

Effect of Reverse Logistics on Procurement Performance Of Private Dairy Firms in Kiambu County

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Abstract: The increasing prevalence of reverse logistics adoption in modern supply chains can be attributed to its strategic approach in optimizing resource utilization, mitigating environmental impacts, and enhancing overall supply chain efficiency. Empirical research examines the relationship between reverse logistics practices and organizational performance. However, few studies have focused on reverse logistics and its relationship with procurement performance. By analyzing the complex interplay between reverse logistics and procurement performance, this study aimed to address a significant gap in the current body of knowledge. The general objective of the study was to establish the effect of reverse logistics on the procurement performance of private dairy firms in Kiambu county. The study was also guided by a specific objective namely to examine the effect of returns management on the procurement performance of private dairy firms in Kiambu county. This study used a descriptive research design. The target population included staff in management, procurement, finance, sales and marketing, and logistic departments. Primary data was collected by use of questionnaires. Descriptive analysis was used in analyzing descriptive data. MS Excel and Statistical Package for Social Sciences (SPSS version 21) were used to describe the data. Frequencies, percentages, means and other central tendencies were used. The results were presented by use of tables. Mean scores and standard deviation were used to analyze Likert scale. Open-ended questions were analyzed by use of content analysis. A multiple regression analysis was carried out to find out the association between reverse logistics and procurement performance. To determine the significance level of the model ANOVA was adopted. The study found that returns management had significant positive relationship with procurement performance in private dairy firms in Kenya. The study recommends private dairy firms to enhance returns management systems to improve their procurement performance.

Keywords: Dairy firms, Kiambu, procurement performance, reverse logistics, returns management,

I. Introduction

Background of the study

The increasing prevalence of reverse logistics adoption in modern supply chains can be attributed to its strategic approach in optimizing resource utilization, mitigating environmental impacts, and enhancing overall supply chain efficiency (Ye et al., 2013). Reverse logistics is a methodical strategy utilized to efficiently manage the flow of goods along with materials in the opposite direction from where they originate, specifically from the end-user or consumer to the original manufacturer or producer (Huang, Rahman et al., 2015). The principal aim of supply chain management entails the proficient and streamlined coordination and integration of diverse value-enhancing processes and activities across multiple organizations that operate within a networked supply chain (Banihashemi et al., 2019). However, it is important to acknowledge that a significant proportion of companies face difficulties when endeavoring to efficiently integrate reverse logistics into their internal value chain in conjunction with forward logistics according to the works of (Hammes et al., 2020).

The recognition of the importance of reverse logistics enables businesses to proficiently oversee the movement of products in the reverse direction, encompassing the journey from the point of consumption to the point of origin (Shaik & Abdul-Kader, 2018). The implementation of a comprehensive approach guarantees the optimization of the entire supply chain, thereby facilitating businesses in effectively addressing the changing requirements of their business partners and end consumers (Piyachat, 2017). It is worth noting that the existence of reverse logistics is contingent upon the occurrence of various factors that necessitate the return of goods. These factors include seasonal inventory

fluctuations, instances of damage, product recalls, and inaccurate forecasting. As highlighted by Chuck (2018), these reasons play a significant role in driving the need for reverse logistics operations.

As per the findings of Morgan, Richey-Jr and Autry (2016), the concept of reverse logistics (RL) pertains to the organizational capacity of firms to effectively allocate their resources for the purpose of handling product returns. Although the concept of reverse logistics (RL) is not new, there is a current need to develop a collaborative structure that can efficiently facilitate the adoption of a circular economy focused on RL practices. Nevertheless, it is worth noting that there appears to be a discernible dearth of attention given to the effective handling and oversight of product returns as well as recalls within the existing literature and discourse. Hence, it is crucial for enterprises to incorporate RL guidelines into their current logistics procedures to augment their potential for generating revenue, as proposed by Fernando et al. (2017).

Reverse logistics in Europe is primarily driven by regulatory factors (Kubasakova & Kubanova, 2021). Governmental regulations in this region require businesses to actively manage the recovery alongside disposal of end-of-life products. This emphasis on compliance with regulations ensures that businesses in Europe are compelled to address the proper handling of these products as expressed by the work of Cin & Kusakcı (2017). In contrast, the motivation for reverse logistics in the United States is primarily profit-driven according to Olorunniwo & Li (2011). Businesses in the USA seek to recover value from end-of-life products whenever and wherever possible as stated by Mahaboob-Sheriff et al., (2012). This profit-oriented approach encourages businesses to explore various avenues for extracting value from these products, thereby maximizing their financial returns in the works of J-Hall et al., (2013). On the other hand, reverse logistics is still in its early stages of development in many developing countries, including India as expressed by Sharma et al., (2011).

