result revealed that majority of the respondent as indicated by a mean of (4.9) agreed with the statement salvage management play a significant role in cost reduction. The standard deviation for was 0.9 showing a variation. The result revealed that majority of the respondent (3.4) agreed with the statement that environmental clean-up play a significant role in cost reduction. The results were varied as shown by a standard deviation of 1.3.

The average response for the statements on end of life management play a significant role in attaining higher market share was (3.6). The results were varied as shown by a standard deviation of 1.2. The average response for the statements on salvage management play a significant role in attaining higher market share was (4.1). The results were varied as shown by a standard deviation 0.8. The results revealed that majority of the respondent with a mean of (4.1) agreed with environmental clean-up play a significant role in attaining higher market share. The measure of dispersion around the mean of the statements was 0.9 indicating the responses were varied.

The result revealed that majority of the respondent as indicated by a mean of (4) agreed with the statement end of life management play a significant role in improving profitability. The standard deviation for was 1 showing a variation. The result revealed that majority of the respondent (4.2) agreed with the statement that salvage management play a significant role in improving profitability. The results were varied as shown by a standard deviation of 0.8. The average response for the statements on environmental clean-up play a significant role in improving profitability was (3.9). The results were varied as shown by a standard deviation of 0.9.

Average mean of all the statements was 3.8 indicating that majority of the respondents agreed on disposal management having an influence on performance of food and beverage manufacturing firms in Kenya. However, the variations in the responses were varied as shown by a standard deviation of 0.9. The results are in tandem with Parkhe (2013) who opine that an organization benefits greatly when disposal management are embraced in their reverse logistics.

Table 8: Disposal Management

Statements	Mean	Std. Deviation
End of life management plays a significant role in cost reductions	3.8	0.9
Salvage management plays a significant role in cost reductions	4.9	0.9
Environmental clean-up plays a significant role in cost reductions	3.4	1.3
End of life management plays a significant role in expanding the market share	3.6	1.2
Salvage management plays a significant role in expanding the market share	4.1	0.8
Environmental clean-up plays a significant role in expanding the market share	4.1	0.9
End of life management plays a significant role in improving profitability	4.0	1.0
Salvage management plays a significant role in improving profitability	4.2	0.8
Environmental clean-up plays a significant role in improving profitability	3.9	0.9
Average	**3.8**	**0.9**

4.5.4 Product Repackaging

There was also need to establish the influence of product repackaging on performance of food and beverage manufacturing firms in Kenya. Results also showed that 3% of respondents indicated to very great extent, great extent was at 12%, moderate extent was 37%, while little extent was at 27% and not at all was at 21%.

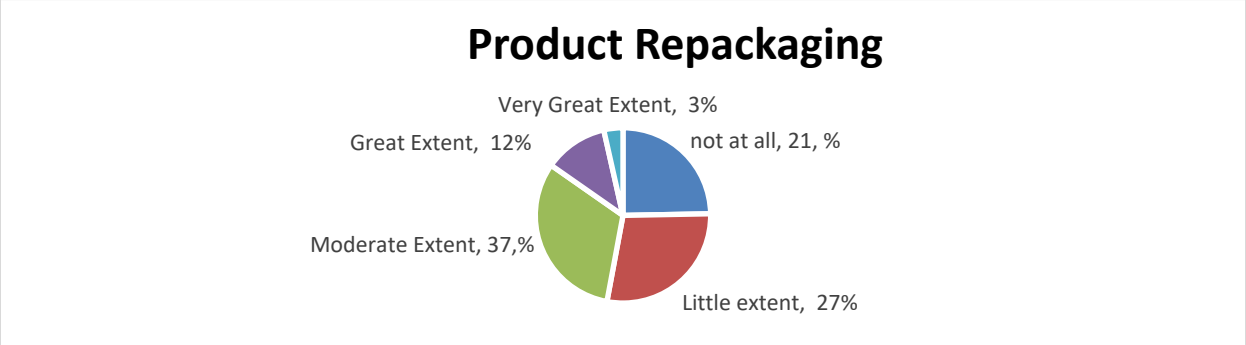

Figure 6: Product Repackaging

The respondents were asked to indicate their views on product repackaging. The results revealed that majority of the respondent with a mean of (4.5) agreed with the statement that illustrative labelling plays a significant role in cost reduction. The measure of dispersion around the mean of the statements was 0.5. The result revealed that majority of the respondent as indicated by a mean

of (3.9) agreed with the statement reusable pack design plays a significant role in cost reduction the standard deviation for was 0.8 showing a variation. The result revealed that majority of the respondent (3.2) agreed with the statement that eco-branding plays a significant role in cost reduction. The results were varied as shown by a standard deviation of 1.4

