EFFECT OF RE-PACKAGING ON SUPPLY CHAIN PERFORMANCE OF MOTOR VEHICLE ASSEMBLERS IN KENYA

1Lumwaji A. Eugene, 2Dr. Atieno Margaret, 3Dr. Nurwin Fozia

School of Business and Economics
Kaimosi Friends University

Abstract- Kenya motor vehicle assemblers face several challenges following liberalization of the economy in the last decade of the 20th century. Domestic industries have been suddenly exposed to competition from imported products. On one hand there are prospects for faster development of manufacturing capabilities, but on the other, imports provide consumers with affordable alternatives. Despite adoption of re-packaging to gain a competitive edge, the performance of the motor vehicle assembly in Kenya is still on a downward trend. The aim of the study was the effect of re-packaging and to establish the effect of organizational policies on the relationship between re-packaging and supply chain performance of the motor vehicle assemblers in Kenya. The study was anchored on Theory of Constraints. The study used descriptive survey research design. The target population was 32 respondents from 8 firms in the motor vehicle assembly in Kenya comprising of staff from; logistics departments, sales departments, stores departments and factory departments. Census sample was adopted. Primary data was collected using structured questionnaires and secondary data through downloaded published audited financial statements. Pilot test was done on Associated Vehicle Assemblers. The study used Cronbach’s alpha to measure degree of reliability. The validity was tested through expert analysis and factor analysis. Both descriptive and inferential statistics were used to analyze the data. Descriptive statistics included frequencies and percentage. Inferential statistics consisted of multiple linear regression analysis and Correlation analysis. Findings were presented in tables. Regression analysis indicated that re-packaging had a significant effect on supply chain performance with a coefficient of 2.621 without moderating effect of organizational policies and 2.813 with moderating effect organizational policies. The study depicted repackaging explains 38.6% and 41.3% variation in supply chain performance without and with moderating effect of organizational performance respectively. The empirical results of this study would assist policy makers including the Kenya association of manufacturers to identify challenges that still affect the motor vehicle assemblers particularly in the area of reverse logistics. Therefore, the study concluded that re-packing had a positive and significant effect on supply chain performance. The study recommended that motor vehicle assemblers in Kenya should provide refund to products that are retuned due to wrong packaging.

Background of the study
The contemporary and ever-evolving business environment has given rise to a situation of intense competition among organizations and their interconnected networks of suppliers and distributors. As a result, there is an increasing inclination among firms to enhance the efficiency and efficacy of their supply chain activities. The supply chain is frequently characterized as a complex system of interrelated enterprises that cooperate to enable the efficient flow of commodities to the marketplace. Within this particular context, the term “supply chain performance” pertains to the assessment of a company’s supply chain efficiency and effectiveness through the utilization of specified criteria. Hence, it is imperative for enterprises to maintain a continuous oversight, control, and evaluation of their daily operations to attain the desired level of performance from their supply chains. The assessment of supply chain performance poses a significant difficulty as there is no single metric that comprehensively represents the holistic performance of a company's supply network. Hence, the assessment of supply chain performance is optimally carried out by employing a complete framework that incorporates multiple aspects, such as costs, customer responsiveness, flexibility, profits, competitiveness, lead time, and agility (Kader & Nadeem, 2021). The motor vehicle assembly supply chain is widely acknowledged for its high level of complexity, rendering it one of the most sophisticated supply chains on a global scale. The success of this sector relies heavily on the cooperation of several external entities, who jointly contribute to the timely supply of multiple components necessary for the completion of manufacturing activities, thereby guaranteeing the manufacture of high-quality items. Automotive supply chain firms are continuously incorporating innovative technical improvements, which in turn allows them to acquire access to vast inventory. Moreover, leveraging an extensive worldwide logistics infrastructure, these organizations possess the capacity to efficiently transfer goods to any destination throughout the planet. The issue of visibility presents
a notable obstacle for automotive supply chains, similar to that faced by numerous other industries. Typically, an automobile comprises over 30,000 discrete components that are intricately engineered to facilitate the smooth integration of supply chains, hence ensuring a uniform manufacturing process. The omission of any element pertaining to the manufacturing process might result in adverse outcomes for the procurement process, such as shortages in inventory and significant delays. The issue of poor knowledge among all stakeholders in the supply chain can be efficiently addressed through a comprehensive assessment of communication, optimization of operations, and usage of predictive analytics (Omonash, 2022).