Regionally, reverse logistics, a pivotal component of the contemporary supply chain, holds utmost significance for enterprises striving to maintain their competitive edge within the South African marketplace as stated by Meyer et al., (2017). The significance of reverse logistics within the supply chain as a whole in South Africa has witnessed a notable surge, primarily attributed to the escalating prevalence of ecommerce (Khan, Dong, Zhang & Khan, 2017). In their study, Afum, Sun & Kusi, (2019) examined the implementation of reverse logistics practices within the pharmaceutical manufacturing industry, focusing specifically on the insights gained from Ghanaian experiences.

Within the Nigerian setting, an insufficient number of studies have been undertaken to investigate the practice of reverse logistics (Amole et al., 2018). Several studies have examined the relationship between reverse logistics as well as various aspects of organizational performance (U-Dominic, Orji & Okwu, 2021). For instance, Somuyiwa and Adebayo (2014) explored the connection between reverse logistics as well as economic performance. Similarly, Oko and Nkamnebe (2013) investigated the link between reverse logistics as well as environmental sustainability. Additionally, Bilqis, Sulaimon, and Kayode (2018) focused on the relationship between reverse logistics along with waste management. These studies shed light on the interplay between reverse logistics alongside different dimensions of organizational outcomes.

The existing body of research has not established a direct correlation between the implementation of reverse logistics practices and the subsequent increase in sales of manufacturing companies as expressed in the works of Ahaiwe & Nwadiogha (2021). According to other organizations, the practice is perceived as disruptive. The underlying cause of this issue can be attributed to a deficiency in awareness and commitment among top management regarding the implementation of reverse logistics. Additionally, these leaders have failed to recognize the numerous advantages that are closely linked to the adoption of such supply chain practices in the works of Salvador (2017). The potential consequences of organizational neglect may manifest in detrimental impacts on marketing performances, primarily characterized by diminished customer patronage and an inability to effectively meet customer satisfaction.

In the context of Kenya, it is observed that contemporary customers have developed certain expectations and demands regarding the process of returning defective or unwanted products (Kariuki, 2014). They seek a seamless and expeditious experience, wherein they can easily initiate the return process and receive a refund or replacement swiftly. Moreover, customers in Kenya also prioritize cost-effectiveness, aiming for a return process that incurs minimal expenses (Mutuku & Moronge, 2020). A company that demonstrates the capability to fulfil these escalating customer demands is poised to cultivate customer loyalty, sustain their existing market share, and potentially augment it. The allocation of adequate resources and diligent monitoring and measurement of reverse logistics processes is a crucial imperative for management within a firm, as highlighted by Wambaya et al., (2018).

According to the Kenya National Bureau of Statistics (2017), a significant finding emerged regarding the operational priorities of manufacturing companies in Kenya. The study revealed that a considerable majority, specifically 65% of these firms, primarily concentrate on forward logistics activities. Consequently, they tend to neglect the significance of engaging in reverse logistics activities, thereby missing out on the potential benefits it offers in terms of enhancing both firm-level and supply chain performance in the works of Panya & Marendi (2021).

Given the increasingly stringent legislative measures and the escalating environmental concerns surrounding the optimal utilization of materials, organizations find themselves compelled to adopt reverse logistics practices (Mwanyota, 2021). According to a study conducted by the Kenya Institute for Public Policy Research and Analysis (KIPPRA) in 2014, the implementation of reverse logistics has emerged as an essential practice within the manufacturing industry. This development can be attributed to the influence of legislations and growing environmental concerns. Numerous organizations actively seek novel opportunities to develop and enhance their return systems, with the ultimate goal of attaining a competitive edge in the marketplace (Job et al., 2020).

In the local context, there have been studies conducted pertaining to the field of reverse logistics. According to Moturi (2015), it has been observed that in numerous organizations, the optimization of return management can yield substantial benefits for the overall performance, encompassing both business and logistical aspects. This is particularly relevant considering the prevailing narrow profit margins experienced by many organizations. According to current research findings, it has been observed that a significant proportion, specifically 80%, of manufacturing firms have not yet implemented reverse logistics practices.

