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Logistics Management Practices and Supply Chain Performance of Export Firms in Nakuru County, Kenya

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ABSTRACT: Export firms play an important role in the economy by influencing employment, economic growth and balance of payments. Exports collectively account for approximately 62% of all the total domestic export earnings. Therefore, promoting exports encourages specialization and learning-by-doing, increasing productivity in the tradable sector and the entire economy. Export firms rely heavily on the efficiency of the supply chain framework of these firms. However, supply chain management practices such as logistics outsourcing remain unknown among these firms. The purpose of this study was to establish the influence of logistics outsourcing practices on supply chain performance in export firms Nakuru County, Kenya. The study was undertaken amongst all 34 export firms registered in Nakuru County, Kenya. The study was anchored on a a Supply Chain Network Theory. The study adopted a descriptive survey research design and targeted 2 supply chain staff in the 34 export firms thus totaling a population of 68 procurement staff. Since the target population was fairly small, the study undertook a census survey. Closed ended questionnaires based on a 5-point Likert scale were used for data collection. The questionnaires were piloted among export firms in Machakos County. Before data collection, the researcher sought a research permit from the National Council for Science, Technology and Innovation (NACOSTI). The data collected was analyzed using both descriptive and inferential statistics with the aid of Statistical Package for Social Science (SPSS) computer software version 23.0. The study found a moderately strong correlation between logistics outsourcing and supply chain performance ($r = .523^{**}$, $p = .000$). The study also found an R-square of 0.274 which implied that logistics outsourcing explained 27.4% of variation in supply chain performance of export firms. Therefore, the study concluded that logistics outsourcing was a significant predictor of supply chain performance.

KEYWORDS: Logistics Outsourcing, Supply Chain Performance

I. INTRODUCTION

Exports play an important role in the economy by influencing employment, economic growth and balance of payments. Kenya's top exports include: tea, horticulture, articles of apparel and clothing accessories; coffee, titanium ores and concentrates. All these exports collectively accounted for 62% of all the total domestic export earnings (Kenya National Bureau of Statistics, 2022). According to Wamalwa and Were (2021), the role of exports in promoting economic growth has been brought to the fore by the new wave of openness to trade as an economic strategy for development. Ideally, increased openness enables domestic producers to access the larger market for domestic goods, facilitating economies of scale in producing goods and services. Promoting exports encourages specialization and learning-by-doing, increasing productivity in the tradable sector and the entire economy. However, these activities rely heavily on the efficiency of the supply chain framework of these firms. According to Abebe, Beyecha and Gemeda (2020) the short term objective of supply chain management (SCM) is to increase productivity and reduced inventory and cycle time. On the other hand, the long-term strategy is to improve process efficiency and effectiveness for all the supply chain members to eventually increase customer satisfaction, market share and profits. However, the overall objectives of SCM are to optimize total supply chain costs and investment in addition to appropriate levels of customer service in targeted market segments (Sweeney, 2019). Survival and growth of export firms depend on how they effectively allocate resources through their strategic focus, and secure better negotiation terms through improvement of their supply chain relationship position (Lee, 2021). The performance of the supply chains in export firms would thus enable these firms to navigate the various challenges and enhance their individual and national outputs.

Export firms therefore, need to constantly scan the environment with a view to identifying and implementing supply chain practices that will enable an enterprise to achieve supply chain optimization using its limited resources (Tukamuhabwa, Mutebi &Kyomuhendo, 2021). Some of the well-known practices include; benchmarking, logistics outsourcing, customer relationship management, risk management, information sharing, e-sourcing, inventory management, collaboration among customers and suppliers, information technology management, management of human resources and partnerships. According to Lee (2021), the most common SCM practices include outsourcing, strategic planning, holding safety stock, strategic supplier relationships, supply chain performance, information sharing and coordination, supply chain benchmarking and sub-contracting. Adoption of supply chain management practices among export firms could yield a number of benefits such as reduced operating costs, improved customer service, reduced inventory and access to markets (Tukamuhabwa *et al.,* 2021). In spite of the perceived SCM benefits, there a number of challenges a business enterprise may encounter in the course of implementing the practices. Some of the challenges include high cost of information technology and other infrastructure, lack of credit, increasing transportation costs, changing customer needs and lack of training in supply chain management (Lee *et al.,* 2020). Due to varying levels of physical and human resources, SCM practices may vary among export firms. Past studies have, however, revealed that a large percentage of firms, still rely on manual processes to manage their global trade operations, particularly their exports. Thus, export firms are likely to adopt SCM practices such as customer-supplier partnerships, information sharing, information technology and logistics outsourcing.