The motor vehicle assembly process necessitates the implementation of efficient inventory management practices to maximize profitability by avoiding excessive stock of underutilized raw materials. To tackle the issue of high inventory levels, automobile companies may choose to engage third-party logistics providers who utilize software systems to track measurable data and offer valuable insights into product demand. The use of the just-in-time production technique facilitates efficient inventory management and enables firms to make well-informed decisions pertaining to daily stock needs. The automotive manufacturing industry has progressively placed greater emphasis on an environmental agenda.

It is crucial that both manufacturers and third-party partners conform to the expectation and requirement of constructing automobiles in an environmentally conscious manner. Unfortunately, the advent of globalization has facilitated the cross-border transportation of goods, leading to divergent ideas on sustainability across different countries. Consequently, this has resulted in issues within the realm of supply chain management (Kader & Nadeem, 2021).

The process of assembling motor vehicles holds immense importance in the global economy, serving as a pivotal driver of macroeconomic growth, promoting stability, and facilitating technological advancements in both industrialized and emerging countries. This industry also exerts significant influence on numerous interconnected businesses. The automotive industry serves as a fundamental basis for various business sectors, incorporating both upstream and downstream operations, along with associated enterprises. This dynamic gives rise to a multiplier effect that impacts both growth and economic development. It was projected that the global direct employment in the business will reach roughly fourteen million workers in 2022 (Halonen & Liukkunen, 2021).

The manufacturing of motor vehicles typically plays a significant role in generating government revenue, fostering economic growth, facilitating the development of human capital, and promoting research and development (R&D) as well as innovation. Therefore, the development of a strong automotive industry has the capacity to create beneficial spillover effects in the fields of agriculture and construction equipment production, as well as other sectors involved in manufacturing specialized equipment. The worldwide automotive consumer market is experiencing a growing level of maturity, accompanied by a matching increase in market competition. The execution of an automotive recall has the capacity to augment client satisfaction, thereby facilitating the enhancement of the product’s recyclability and the mitigation of environmental pollution. The automotive industry in this area encounters significant competition from the influx of imported used vehicles. Hence, it is imperative to employ innovative approaches in order to thrive under intense competition (Houshmand, Akbaripour, & Moghaddam, 2021).

Reverse logistics, commonly abbreviated as RL, encompasses a wide array of operational endeavors pertaining to the reusing and recycling of various products and materials. The concept of supply chain management entails the purposeful coordination and oversight of the structured processes involved in planning, executing, and monitoring the smooth and economical movement of raw materials, intermediate inventory, finished products, and associated information from the point of consumption to the point of origin. The main objective is to ensure appropriate disposal. Reverse logistics is a structured process that involves the movement of things from their usual destination in order to recover value or ensure proper disposal. Reverse logistics (RL) has become a prominent issue that has attracted the interest of numerous organizations. The increased attention to this matter can be ascribed to the growing number of products being returned. The surge in reverse logistics can be attributed to several key factors (Aryee & Adake, 2023).

Firstly, the depletion of natural resources has necessitated a shift towards more sustainable practices, prompting businesses to adopt reverse logistics as a means of reducing waste and conserving resources. Additionally, the implementation of environmentally friendly legislation has placed greater emphasis on the importance of reverse flow, encouraging companies to incorporate reverse logistics into their operations. Furthermore, there is a growing recognition of the value that can be derived from reverse logistics, both in terms of cost savings and environmental benefits. This has led businesses to actively promote a positive e-business image by showcasing their commitment to sustainable practices through the adoption of reverse logistics. Moreover, reverse logistics plays a crucial role in cultivating customer relationships, as it allows companies to effectively address product returns, repairs, and recycling, thereby enhancing customer satisfaction and loyalty. Lastly, the utilization of information systems has facilitated the efficient management of reverse logistics processes, enabling businesses to streamline operations and optimize resource allocation (Aryee & Adake, 2023).

The establishment of an efficient reverse supply chain is widely acknowledged to offer numerous immediate benefits, including improved customer satisfaction, reduced resource investment needs, and decreased costs related to storage and delivery. The process of retrieving products with the intention of engaging in remanufacturing, repair, reconfiguration, and recycling holds significant potential for generating profitable economic opportunities. Enterprises
that effectively leverage economies of scale have a higher likelihood of achieving success, given that they possess the capability to efficiently and rapidly handle product returns for necessary interventions. The concept of reverse logistics comprises multiple facets that contribute to competitive strategy, profit production, customer satisfaction, and environmental and health preservation (Wambaya Namusonge & Sakwa, 2018). The implementation of an effective and standardized reverse logistics process has the ability to provide a firm with a substantial competitive advantage and the opportunity to expand its market share within the sector. This advantage is derived from the firm's capacity to efficiently fulfill client demands and outperform its peers and competitors in terms of the quality of its processes. Within the context of present-day consumer culture, there is a widespread anticipation among individuals who engage in commercial transactions for a streamlined and efficient procedure for returning faulty merchandise. This expectation is complemented by the rapid issuance of refunds or the timely fulfillment of correct orders, all while striving to minimize associated expenses. A company that effectively meets the increasing demands of its clients is likely to establish customer loyalty and retention, which could perhaps result in a growth of its market share. Reverse logistics is a methodical process that involves the recovery of value from returned items and their timely reintegration into the market (Tian, Liu, Zhang, & Yang, 2019).