Kenya's dairy industry is mainly driven by the private sector and Kiambu county is the hub of Dairy Farming. According to KDB, MoALF (2012), the dairy industry is the largest agricultural sub-sector and it contributes to a 4% GDP. Kiambu has a number of dairy processors, such as Brookside Dairies, Limuru Milk, Githunguri Dairies, Ndumberi Dairies, and Palmside Dairies. According to Miheso and Morton (2000), private dairies in Kiambu county have begun to buy milk directly from the smallholders. The smallholders prefer to sell their milk to the private dairy firms for various reasons including, assured permanent market, monthly lump sum making it possible for farmers to plan for their expenditure, have no limit to what a farmer can supply and quality control over their milk among others.

Dairy processing firms have embraced reverse logistics strategies in their operations. The study states that firms should set aside a considerable part of their resources for activities that consume a huge amount of total costs, which is in determining customer requirements (Peter, 2022). Reverse logistics is aimed at reducing wastes by encouraging re-use and recycling initiatives. The implementation of a reverse logistics program Kiambu Dairies serves as a strategic initiative aimed at augmenting the company's procurement performance.

The main aim of this research endeavor was to conduct a review of the dairy industry, with a particular focus on private dairy firms in Kiambu County. The private dairy firms in Kiambu County were the central point of investigation for this study. The dairy industry in Kenya is of considerable economic importance, as it plays a crucial role in the country's overall sustainability. To ensure the industry's long-term viability, it is essential to implement efficient reverse logistics practices. The principal aim of this research endeavor was to examine the potential association between reverse logistics alongside procurement performance within the context of a privately-owned dairy firms.

II. Statement of the Problem

Reverse logistics is a strategy that involves returning products to their original manufacturers or suppliers for refurbishment, recycling, or disposal after their life cycle (Kariuki, Ngugi&Mburu, 2022). This practice is increasingly important in Kenya due to increasing pressures from consumers, government agencies, and environmental organizations to reduce waste and pollution (Obiso, 2023). The implementation of reverse logistics strategies has been found to positively impact customer loyalty and service, as well as recovery of asset value faster. The successful implementation of reverse logistics requires significant financial resources, including the use of diverse equipment and specialized training (Kamanga&Osoro, 2022).

The initial costs can significantly impact an organization's profitability. The country's major manufacturing issues include high production costs and poor raw material quality (U-Dominic, Orji &Okwu, 2021). Some companies have implemented cost-cutting measures, violating international best practices (Chege, 2022). Chemical manufacturers are also required to adhere to stringent environmental regulations due to their impact on water bodies. Empirical research has examined the relationship between reverse logistics practices and organizational performance, with studies by Ndong&Ochieng (2016), Maeke (2017), Kiarie&Manyaga (2017) establishing a connection between the adoption of reverse logistics practices and overall organizational performance.

However, there is a lack of comprehensive research exploring the interconnections between reverse logistics and procurement performance in private dairy firms. The complex relationship between reverse logistics and procurement performance in private enterprises necessitates further investigation. Furthermore, research specific to the private dairy sector in Kiambu County remains scarce. This represents a critical knowledge gap, as Kiambu County is a key player in Kenya's dairy industry, contributing significantly to national milk production. Without a clear understanding of how reverse logistics affects procurement performance in this region, private dairy firms may be missing opportunities to enhance efficiency, reduce costs, and meet sustainability goals.

This lack of region-specific research creates a significant gap, which this study aims to address. By focusing on Kiambu County, the study will provide insights tailored to the unique challenges and opportunities within the local dairy sector, offering practical solutions to improve procurement performance through better reverse logistics practices. By analyzing the complex interplay between reverse logistics and procurement performance, this study aimed to address a significant gap in the current body of knowledge.

Objective of the Study

To establish the effect of reverse logistics on procurement performance of private dairy firms in Kiambu county.

Specific Objective

To examine the effect of returns management on the procurement performance of private dairy firms in Kiambu county.

Research Question

What is the effect of returns management on the procurement performance of private dairy firms in Kiambu county?

III. Literature review

Theoretical Literature Review

Transaction cost economics theory

The theory of Transaction Cost Economics (TCE) provides useful insights into the changing dynamics of managing returns within the framework of reverse logistics (Hung-Lau, & Wang, 2009). Transaction cost economics (TCE) is primarily concerned with comprehending the expenses and determinants that impact the selection between various systems of conducting transactions, which include market exchange as well as hierarchical coordination (Mugejjera, 2013). The application of Transaction Cost Economics (TCE) to returns management entails the utilization of a theoretical framework for the examination of the decision-making procedures and governance systems associated with the management of returned items (Vlachos, 2016).