Global supply chains contribute to promoting growth, creating more jobs, and reducing the poverty level. In the US, their Census Bureau data suggest that the majority of US exporting companies dominate international trade. However, these export firms emerged as the largest exporter in the past decade recording approximately $87 billion worth of exports (Biazzin, 2019).They however suggested that SCM practices affects procurement performance and the firms competitive advantage hence export firms are expected to improve their competitive advantage through price/cost, quality, delivery dependability, time to market, and product innovation. They also indicated that the various components of SCM practices have an impact on competitive advantage such as price and cost, strategic supplier partnership can improve supplier performance, reduce time to market and increase the level of customer responsiveness and satisfaction. In China, Zhou and Li (2020) argued that export firms contribute to more than 75% of urban employment opportunities and more than 50% national fiscal revenue. Further, information sharing significantly influenced quality management and supplier specific investment which led to enhanced performance. They opined that Chinese export firms facing severe intense competition tend not to invest as much as those facing fair level of competition. For the firms with different levels of supplier specific investment, their study did not find any difference in quality management practice, supply chain information sharing, and business performances. They however suggested that supply chain management practices should be deployed s a firm specific strategy and not industry specific strategy since different firms operating in different business environment with different challenges.

Exports in general contributed significantly to the growth and development of Sub-Saharan African countries. In Nigeria, Adebiyi, Adediran, Shodiya and Olusola(2021) argued that supply chain management was a set of methods used for the efficient integration of supply chain partners suppliers, manufacturers, warehouses, and retailers so that a correct number of goods can be manufactured and distributed at the best place and time at an optimal cost. They suggested that to be effective, supply chain management (SCM) integrates the internal cross-function within a firm with the exterior operations of external partners in a close and effective manner. SCM's goal is to share market information, develop new products, improve the number of suppliers for manufacturers, and activate and release management resources to build long-term relationships based on the members' initial trust needs. Their study suggests that strategic partnership, customer relationship management, information sharing, material flow management, lean production and participative design significantly influenced performance of supply chains. In Tanzania, Nkwabi(2019) argued that supply chain management (SCM) has gained popularity around the globe due to its significance in relation to improving business performance. They suggested that firms in developing countries are faced with several constraints that hinder the effective implementation of SCM. Firms face challenges including technological difficulties, poor coordination with the supplier's lack of government support, resources, funds, access to markets and top management support, issues in information sharing, inventory management, poor SCM knowledge and unskilled workforce. They opined that information sharing, inventory management, a lack of access to markets and poor SCM knowledge were insignificant constraints affecting SCM.

Locally, studies have investigated supply chain management practices and supply chain performance in different sector with mixed findings. For example, Njeri and Ndeto(2021) noted that business dynamism environment is characterized by intense competition, diminishing resources and internationalization among other factors. As a result, many firms are adopting supply chain management control techniques which minimize operational costs hence maximizing profits. They suggested that SCM practices improve efficiency on the supply chain and hence it plays an important role in firms. Furthermore, they argue that in fast moving manufacturing firms, too much stock could lead to tied capital, increase in holding cost, theft and deterioration of materials. In addition, materials shortage in manufacturing firms can lead to

production process interruption, underutilization of machines and poor customers' relations. They suggested that purchasing, distribution and floor management influenced performance. Similarly, Muthoni and Mose (2020) noted that the agricultural and manufacturing sector recorded a significant drop in growth from 4.7% to 1.6% and 2.7% to 0.2% respectively in the past 5 years which has impacted negatively on export quotas and dollar inflows. They suggest that this has had a negative effect on the sectors as they heavily contribute to the economy and provide countless job opportunities. They suggested that production management, materials requirements planning, forecasting, supplier relationships, supplier collaboration and production planning were significant predictors of procurement performance. They suggested that production management, demand forecasting, supplier collaboration and production planning led to improved procurement performance of food and beverage manufacturing firms. Furthermore, their study suggested that the firms did not have long term contracts with suppliers and did not efficiently schedule work tasks required in the manufacturing process and thus opine that enhanced supplier relationships and collaboration are important in enhancing procurement performance.