The prominence of reverse logistics has become a significant concern in recent years, mostly attributed to the confluence of multiple factors. On one hand, there is a valid concern over environmental challenges and the endeavor to achieve sustainable development. In the present situation, a multitude of legislative measures have been implemented in several countries, with Germany and the Netherlands emerging as prospective frontrunners. Germany has enacted legislation on the repatriation of packaging materials and electrical devices, whilst the Netherlands has created rigorous regulations pertaining to motor vehicles. The impact has been swiftly propagated over various locations, encompassing Europe, the United States, and Japan, among other nations. On the other hand, the importance of reverse logistics difficulties has been heightened due to economic concerns (Letunovska, Pimonenko & Kwilinski, 2023). Companies are increasingly inclined to prioritize operational efficiency as a response to the shrinking profit margins that arise from intensified market rivalry. The motivation behind the focus on efficiency arises from the possibility of cost reduction in terms of material procurement expenses, as well as labor and overhead costs. In contemporary times, there has been a notable increase in attention and intellectual engagement with the concept of reverse logistics, both within business settings and academic discourse. The scope of this profession has experienced considerable growth, today spanning a wide range of disciplines including recycling, remanufacturing, information technology, warehousing, operations, and environmental sustainability, among others (Narayana, Agdas & Rose, 2020).

By employing the practice of utilizing returned products, organizations have the opportunity to recover constituent materials that are no longer need to be procured in the same quantities, or to obtain additional value. Logistics management have recognized the possibility of improving operational effectiveness and cost reduction by leveraging the reverse channel. As a result, organizations have started to place greater importance on this particular component and are employing reverse logistics as a strategy to distinguish themselves within the market and achieve financial gains. The use of differentiation strategies holds the potential to facilitate organizations in maintaining or gaining a greater market share, augmenting their revenue, and potentially reducing transportation and inventory costs through the optimization of their supply chain processes (Houshmand, Akbaripour, & Moghaddam, 2021)

At the national level, the government has implemented a range of regulatory measures aimed at promoting sustainability in corporate activities and fostering environmentally-friendly business operations. In contemporary societies across the globe, it is commonplace to find legislative measures, commonly referred to as Acts of Parliament, dedicated to the regulation and oversight of environmental management. Furthermore, the existence of dedicated governmental or non-governmental entities specifically tasked with addressing environmental concerns is a prevailing characteristic in nearly all nations. At various levels within businesses, there is a tendency to adopt worldwide and national standards and policies in order to ensure sustainability and environmental conservation. Additionally, many organizations have also formulated their own internal standards and plans to address these concerns. Moreover, in the contemporary period, the performance of supply chains has emerged as a potent instrument inside the industrial sectors, facilitating the production of creative items. The ability to manage reverse logistics is a crucial competency for any enterprise that conducts operations inside the contemporary global market (Mwayoto, 2021)