TCE distinguishes between two categories of expenses, namely transaction costs and manufacturing costs (Shaharudin, Zailani & Ismail, 2014). In the realm of returns management, it is important for organizations to assess the expenses linked to the processing of returns, the determination of disposition, and the identification of suitable channels for recovery or disposal (Frankel et al., 2015). Total cost of ownership (TCO) assists in quantifying these expenses and provides guidance to organizations in selecting the most effective and economically viable returns management techniques (Paula et al., 2020). The paradigm for TCE's purchasing or manufacturing decision is applicable to the domain of returns management, wherein organizations deliberate on the choice between internal processing of returns or outsourcing them to third-party suppliers (Bernon, Rossi & Cullen, 2011).

Through a comparative analysis of the transaction costs linked to internal processing and outsourcing, organizations may make well-informed determinations on the most economically advantageous alternative (Genchev, Glenn Richey & Gabler, 2011). The theory of transaction cost economics (TCE) posits that organizations should choose for governance structures that aim to minimize the costs associated with transactions (Kumar & Kumar, 2013). Within the realm of returns management, organizations possess the ability to opt for governance structures that are in accordance with the distinct attributes of returned items, including factors such as their condition, worth, and possibility for refurbishment (Wang, Wang & Chan, 2021). The decision regarding refurbishment, collaboration with specialized partners, or outsourced disposal is influenced by TCE.

The concept of asset distinctiveness and flexibility has significant relevance in transaction choices, as emphasized by TCE (Agrawal, Singh & Murtaza, 2015). Organizations must take into account the particularity of their own reverse logistics assets, such as refurbishing facilities and sorting systems, and assess their suitability for various product

categories when managing returned items (Russo & Masorgo, 2019). The use of Total Cost of Ownership (TCO) analysis aids in evaluating the viability of investing in specialized assets vs opting for flexible alternatives. TCE recognizes the significance of asymmetry of information and uncertainty in the context of transactions (Dhakai, 2018). The handling of returns frequently includes elements of uncertainty, including issues such as the state of the goods, the demand for refurbished products, and the market value.

TCE assists organizations in designing returns management systems that aim to mitigate information asymmetry, promote transparency, and alleviate uncertainty by means of efficient communication and cooperation (Odhiambo, 2014). The significance of well-defined contracts in governing transactions is underscored by the concept of Transaction Cost Economics (TCE). Contracts within the realm of returns management have the capacity to delineate the specific terms and circumstances governing the process of returns (Ellahi et al., 2022). These contractual agreements encompass several aspects, such as the allocation of obligations pertaining to transportation, inspection, refurbishing, and disposal. Well-defined contractual agreements serve to reduce possible disputes and establish shared interests among stakeholders within the supply chain (Mwanyota, Maalu & Njihia, 2017). The concept of vertical integration plus modularization is examined by TCE in relation to transaction management, with a focus on the associated advantages.

Organizations have the ability to incorporate these principles into their returns management strategies by vertically integrating specific components of the reverse logistics procedure, such as refurbishing, while simultaneously outsourcing other portions (Narayana, Elias & Pati, 2014). The use of modularized returns management methods allows for the flexible adjustment to different product attributes and situations. This theory places emphasis on the expenses linked to transactions and exchanges among economic organizations (Kumar, 2017). The determination of whether to approve and handle returns in the context of returns management necessitates the evaluation of transaction costs, encompassing various expenditures such as transportation, inspection, refurbishing, and restocking. Enhancing comprehension and mitigating these expenses via effective returns management solutions may result in enhanced decision-making and heightened supply chain performance.

Empirical Review of Literature

Returns Management and Performance

Returns management refers to the systematic approach employed in the handling and processing of items that have been returned by consumers (Ambilkar et al., 2022). The process encompasses several actions, such as the reception, examination, and handling of returned items, as well as the subsequent disposal or resale of those things. Reverse logistics refers to the systematic management of the movement of commodities, materials, along with data from the point of consuming to the site of origin (Karlsson et al., 2023). The scope of these actions encompasses product returns, reuse and recycling, as well as disposal. The use of efficient returns management strategies can yield several advantages for enterprises.

The process of returns can incur significant expenses, so implementing efficient returns management practices can aid in mitigating these costs (Starostka-Patyk, 2021). By implementing efficient and effective return management strategies, organizations have the potential to enhance customer satisfaction. Returns have the potential to generate money, as things that are returned can be resold or recycled as stated by Dutta et al., (2020). Businesses have the potential to enhance their environmental performance via the use of waste reduction strategies. The administration of returns has inherent complexities due to the involvement of several processes and parties (Paula et al., 2020). The management of returned items can provide a challenge due to their diverse origins and the need to effectively handle their flow.