II. STATEMENT OF THE PROBLEM

Export firms play an important role in the economy by influencing job creation, enhanced revenues, increased foreign exchange earnings, economic growth and better balance of payments. According to Kenya National Bureau of Statistics (2022), export firms collectively accounted for 62% of all the total domestic export earnings. Ideally, these export firms must integrate global supply chains in their processes in order to remain competitive and to meet modern day challenges. However, supply chain performance especially in the present times when the global value chains have been fragmented by global economic recessions and Covid-19 pandemic that almost impaired the global supply chains, most export firms face numerous challenges. As opined by Njeri and Ndeto (2021), firms in Kenya lose up to 18% of their outputs due to lack of effective SCM practices. They suggested that there has been an increased level of inefficiency as a result of poor alignment of the SCM practices in many firms with performance targets. Evidently, adoption of SCM practices among export firms could yield a number of benefits such as reduced operating costs, improved customer service, reduced inventory and access to markets. Past studies, such as Barua (2019), however, reveal that a large percentage of these export firms still rely on manual processes to manage their global trade operations. Other scholars such as Okok *et al.,* (2021) and Muthoni and Mose (2020) have suggested that SCM practices play a significant role in supply chain performance. However, SCM practices such as logistics outsourcing remain unknown among export firms. Given the importance of export firms in creating jobs, earning foreign exchange, reducing balance of payments and earning revenue, there is need to further investigate logistics outsourcing practices and how they influence performance of export firms. This study, therefore, seeks to establish the influence of logistics outsourcing practices on supply chain performance of export firms in Nakuru County, Kenya.

III. OBJECTIVES OF THE STUDY

The main objective of this study was to establish the influence of logistics outsourcing practices on supply chain performance in export firms Nakuru County, Kenya.

IV. LITERATURE REVIEW

Theoretical Framework

Supply Chain Network Theory was proposed by Ford in 1990. The theory is premised on belief that exchange of resources is necessary for firms and it views outsourcing as network coordination means for firms to manage their supply chains as one entity rather than a set of fragmented entities. Networks help firms procure resources managed by other firms and to that extent, it focuses on relationship building between firms (Fadile *et al.,* 2018). The theory suggests that supply chains can be represented as a network of independent units of business which are capable of undertaking free choices. It is a combination of connections which link organizations jointly for purposes of new product and service development. Inter-firm connections symbolize the relations and contractual agreements if any. The purpose of supply chain network is to develop trust among the various supply chain players leading to long-term business relationships including outsourcing of logistics. The theory can thus be used to explain logistics outsourcing and how logistics outsourcing influences supply chain performance in export firms. Since logistics outsourcing in itself mainly focuses on integrated logistics systems such as inventory management, vendor relationships, transportation, distribution, warehousing and delivery services that lead to inventory reduction both within and across firms in the supply chain, it would be appropriate to treat these logistical systems as independent nodes that must act in symphony and systematically with other nodes to create a functional logistics outsourcing system. The theory therefore posits that logistics outsourcing is integral in contributing towards the profitability of any organization. However, the increasing supply chain demand for higher penetration for better integration with the retailers and consumers, third party logistics is rapidly gaining prominence within the supply chain.

Empirical Literature Review

Various studies in literature have investigated outsourcing practices with various performance measures. For example, Wasike and Juma (2020) studied the effects of warehouse management practices on organizational performance of logistical

firms in Mombasa, Kenya. The data collected was analyzed using both descriptive and inferential statistics. Descriptive analysis was conducted using frequencies, percentages, mean and standard deviation. Inferential analysis was conducted using Pearson correlation and multiple regression model to test the relationship between the variables. While the study yielded important information on warehouse management in terms of tracking of goods and receiving process of goods, the study did not investigate other aspects, such as; cost of goods, time of storage and warehouse capacity. This will be examined in detail in the present study. Owuor and Zaman (2019) examined the influence of logistics outsourcing on performance of large retail firms in Nairobi City County, Kenya. The study adopted a descriptive research design and the targeted 32 large retail companies in Nairobi Central Business, Nairobi County, Kenya. The unit of observation comprised of procurement personnel in the firms. A census was used whereby all the 32 companies were included in the study. A structured questionnaire was used to collect data for the study which was analyzed through mixed-method, where both qualitative and quantitative data were incorporated. The study findings established that transport outsourcing and financial services positively and significantly influence performance of large retail firms in Nairobi County and recommended that the management of large retail firms should focus on enhancing transport outsourcing practices since the practice bears a positive and significant influence on performance of the firms.