In the year 2022, the Kenya Motor vehicle sector documented a cumulative figure of 12,981 units of newly sold automobiles. Concurrently, the overall count of newly registered motor vehicles in that same year amounted to 109,751. The proportion of new car sales in relation to new registrations was found to be about 12%, while the remaining 88% comprised imported old vehicles. Additional examination reveals that a mere 53% of newly purchased vehicles were domestically built, while the remaining 47% were imported. Consequently, the registration of both new and used vehicles accounted for more than 90% of total new vehicle registrations. The practice of importing secondhand automobiles restricts the potential for new car production. Based on regional analysis, it has been determined that the East African Community region experiences an annual foreign exchange loss over US$ 2.01 billion due to the importation of motor vehicles (Kenya Association of Manufacturers, 2022).
Statement of the Problem
The imperative to enhance organizational efficiency, minimize waste, address supply chain inefficiencies, and attain a competitive edge has prompted motor vehicle assembly companies in Kenya to increasingly contemplate the adoption of repackaging as a strategic approach. The process of motor vehicle assembly serves as a facilitator for accomplishment, hence possessing the capacity to provide additional employment opportunities and foster economic expansion, provided that inefficiencies within the supply chain are mitigated (Rahoma, Makhamch, Eneizan, & Alhamzah, 2018). Despite the implementation of adoption or repackaging strategies aimed at achieving a competitive advantage, the motor vehicle assembly sector in Kenya continues to encounter several obstacles pertaining to production, efficiency, sales volume, market share, and logistical issues such as escalated packing, transportation, maintenance, and warehousing expenses (Kenya Association of Manufacturers, 2022). In the year 2022, the Kenyan motor vehicle sector witnessed a mere 12% of new car sales, while the remaining 88% comprised imported used automobiles. Moreover, a mere 53% of newly purchased vehicles were manufactured domestically, whereas the remaining 47% were imported. The automotive industry experienced a notable decline of 51% in its export figures during the year 2021 (Kenya Association of Manufacturers, 2022). This shows a decline in assembling of new vehicles in Kenya. The studies done on repackaging have focused on other sectors such as building and construction and the retail industry and not the automotive industry. They have also ignored the moderating effect of organizational policies on the relationship between repackaging and supply chain performance. Therefore, the need to establish the effect of repackaging on supply chain performance of motor vehicle assemblers in Kenya.

Objectives of the Study
To evaluate the effect of repackaging on supply chain performance of motor vehicle assemblers in Kenya.

Research Hypothesis
H0₁: Repackaging has no significant effect on Supply Chain Performance of motor vehicle assemblers in Kenya.

The Theory of Constraints (TOC)
The idea in question was proposed by Cox, Goldratt, and Eliyahu in 1986. The theory postulates that the overall effectiveness of the supply chain is predominantly influenced by the robustness of its individual links. To optimize the advantages derived from the supply chain, it is imperative for enterprises to actively engage in the identification and analysis of interconnected links that may give rise to vulnerabilities within the system. These vulnerabilities might hinder the achievement of enhanced performance across the whole network. Enhanced operational performance can be attained by the implementation of this theoretical framework into supply chain operations. This approach aims to alleviate restrictions within the system that hinder the realization of organizational objectives, hence mitigating the occurrence of variations (Schlerier & Cox, 2016).

The Theory of Constraints (TOC) is a significant methodology that seeks to enhance processes through the identification of the system constraint or bottleneck. According to the idea, it is posited that every network is subject to a constraint that impedes the achievement of organizational objectives. This limitation additionally governs the quantity of output that the organization is capable of generating. One approach to ensuring optimal network performance is to either eliminate system limits totally or make incremental enhancements to these constraints in order to improve efficiency. In the present context, the term "constraints" is employed to denote any variable that imposes limitations on an organization's ability to fully realize its objectives without obstruction. The inability to adequately manage the system restriction might lead to many detrimental impacts. This phenomenon is anticipated to result in a decline in operational efficiency, a rise in expenses, a decrease in profitability, and a loss of market share (Bonatsos, 2019).

When restrictions are promptly identified and effectively controlled, they have the potential to result in substantial improvement and facilitate ongoing progress. Nevertheless, if disregarded, the constraint has the potential to remain inactive, resulting in a reduction of the system's capacity. The Theory of Constraints (TOC) redirects the attention of senior executives from solely maximizing the use of individual resources, capital assets, and functions to enhancing the overall throughput created by the entire system. The basic stages of TOC are aimed at identifying and removing barriers that impede each aspect of the process from working together as an integrated whole. The efficacy and extent to which the supply chain network attains its objectives are contingent upon the robustness of the links within the supply chain. By strategically utilizing this limitation, organizations can effectively attain their financial objectives and provide added value to their clientele, hence minimizing the time required for order fulfillment and averting instances of inventory depletion (Bor, 2020).

The TOC International Certification Organization posits that there exist three fundamental assumptions underpinning this theory. The initial assumption posits that every issue within the network may be elucidated by a causal relationship. The ultimate success of the network can be evaluated by proficiently recognizing and controlling all the sources of variations that manifest within the system. This encompasses the inventory of goods maintained by companies, as well as the expenses associated with the operational operations necessary to sustain the internal organizational setup. The third assumption presented by the theory asserts that the organization must possess multiple underlying traits in order to successfully attain its significant ambitions. Hence, it is imperative for supply chain managers to possess a
comprehensive and discerning comprehension of the essential characteristics that are necessary to achieve corporate objectives (Matos, Junior, & Pacheco, 2021).