The inspection of returned items is necessary in order to assess their condition and ascertain their worth (Nanayakkara et al., 2022). This procedure may be characterized as one that requires a significant investment of time and effort. The appropriate disposal of unsellable merchandise that cannot be resold is vital to ensure environmental sustainability (Wanganoo, 2020). This technique can incur significant expenses. There exist several ways that enterprises may employ to enhance their returns management. It is important for businesses to have explicit rules and processes pertaining to the management of return transactions (Usama & Ramish, 2020). These policies ought to possess a high level of comprehensibility and adherence. The utilization of technology enables the automation of certain aspects of returns management, including the monitoring of returned items' movement and the facilitation of return processing.

Business enterprises have the opportunity to engage in collaborative efforts with external partners in order to facilitate the process of returns management as expressed by Wang, (2021). This has the potential to save expenses and enhance operational effectiveness. It is important for businesses to provide clients with comprehensive information regarding

their returns policies (Mutuku&Moronge, 2020). This approach has the potential to decrease the quantity of superfluous returns. The management of returns, which is a vital component of reverse logistics, has received growing recognition owing to its influence on the efficiency of supply chains, customer satisfaction, as well as environmental sustainability (Frei, Jack & Brown, 2020). Existing literature review and explores the many aspects of returns management, analyzing its importance, difficulties, approaches, and impact on enterprises and sustainability.

Returns management is the systematic process of organizing, processing, and disposing of returned items (Frei, Jack & Brown, 2020). It involves tasks such as categorization, restoration, repackaging, recycling, and proper disposal. Efficient returns management can boost consumer loyalty, improve brand image, and reduce costs, minimize waste, and enhance inventory management as expressed by Maheswariet al., (2020). Product recovery and resale are often seen as means to achieve sustainability in companies, yielding economic advantages. Product recovery encompasses the activities of reusing and recycling, while recall management integrates both (Agrawal & Singh, 2020). Materials recovery aims to reclaim the economic worth of materials and improve solid waste management. The primary aim of recovery is to restore the economic and ecological value of goods and materials to the greatest extent possible, facilitating the retrieval of value that might otherwise be forfeited (Singh & Asthana, 2020).

Optimal disposition decisions require striking a delicate balance between refurbishing expenses and the potential monetary return from resale (Aćimović et al., 2020). Reintegration of returned items into the supply chain requires compliance with regulatory and legal frameworks, ensuring product safety, labeling, and quality requirements. Various tactics are implemented by organizations to optimize returns management within reverse logistics (Abbas &Farooquie, 2020). Reverse logistics systems are strategically developed to direct the flow of returned items towards designated processing centers. Efficient sorting procedures use automation and innovative technology to precisely classify items. Data analytics is crucial for providing valuable insights about return patterns, enabling organizations to accurately predict returns and allocate resources efficiently (Chaves et al., 2020). Collaborative alliances among manufacturers, merchants, and third-party logistics providers facilitate improved communication and coordination, resulting in expedited and precise returns processing.

Returns management plays a significant role in promoting environmental sustainability. The appropriate management and disposal of returned items can effectively mitigate waste generation and minimize resource use (Wilson &Goffnett, 2022). The field of returns management in reverse logistics has seen significant transformation due to advancements in technology. Continuous research on returns management is essential for achieving more sustainable and effective supply chain practices (Muzivi&Sunmola, 2021). By incorporating the principles of reducing, reusing, and recycling, organizations can enhance the effectiveness of their returns management programs. Reusing optimizes asset value through efficient refurbishment programs and using both conventional and innovative secondary channels for disposition (Wan, Li, Chen & Lei, 2020). Recycling prioritizes environmental sustainability and material recovery, but waste generated by product return programs should not be discouraged.

IV. Conceptual Framework

According to Imenda (2014), a conceptual framework refers to a complete collection of core concepts and guiding principles that are obtained from relevant fields of investigation. This framework is utilized to structure and organize a following exposition. The present study employed a conceptual framework which illustrated the relationship between independent factors and the dependent variable. The independent factors examined in the study include product repackaging, returns handling, waste management, and recycling. The primary area of inquiry in this study was the evaluation of procurement performance, which were examined as the variable that is dependent. The diagram presented in Figure 2.1 illustrates a conceptual representation of the relationship connecting the independent and dependent variables