The average response for the statements on illustrative labelling plays a significant role in attaining higher market share was (4.5). The results were varied as shown by a standard deviation of 0.5. The average response for the statements on reusable pack design plays a significant role in attaining higher market share was (4.4). The results were varied as shown by a standard deviation 0.6. The results revealed that majority of the respondent with a mean of (4.4) agreed with the statement eco-branding plays a significant role in attaining higher market share. The measure of dispersion around the mean of the statements was 0.9 indicating the responses were varied.

The result revealed that majority of the respondent as indicated by a mean of (4.3) agreed with the statement illustrative labelling plays a significant role in improving profitability. The standard deviation for was 0.7 showing a variation. The result revealed that majority of the respondent (4.5) agreed with the statement that reusable pack design plays a significant role in improving profitability. The results were varied as shown by a standard deviation of 1.0. The average response for the statements on eco-branding plays a significant role in improving profitability was (4.1). The results were varied as shown by a standard deviation of 1.0.

Average mean of all the statements was 4.2 indicating that majority of the respondents agreed on product repackaging having an influence on performance of food and beverage manufacturing firms in Kenya. However, the variations in the responses were varied as shown by a standard deviation of 0.8. The results agree with Gordon (2014) that an organization that embraces product repackaging benefits greatly in its operations management.

Table 9: Product Repackaging

Statements	Mean	Std. Deviation
Illustrative labelling plays a significant role in cost reductions	4.5	0.5
Reusable pack design plays a significant role in cost reductions	3.9	0.8
Eco-branding plays a significant role in cost reductions	3.2	1.4
Illustrative labelling plays a significant role in expanding the market share	4.5	0.5
Reusable pack design plays a significant role in expanding the market share	4.4	0.6
Eco-branding plays a significant role in expanding the market share	4.4	0.9
Illustrative labelling plays a significant role in improving profitability	4.3	0.7
Reusable pack design plays a significant role in improving profitability	4.2	1.0
Eco-branding plays a significant role in improving profitability	4.1	1.0

Average	**4.2**	**0.8**

4.6 Correlation Analysis

Correlation analysis was used to determine both the significance and degree of association of the variables and also predict the level of variation in the dependent variable caused by the independent variables. The correlation summary shown in Table 10 indicates that the associations between each of the independent variables and the dependent variable were all significant at the 95% confidence level. The correlation analysis to determine the relationship between reverse logistics influence on food and beverage manufacturing firms in Kenya, Pearson correlation coefficient computed and tested at 5% significance level.

The results indicate that there is a positive relationship (r=.509) between product returns management and performance of food and beverage manufacturing firms in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05). The results also indicate that there is a positive relationship (r=.398) between recycling management and performance of food and beverage manufacturing firms in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The results indicate that there is a positive relationship (r=.678) between disposal management and performance of food and beverage manufacturing firms in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05). The results indicate that there is a positive relationship (r=.685) between product repackaging and performance of food and beverage manufacturing firms in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05). Hence, it is evident that all the independent variables could explain the changes in implementation of performance of food and beverage manufacturing firms in Kenya, on the basis of the correlation analysis.

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Table 10: Summary of Pearson's Correlations

Correlations		Product Returns Management	Recycling Management	Disposal Management	Product Repackaging	Performance of Firms
Product Returns Management	Pearson Correlation	1				
	Sig.(2-Tailed)					
Recycling Management	Pearson Correlation	.263**	1			
	Sig.(2-Tailed)	0.007				
Disposal Management	Pearson Correlation	.350**	.346**	1		
	Sig.(2-Tailed)	0	0			
Product Repackaging	Pearson Correlation	.363**	.516**	.543**	1	
	Sig.(2-Tailed)	0	0	0		
Performance of Firms	Pearson Correlation	.509**	.398**	.678**	.685**	1
	Sig.(2-Tailed)	0	0	0	0	

** Correlation is Significant at the 0.05 Level (2-Tailed).

4.7 Regression Analysis

In this study multivariate regression analysis was used to determine the significance of the relationship between the dependent variable and all the independent variables pooled together. Regression analysis was conducted to find the proportion in the dependent variable (performance of food and beverage manufacturing firms in Kenya) which can be predicted from the independent variables (product returns management, recycling management, disposal management and product repackaging).