The Theory of Constraints holds relevance in the context of this study since it offers the automobile sector a validated approach to enhance their profitability and market share. The achievement of this objective can be facilitated by the identification of restrictions within the supply chain network and the subsequent development of strategies and procedures to mitigate or eliminate these constraints. By conducting a comprehensive analysis of throughput in processing plants, it is possible to effectively mitigate the constraint of intense rivalry, which is a significant challenge within the industry. This theory demonstrates a high level of efficacy and can serve as a valuable tool for establishing the prioritization of goals inside a corporation, taking into account specific internal and external elements.

Conceptual Framework
This section shows the constructs of repackaging and supply chain performance as shown in Figure 1.1.

Empirical Literature Review
Mbovu and Mburu (2018) conducted research with the objective of investigating the influence of reverse logistics strategies on the financial performance of manufacturing firms in Kenya. The study’s participant pool comprised 240 individuals employed in the fields of logistics, procurement, and finance at East Africa Breweries Limited. The survey instrument utilized by the researchers encompassed a blend of open-ended and closed-ended questions, enabling the collection of primary data from the participants. The researchers obtained supplementary data from several published sources, such as journals, periodicals, magazines, and reports, to augment the primary dataset. The study utilized a multiple regression analysis to investigate the relationship between independent variables and dependent variables. The findings of the research demonstrate a statistically significant and positive association between the use of reverse logistics repackaging and the financial performance of manufacturing firms in Kenya.

The research conducted by Ekirapa (2022) examined the effects of adopting green supply chain management strategies on the operational results of dairy processors located in Kenya. The present study was undertaken with the support of three well-established theoretical frameworks, namely the theory of constraints, channel coordination theory, and supply chain network theory. The investigators utilized a descriptive survey research approach. The research was centered on a distinct demographic comprising of 30 dairy processing firms situated in Kenya that were duly authorized by the Kenya Dairy Board. The sample for this study had 90 participants, with each organization providing three employees from the procurement and logistics department, finance department, and production department. In light of the nationwide shortage of certified dairy processors, a census study was undertaken. The conducted research has demonstrated a noteworthy association between the use of environmentally friendly packaging and the utilization of reverse logistics strategies, as well as the overall operational effectiveness of dairy processing firms in Kenya.

In the study conducted by Gikonyo, Ngugi, and Paul (2022), the objective was to assess the influence of reverse logistics on the operational efficiency of building and construction manufacturing firms in Kenya. In order to achieve this purpose, the study was based on the theoretical frameworks of the technical acceptance theory and the economic theory.
of corporate characteristics. The current investigation utilized a methodology based on descriptive research design. The study's sample comprised 54 manufacturing businesses in Kenya that specialize in the field of building and construction. The researchers utilized purposive sampling methodology to choose a sample size of 270 participants from crucial departments within the 54 firms. Primary data collection was carried out by employing a standardized questionnaire. The examination of qualitative data entailed employing content analysis, whereas the examination of quantitative data entailed utilizing descriptive statistics and inferential statistics. The findings were presented through the utilization of tables, pie charts, and bar graphs. The study's results revealed that the adoption of green reverse logistics, particularly through re-packaging, significantly influenced the operational efficiency of building and construction manufacturing firms in Kenya.

**METHODOLOGY**

**Research Design**
This study employed a descriptive research design in order to involve the individuals who are the focal point of the research aims. This research design was appropriate for this study as it aimed to offer a thorough examination of the present condition of these variables and their interconnections within the particular context (Cooper & Schindler, 2015).

**Target Population**
The study's target audience consisted of 32 respondents from 8 motor vehicle assembling firms in Kenya. These respondents included logistics managers, sales managers, stores managers, and factories managers, as indicated in Table 1.1.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory Managers</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>Sales Managers</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>Store Managers</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>Logistics managers</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>32</td>
<td>100</td>
</tr>
</tbody>
</table>

**Sample Size and Sampling Technique**
Since the target population was small, census sampling was used so as to avoid bias and improve objectivity of results.

**Research Instruments**
Structured questionnaires were employed to gather primary data. Questionnaires were advantageous over other data collection methods since questionnaire responses are can be used to uphold confidentiality. Open ended question will be used since they are precise and easy to analyze. Questionnaires are beneficial due to their anonymity which gives confidentiality to respondents. The collection of secondary data involved the utilization of public audited annual statements for the time frame spanning 2022 to 2023.

**Data Collection Procedure**
The distribution of questionnaires to the respondents was facilitated through the utilization of the drop and pick approach, with the assistance of research assistants. The questionnaires was collected after one week to give respondents adequate time to give feedback. The collection of secondary data was facilitated by acquiring public audited yearly financial statements. The data that was collected encompassed the cost of products sold as well as the opening and closing inventory.