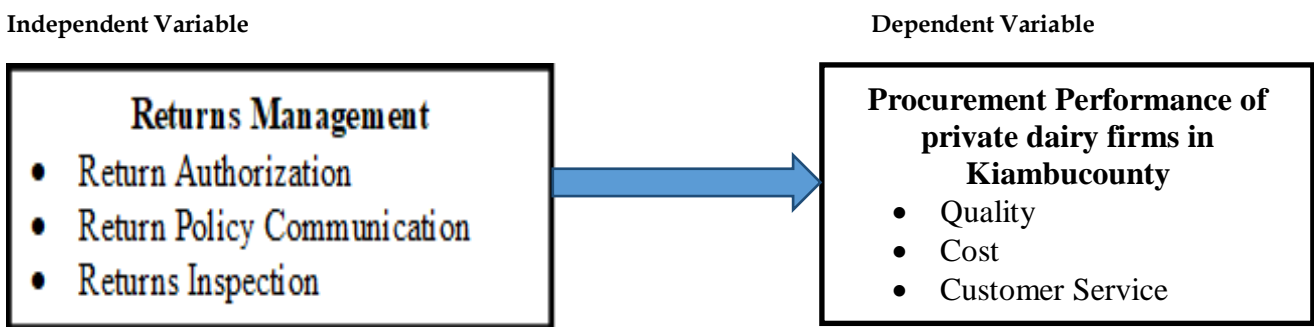


Figure 2.1 Conceptual Framework

Source: Researcher 2023

V. Research methodology

The study employed a descriptive survey design. The selection of the design for this study is crucial as it serves as the foundation upon which the study is structured. It establishes the framework within which all facets of the research are interconnected, thereby contributing to the overall significance of the study (Myers et al., 2013). . The target population was 450 employees from the 27 dairy firms in Kiambu County. The respondents included head of procurement, procurement officers, employees in management and employees in finance, sales and marketing and logistics department since they have accurate information on the topic under study.

According to the Kenya dairy board there are 27 private dairy firms in Kiambu county. The study targeted 9 firms which were picked randomly since all the firms held similar characteristics. Random sampling helps ensure that the sample represents the broader population. By giving each member of the population an equal chance of being selected, the results of the study are more likely to reflect the characteristics of the entire population, thus increasing external validity (Mills & Gay, 2019). The study targeted 9 managers, 12 staff from the procurement department, 8 staff from finance, 11 staff from sales and marketing, and 10 staff from logistics department from each of the 9 Private Dairy Firms in Kiambu County.

Yamane formula was used to determine the sample size. Its acceptance is due to its effectiveness in producing statistically significant sample sizes while considering the trade-offs between precision, confidence level, and population variability (Bartlett, Kotrlik, & Higgins, 2001).

The formula is $n = \frac{N}{1 + N(e)^2}$

Where n=sample size,

N=population size

e=error term (0.05)

Hence, $n = \frac{450}{1 + 450 (.05)^2} = 212$

The sample size of the study was 212 respondents.

The study utilized questionnaires with both open ended and close ended questions to collect data. The questionnaire serves as the principal tool for gathering primary data in order to acquire information. According to Couper (2011), a questionnaire is a tool utilized for measurement purposes, wherein individuals are presented with a series of questions or statements to which they are expected to respond. The research instrument’s validity and reliability was tested through a pilot test. Cook and Beckman (2006), noted that pilot testing aids to test instruments of data collection reliability. For data to be accurate as well as true, it must be reliable. Streiner *et al.*, (2015), states that reliability is the measurement of consistency and is evaluated frequently by use of the split-half test reliability technique. They stated that a reliability coefficient of 0.70 or above denotes that there is a high degree of reliability of the data.

The data underwent editing, coding, and entry processes using SPSS version 29.0 in order to facilitate subsequent statistical analysis. The data subsequently underwent an analysis applying both descriptive and inferential statistics in order to generate measures of central tendency, specifically means, as well as measures of dispersion, such as standard deviation. In the realm of inferential statistics, the utilization of Pearsons correlation coefficient along with OLS multiple regression technique were suitable approaches for elucidating the predictive capacity of the independent variables. To determine the significance level of the model ANOVA was adopted. OLS multiple regression is a model of statistical analysis that use many explanatory factors in order to forecast the result of a response variable (Burton, 2021).