Table 11 presents the regression coefficient of independent variables against dependent variable. The results of regression analysis revealed there is a significant positive relationship between dependent variable and the independent variable. The independent variables reported R value of .805a indicating that there is perfect relationship between dependent variable and independent variables. R square value of 0.647 means that 64.7% of the corresponding variation in performance of food and beverage manufacturing firms in Kenya can be explained or predicted by (product returns management, recycling management, disposal management and product repackaging) which indicated that the model fitted the study data. The results of regression analysis revealed that there was a significant positive relationship between dependent variable and independent variable at ($\beta = 0.647$), $p=0.000 <0.05$).

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Table 11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.805[a]	.647	.633	.166295

Table 12: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.027	4	1.257	54.652	.000[b]
	Residual	2.738	117	0.023		
	Total	7.765	121			

The significance value is 0.000 which is less than 0.05 thus the model is statistically significance in predicting how product returns management, recycling management, disposal management and product repackaging influence performance of food and beverage manufacturing firms in Kenya. The F critical at 5% level of significance was 36.8. Since F calculated which can be noted from the ANOVA table above is 54.652 which is greater than the F critical (value= 36.8), this shows that the overall model was significant. The study therefore establishes that; product returns management, recycling management, disposal management and product repackaging were all important reverse logistics influencing performance of food and beverage manufacturing firms. These results agree with Kazemi and Hooshyar (2009) results which indicated a positive and significant influence of reverse logistics on performance of food and beverage manufacturing firms.

Table 13: Coefficients of Determination

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		β	Std. Error	Beta		
1	(Constant)	2.353	0.202		11.619	0.000
	Product Returns Management	0.183	0.037	0.392	4.948	0.000
	Recycling Management	0.158	0.045	0.232	3.546	0.001
	Disposal Management	0.121	0.023	0.383	5.272	0.000
	Product Repackaging	0.001	0.036	0.027	0.021	0.040

The research used a multiple regression model

$$Y= \beta_0+ \beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+Ɛ$$

The regression equation will be;

$$Y=2.353+ 0.183X_1 + 0.158X_2 + 0.121X_3 + 0.001X_4$$

The regression equation above has established that taking all factors into account (product returns management, recycling management, disposal management and product repackaging) constant at zero, performance of food and beverage manufacturing firms will be an index of 2.353.

The findings presented also shows that taking all other independent variables at zero, a unit increase in product returns management will lead to a 0.183 increase in performance of food and beverage manufacturing firms. The P-value was 0.000 which is less 0.05 and thus the relationship was significant.

The study also found that a unit increase in recycling management will lead to a 0.158 increase in performance of food and beverage manufacturing firms. The P-value was 0.001 and thus the relationship was significant. In addition, the study found that a unit increase in disposal management will lead to a 0.121 increase in performance of food and beverage manufacturing firms. The P-value was 0.000 and thus the relationship was significant.

Lastly, the study found that product repackaging will lead to a 0.001 increase in performance of food and beverage manufacturing firms. The P-value was 0.040 and hence the relationship was significant since the p-value was lower than 0.05. The findings of the study show that, product returns management contributed most to performance of food and beverage manufacturing firms.

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of the Findings

R square value of 0.647 means that 64.7% of the corresponding variation in performance of food and beverage manufacturing firms in Kenya can be explained or predicted by (product returns management, recycling management, disposal management and product repackaging) which indicated that the model fitted the study data. The results of regression analysis revealed that there was a significant positive relationship between dependent variable and independent variable at ($\beta = 0.647$), $p=0.000 <0.05$).

5.2 Conclusion

The findings of the study indicated that product returns management, recycling management, disposal management and product repackaging have a positive relationship with performance of food and beverage manufacturing firms in Kenya.

5.3 Recommendations

Finally, the study recommended that food and beverage manufacturing firms should embrace reverse logistics so as to improve performance and further researches should to be carried out in other sectors to find out if the same results can be obtained.

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