**Pilot Test**
A pilot test was conducted at Associated Vehicle Assemblers, involving four respondents. The purpose of this pilot test was to assess the reliability and validity of the questionnaires. According to (Cooper & Schindler 2015).

**Reliability of the Research Instruments**
Reliability refers to the extent to which a research instrument consistently yields similar outcomes throughout multiple iterations, hence providing a valid representation of the entire target population being investigated. The findings derived from assessing reliability aid in determining whether it is necessary to reformulate the questionnaire. The assessment of internal consistency among individuals' responses to several items on a test was conducted using Cronbach's alpha (Cooper & Schindler, 2015). Cronbach's coefficient alpha is a statistical measure used to assess the internal consistency reliability of a scale or measure, ranging from 0 to 1. Alpha values below 0.7 are generally considered to be less dependable and are not typically accepted. Values between 0.7 and 0.8 suggest an acceptable level of reliability, while values between 0.8 and 1.0 are considered to be quite reliable.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach alpha</th>
<th>Number of items</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>RP</td>
<td>0.819</td>
<td>11</td>
<td>Reliable</td>
</tr>
</tbody>
</table>
From the results, repackaging, organizational policies and supply chain performance had a Cronbach alpha 0.819, 0.888 and 0.857 respectively implying all the constructs were reliable.

Validity of Research Instruments
Validity refers to the degree of precision with which a research instrument is able to measure the intended construct or phenomenon. Factor analysis was utilized to evaluate the construct validity of participants’ scores on a measurement instrument, with a specific focus on the extent to which these scores were associated with other variables that would be expected to demonstrate such relationships.

Validity of Research Instruments

<table>
<thead>
<tr>
<th>Construct</th>
<th>No of Items</th>
<th>KMO</th>
<th>Bartlett’s test of Sphericity</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM</td>
<td>11</td>
<td>0.918</td>
<td>817.913, 55, 0.000</td>
</tr>
<tr>
<td>OP</td>
<td>11</td>
<td>0.928</td>
<td>816.237, 55, 0.000</td>
</tr>
<tr>
<td>SCP</td>
<td>10</td>
<td>0.904</td>
<td>753.374, 45, 0.000</td>
</tr>
</tbody>
</table>

Source: Data Source
The results showed that repackaging, organizational policies and supply chain performance had a KMO value of 0.918, 0.928 and 0.904 respectively and a Bartlett’s test had a p value of 0.000 for all the constructs indicating that the was adequate and valid for conducting the study.

Data Processing, Analysis and Presentation
The collected data followed a series of procedures including editing, coding, and tabulation to detect any anomalies in the responses and assign accurate numerical values to each response for further research. The data underwent analysis utilizing both descriptive and inferential statistical methods. Descriptive statistics include several measurements such as the mean, standard deviation, and variance. Inferential statistics involved the application of several techniques such as multiple linear regression analysis and correlation analysis. Multiple diagnostic tests such as normality test, multicollinearity test, autocorrelation test and heteroscedasticity test were performed in order to assess the suitability of the data for regression analysis. The equations governing multiple linear regression can be derived and expressed as equations 3.1 and 3.2, as displayed.

\[ Y = \beta_0 + \beta_1 RP + \epsilon_0 \]  
\[ Y = a_0 + a_1 RP \cdot OP + a_2 OP + \epsilon_1 \]

Where:
- \( Y \) Supply Chain Performance
- \( \beta_0 \) Constant when there is no moderating variable
- \( \beta_1 \) Regression Coefficients when there is no moderating variable
- \( RP \) Repackaging
- \( OP \) Organizational Policies
- \( a_0 \) \( a_0 \) represents regression constant when there is organization policy as a moderating variable

Data Analysis, Presentation and Discussion
Descriptive statistics
The research also aimed evaluating the effect of re-packaging on supply chain performance of motor vehicle assemblers in Kenya with the null hypothesis of repackaging has no significant effect on Supply Chain Performance of motor vehicle assemblers in Kenya. The results from the descriptive statistics showed that most of the respondents
agreed that repackaging influences supply chain performance through repacking of products returned due to damaged packages and redistribution of repackaged products to customers.

**Inferential Statistics**
The link between the independent and dependent variables was discovered by evaluating the data using inferential statistics.