VI. Research findings and discussion

Questionnaire response rate is as outlined in figure below:

Table 4.1: Response Rate

Response	Frequency	Percentage
Actual Response	181	85.5%
Non-Response	31	14.5%
Total	212	100%

Descriptive Statistics of Return Management

Respondents were asked to indicate the extent to which they agreed with the following statements relating to return management and procurement performance. The results are presented in Table 4.1 below:

STATEMENTS	MEAN	STD. DEV.
Return Authorization	4.3	2.5
Return authorization process is clearly communicated to our customers, facilitating ease of returns.	4.3	2.4
Our firm ensures proper tracking and handling of returned items.	4.2	2.6
Our firm identifies the reasons for returns and thus improving product quality.	4.3	2.4
Return Policy	4.2	2.6
Our firm’s return policy is clearly communicated to customers through multiple channels.	4.1	2.1
Our firm’s return policy strikes a balance between customer satisfaction and operational efficiency.	4.3	2.4
Our firm’s return policy adequately addresses the handling of defective or damaged items.	4.2	1.9
Returns Reception and Inspection	4.2	2.3
Returned items are visually inspected for damage or wear during reception in our firm.	4.2	2.6
The inspection process ensures that returned items match the original condition of our products.	4.2	2.6
Returns reception process in our firm includes thorough verification of return authorization.	4.1	1.9

From the findings in Table 4.1, the respondents were in agreement that return authorization process is clearly communicated to the customers, facilitating ease of returns as shown by a mean of 4.3, the firm ensures proper tracking and handling of returned items as shown by a mean of 4.2, firm identifies the reasons for returns and thus improving product quality as shown by a mean of 4.3. On return policy, firm’s return policy is clearly communicated to customers through multiple channels as shown by a mean of 4.1, the firm’s return policy strikes a balance between customer satisfaction and operational efficiency as shown by a mean of 4.3 while firm’s return policy adequately addresses the handling of defective or damaged items as shown by a mean of 4.2. On returns reception and inspection, returned items are visually inspected for damage or wear during reception in the firm as shown by a mean of 4.2, the inspection process ensures that returned items match the original condition of the products as shown by a mean of 4.2 while returns reception process in the firm includes thorough verification of return authorization as shown by the mean of 4.1. These findings relate with Kiarie & Manyaga (2017) who evaluated connection between the adoption of reverse logistics practices and overall organizational performance in state corporations and established that waste management performance have a greater use of recyclable and reusable materials.

Descriptive Analysis of Procurement Performance

This section presented the findings of descriptive statistics of procurement performance. The procurement performance was indicated by quality, cost and customer service as shown in table 4.2 below:

STATEMENTS	MEAN	STD. DEV.
Quality	2.6	2.4
Our firm consistently improves the overall quality of returned products.	2.7	2.4
Our firm captures insights on product defects, leading to better quality control measures.	2.5	2.4

Our firm has reduced the number of defective products reaching our inventory.	2.6	2.3
Cost	2.6	2.5
Our firm has reduced the overall cost of managing returned products and materials.	2.8	2.5
Our firm continuously identifies opportunities for cost reduction through efficient product reintegration into inventory.	2.6	2.3
Our firm assesses the residual value of returned items through reverse logistics to enhance to cost control.	2.5	1.9
Customer Service	2.6	2.5
Our firm has improved customer service by offering hassle-free return processes.	2.6	2.9
Our firm resolves customer complaints related to returns, fostering positive interactions.	2.8	2.5
We utilize a customer-centric approach in our firm’s procurement efforts.	2.5	1.9

Correlation Analysis

The degree of relationship between variables was analyzed using correlation analysis. This method determines both the significance and the degree of association of the variables. The results of the correlation analysis are summarized in Table 4.12 below.

Table 4.3 Summary of Pearson’s Correlations

	<i>Procurement Performance</i>	<i>Returns Management</i>
<i>Procurement Performance</i>	1	
<i>Returns Management</i>	0.9234	1

The outcome in Table 4.3 suggests a strong positive correlation (0.9234) between procurement performance and returns management. This indicates a close relationship, where better returns management practices are associated with better procurement performance.

Regression Analysis

The OLS multiple regression model was used to determine the variation in the dependent variable that can be caused by the changes in the independent variable. In this study, the variation of procurement performance brought about by the changes in product repackaging, returns management, waste management and recycling was analyzed. The results were presented in Table 4.4.

Table 4.4 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error
1	.811 ^a	0.7526	0.7453	0.03226

From the findings in Table 4.4, the adjusted R^2 value was 0.753 which implies that 75.3% variations in procurement performance may be attributed to variations in returns management. The remaining 24.7% imply that there exist other procurement practices that can explain the variations in procurement performance that were not discussed in this study. The results also suggest that the variables that were being investigated were strongly and positively related as shown by correlation coefficient value (R) of 0.811. The findings concur with Kiarie and Manyaga (2017) who found that reverse logistics practices and procurement performance is state corporations were significantly and positively correlated.