**Correlation Analysis**
The study utilized the Pearson product-moment correlation coefficient to assess the magnitude and direction of the association between repackaging and supply chain performance. The correlation coefficient data demonstrate values ranging from -1 to +1. The correlation coefficient was assessed at a 95% confidence level using two-tailed testing. Consequently, the criteria for rejection were established using a significance level of 0.05, whereby values beyond this threshold were deemed statistically unimportant, while values falling below it were regarded as statistically significant.

<table>
<thead>
<tr>
<th>Table 1.4: Correlation Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM</td>
</tr>
<tr>
<td>RM</td>
</tr>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

**Model Summary**
The model summary presents information regarding the magnitude of the relationship between the variables in the model and the dependent variable. The coefficient R is a measure of multiple correlation that quantifies the strength and direction of the linear association between the observed model and the predicted values of the dependent variable. The coefficient of determination, commonly referred to as R square, quantifies the extent of variability observed in both the independent and dependent variables. The R-squared change provides insight into the extent to which organizational policies contribute to the regression model. The F change is a statistical test that utilizes the F-test to assess the significance of a change in the R square value. A statistically significant F change indicates that the inclusion of the variable has a substantial impact on enhancing the predictive capabilities of the model. The study's model summary results can be found in Table 1.5.

<table>
<thead>
<tr>
<th>Table 1.5: Model Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

**Source:** Study Data (2023)

According to the data presented, Model 1 exhibits an initial R-value of 0.621, indicating an association between repackaging and supply chain performance prior to the inclusion of the moderating effect. The R-squared value of 0.386 indicates that 38.6% variation in supply chain performance were caused by repackaging in the absence of organizational policies. The remaining 61.4% of the variances in supply chain performance was attributed to other factors that are not accounted for in model 1.

According to the results presented in Model 2, a significant correlation of 0.643 was observed between the independent and dependent variables, after accounting for the moderating influence of organizational policies. This finding suggests a strong relationship between these variables. The R-square coefficient of determination, which is 0.413, indicates that repackaging, when considering the moderating effect of organizational factors, accounts for approximately 41.3% of the variability observed in the supply chain performance of motor vehicle assemblers in Kenya. The remaining 59.7% of the variability in supply chain performance can be attributed to additional factors that are not accounted for in model 2.
The R square change was 0.027 implying that the contribution of organizational policy on the relationship between repackaging and supply chain performance was 0.027.

ANOVA*  
The application of Analysis of Variance (ANOVA) is employed to assess the reliability of a model in predicting a particular outcome. The study's significance level is established at 5%, and for a finding to be deemed statistically significant, the p-value must be less than 0.05. The analysis of variance for the study is presented in Table 1.6.

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>5.587</td>
<td>1</td>
<td>5.587</td>
<td>7.947</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>21.091</td>
<td>30</td>
<td>.703</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26.678</td>
<td>31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>7.104</td>
<td>2</td>
<td>7.104</td>
<td>10.524</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>19.574</td>
<td>29</td>
<td>.675</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26.678</td>
<td>31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Study Data.

According to the findings presented in Table 1.6, Model 1 demonstrates an F-value of 7.947, which surpasses the essential F value of 2.95. This result suggests a strong association between repackaging and supply chain performance, independent of any moderating influence from organizational policies. The F-statistic yielded a p-value of 0.003, which was found to be less than the conventional significance level of 0.05. This result suggests statistical significance and indicates that the model adequately fits the data.

Model 2, which incorporates the moderating effect of organizational policies, demonstrates an F-value of 10.524. This value is above the essential F critical value of 2.95, suggesting a significant relationship between repackaging and supply chain performance when considering the moderating effect of organizational policies. The F-statistics yielded a p-value of less than 0.05, which is the chosen level of significance. This result indicates statistical significance and suggests that the model is a good match for the data. These findings show that organizational strategies moderate the association between the repackaging and supply chain performance of Motor vehicle assemblers in Kenya.

Regression Coefficients  
The study employed binary linear regression analysis to examine the relationship between repackaging and supply chain performance in the context of motor vehicle assemblers. The regression coefficients were computed to illustrate the extent to which organizational policy moderates the effect of repackaging on supply chain performance. The regression findings are presented in Table 1.7.