Analysis of variance

Table 4.5 ANOVA

	df	SS	MS	F	Significance F
Regression	5	6284.52	1256.904	15.058	.008 ^b
Residual	7	1.82069E-28	2.60098E-29		
Total	12	6284.52			

From the analysis in Table 4.5, the p-value was 0.008 which is less than the selected level of significance 0.05 (i.e. $0.008 < 0.05$). This hence implies that the model was significant. The value of F calculated was 15.058 while the value of f critical obtained from the f critical tables was 2.423. Since the value of critical was less than the f calculated value ($2.423 < 15.058$) it was concluded that returns management, significantly influence procurement performance in Private Dairy firms in Kiambu County.

Beta coefficients of the study variable

Beta values were fitted in the regression equation model to $Y = \beta_0 + \beta_1 x_1 + \varepsilon$ to form the regression equation used in predicting procurement performance as a result of changes in product repackaging, returns management, waste management and recycling. The results were as presented in Table 4.11.

Table 4.6 Coefficients

	Coefficients	Standard Error	t Stat	P-value
Procurement performance	1.012	2.86527E-14	9.6326E+15	3.43E-10
Returns management	0.93380673	9.3568E-17	-0.997998227	0.003515211

From Table 4.6, the fitted regression equation was; $y = 1.012 + 0.9338x_1$ (Y=procurement performance x_1 = returns management). The equation above revealed that returns management variable is held to a constant zero, procurement performance will be at 1.012. Returns management was statistically significant to procurement performance ($\beta_2 = 0.9338$, $P = 0.00746$). This implies that returns management had a significant positive link with procurement performance in the private dairy firms in Kenya. This implies that a unit increase in returns management will positively affect procurement performance in private dairy firms in Kenya. These findings concur with Luisa (2022) who concluded that integrated waste management into procurement processes is essential in improving the overall procurement performance.

Discussion of the Study Findings

Effect of returns management on procurement performance of private dairy firms in Kiambu County

Findings indicated that the majority of the respondents worked for less than five years (55%), reflecting industry growth. The study's objectives focused on how returns management impacted procurement performance. The analysis revealed that the practice is reliable with significant effects on procurement. The overall regression analysis revealed a strong positive relationship between return management and procurement performance, explaining 75.3% of the variation in performance outcomes. Correlation analysis revealed strong positive correlations between procurement performance and returns management (0.9234).

VII. Summary of findings

The aim of this study was to establish the impact of Returns management on enhancing procurement performance of private dairy firms in Kiambu County. The compiled knowledge from the study is derived from the responses of 181 participants, from a total of 212, in response to the set questionnaires, yielding an 85.5%. At 85.5% percent response rate, the following findings were deduced. About half of the respondents worked in middle management, and 51% had a bachelor's degree or higher education. This demographic profile of the respondents means that they have been in a good position to give out a strong picture as to how their organizations undertake procurement functions.

The study was based on Transaction Cost Economic theory which assists organizations in designing returns management systems that aim to mitigate information asymmetry, promote transparency, and alleviate uncertainty by means of efficient communication and cooperation (Odhiambo, 2014). This research established that private label repackaging especially in the aspect of new package designs and on the adoption of sustainable packaging improved

procurement performance. Notably, majority of the respondents pointed to the fact that the implementation of environmental friendly packaging in the reversed logistics activities fairly helped in minimizing carbon footprints.

Conclusions of the Study

The findings of this study underscore the critical role of returns management in enhancing procurement performance in private dairy firms. By implementing clear return authorization processes, conducting thorough inspections, and leveraging advanced tracking systems, firms can improve product quality, reduce operational costs, and enhance customer satisfaction. This research contributes to the understanding of how reverse logistics can be integrated into procurement strategies to drive efficiency and sustainability in the dairy industry. The study concluded that returns management should be embraced since it influences procurement performance. Clear communication of the return authorization process, proper tracking of the returns and return policy was proven to enhance customer satisfaction, quality of products and volume of operations in the firms analyzed.

Recommendations

Based on the conclusions, the study recommends that it is essential for dairy firms to establish clear and efficient returns management systems. Firms should develop and communicate return policies that are customer-friendly and easy to understand. Additionally, investing in technology for tracking returned items and analyzing return data can help identify trends, improve inventory management, and enhance overall procurement performance.

Suggestions for Further Studies

The current study focused on the effects of reverse logistics on procurement performance of private dairy firms. Future research could look into the role of technology in enhancing reverse logistics practices in the dairy sector. This research could explore how the integration of technology, such as inventory management systems, data analytics, and automation, influences the effectiveness of reverse logistics practices such as product repackaging, returns management, waste management, and recycling in private dairy firms.

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