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>8.728</td>
<td>1.567</td>
</tr>
<tr>
<td></td>
<td>RP</td>
<td>2.621</td>
<td>.899</td>
</tr>
<tr>
<td></td>
<td>(Constant)</td>
<td>8.698</td>
<td>1.755</td>
</tr>
<tr>
<td>2</td>
<td>RP</td>
<td>2.813</td>
<td>.921</td>
</tr>
<tr>
<td></td>
<td>OP</td>
<td>2.146</td>
<td>.664</td>
</tr>
</tbody>
</table>

Source: Study data

Table 4.65 regression results produced a regression model (4.1) and (4.2).

\[
Y=8.728 + 2.621 RP ................................................................. (4.1)
\]

\[
Y=8.698 + 2.813 RP + 2.146 OP ............................................. (4.2)
\]

The value of 8.728 and 8.698 shows the constants of the regression models without and with moderating variable of organizational policy respectively. All the constant values were significant since they all have a t critical values of 5.570 and 4.955 respectively that were less than a tabulated t value of 2.037. The probability value of all the constant were also less than a significance value of 0.005 (0.000<0.005). The constant of the first model where there is no moderating variable implies that when the motor vehicle assemblers have not adopted repackaging, the inventory turnover ratio stands at 8.728. The constant of the second model where there is organizational policy as the moderating variable shows that when the firms have not adopted repackaging, the inventory turnover stands at 8.698.
The aim of this study was to assess the effect of re-packaging on the supply chain performance of motor vehicle assemblers in Kenya. The research was grounded on the null hypothesis that the act of repackaging does not have a statistically significant effect on the Supply Chain Performance of motor vehicle assemblers in Kenya.

The regression analysis presented in Table 1.7 indicates that the variable repackaging exhibited a regression coefficient of 2.621, accompanied by a p-value of 0.001. This p-value is lower than the predetermined significance level of 0.05, suggesting a statistically significant relationship between the variable repackaging and the supply chain performance. The obtained t value of 2.917, exceeding the critical t value of 2.037, provides additional support for the statistical significance of the effect of repackaging on supply chain performance. The findings of the study led to the rejection of the null hypothesis, which stated that repackaging does not have significant effects on the Supply Chain Performance of motor vehicle assemblers in Kenya.

This suggests that the incorporation of repackaging as part of the reverse logistics process enhances supply chain performance by a magnitude of 2.621 units. Hence, a strong and statistically significant relationship exists between the practice of repackaging and the performance of the supply chain.

When organizational policies are adopted to moderate the relationship between repackaging and supply chain performance, the regression coefficient of repackaging stands at 2.813 with a p value of 0.002. The p value is less than a significance value of 0.05 indicating a significant relationship between repackaging and supply chain performance. The t statistics of 3.055 also shows there is significant relationship between repackaging and supply chain performance since it is more than a t critical value of 2.037. Therefore the null hypothesis that organizational policies have no significant effect on the relationship between repackaging and Supply Chain Performance of motor vehicle assemblers in Kenya was rejected.

This indicates that with moderating effect of organizational policies, adoption of repackaging as an element of repackaging improves inventory turnover by 2.813 units.

The results are similar to the descriptive statistics results which shows that most of the respondents agreed that elements of repackaging such as repacking of products returned due to damaged packages and redistribution of repackaged products to customers have significant effect on supply chain performance of motor vehicle assemblers.

The results resonate the findings from a study conducted by Gikonyo, Ngugi and Nyang'au (2022) and found that repackaging influenced significantly performance in building and construction firms in Kenya. The results also were similar to the study carried out by Mbovu and Mburu (2018) who established that in manufacturing firms of Kenya, repackaging significantly influenced supply chain performance.

**Conclusions**

The objective of the study was to evaluate the effect re-packaging on supply chain performance of motor vehicle assemblers in Kenya. The results from the descriptive statistics showed that most of the respondents agreed that repackaging influences supply chain performance through repacking of products returned due to damaged packages and redistribution of repackaged products to customers. From the inferential statistics, the correlational analysis showed that there was a strong and significant relationship between repackaging and supply chain performance (correlation coefficient, \( r = 0.767 \) and p value 0.001 <0.05). The regression coefficient of repackaging without and with moderating effect of organizational policies is 2.621 and 2.813 respectively. This was statistically significant since the p values were less than a statistical significance of 0.005 and also the t statistics of 2.917 and 3.055 were more than 0.05 implying the repackaging had a positive and significant effect on supply chain performance with and without moderating effect of organizational policies. Therefore, the study concluded that with and without moderating effect of organizational policies, re-packaging significantly affects supply chain performance of motor vehicle assemblers in Kenya.

**Recommendations**

Descriptive statistics also indicated that majority of the respondents disagreed that products returned due to wrong packages are effectively replaced. Therefore, the study recommends that motor vehicle assemblers in Kenya should provide refund to products that are retuned due to wrong packaging. This will help attracting more buyers since they will be guaranteed of refund in case of wrong packaging that will enhance supply chain performance.

**REFERENCES:**