Wainaina (2021) examined the effect of outsourcing logistics to third party providers on performance of manufacturing firms in Kenya. The study adopted descriptive design targeting all the manufacturing firms that are based in Nairobi and its environs. Data was collected through questionnaires and analyzed using descriptive statistics and multiple regression analysis. The study established the effect of outsourcing warehousing operations on firms. This is with regard to its effect on developing the business, Regression results also give a statistically significant coefficient for Outsourcing Warehousing Operations, which implies that an increase in outsourcing warehousing operations will increase firm performance holding integrating operations, transportation and inventory operations constant. However, the study did not consider the effect of outsourcing logistics on export firms. Maina and Mwangangi (2020) also researched on service outsourcing and supply chain performance of Cement Companies., regression and correlation analysis. The study's focus was mainly on inventory management that cement companies' contract to 3PL providers. The study highlighted that globalization has been the main reason of outsourcing citing the fact that the need for more competent and experienced people has forced companies to outsource for inventory management services. The study noted that this has allowed cement manufacturing firms to reduce costs that are related with building internal competencies, increased quality, and improved response to the changing marketing demands, ability to concentrate on their core functions and the effectiveness and efficiency in the supply chains. The study was able to show the contribution of inventory management to firm performance, however, it failed to show how outsourcing logistics affected the performance of export firms. This will be examined in detail in the present study.

From the reviewed studies Wasike and Juma (2020) yielded important information on warehouse management in terms of tracking of goods and receiving process of goods, the study did not investigate other aspects, such as; cost of goods, time of storage and warehouse capacity. Owuor and Zaman (2019) established that transport outsourcing and financial services positively and significantly influence performance of large retail firms. However, they did not investigate other SCM practices in export firms. Kogoh, (2015) demonstrated that order processing, warehousing and transport logistics outsourcing were found to have a statistically positive effect on the performance of the logistics industry in Kenya. However, the study did not consider the effect of outsourcing logistics on in export firms. Wainaina (2021) established the effect of outsourcing warehousing operations on firms. However, the study did not consider the effect of outsourcing logistics on export firms. Studies reviewed and critiqued indicate that logistics outsourcing (Wasike & Juma, 2020; Owuor & Zaman, 2019) and have some effect on supply chain performance. However, these studies have been undertaken in different context and different industries. In the local set up, export firm play a critical role in enhancing job creation, foreign exchange earnings and balance of payments and thus understanding how firm these practices are deployed and how effective such practices are in enhancing supply chain performance is of great importance. Furthermore, while these variables have been investigated in different contexts, there is no evidence literature of studies focusing on export firms. The present study will seek to fill this research gap.

V. RESEARCH METHODOLOGY

The study adopted a descriptive survey research design since there was no attempt to alter the phenomena rather, data was collected from respondents based on their observations and perceptions concerning the subject of interest to the study. In this study the target population comprised 34 export firms in Nakuru County, Kenya. Data from the office of business licensing in Nakuru County Government (2022) indicates that there are 34 licensed export firms. Majority of the export firms deal with cut flowers, vegetables, fruits and apparels. The study thus targeted supply chain staff in these 34 export firms in the county. In selecting the sample, the study targeted 2 supply chain staff in each of the 34 export firms in the county thus the study's unit of observation was all 68 supply chain staff. Since the target population of the study of 68 elements was fairly small, the researcher undertook a census study. Primary data was used in this study and was collected using closed ended questionnaire based on a 5-point Likert scale. Questionnaires were preferred as they have the advantage of enabling the researcher to collect data within a short period of time. The researcher carried out a pilot-test with a small representative

sample identical to, but not including the group in the survey on 7 individuals who are in similar positions in Machakos County, Kenya as they two counties have similar export firms. Before commencing data collection, the researcher upon clearance by the University; sought a research permit from the National Council of Science, Technology and Innovation (NACOSTI) as legally required to all researchers conducting studies in Kenya. Upon receipt of the research permit, the researcher sought permission from the various export firms outlining to them the objectives of the current research. The researcher then administered the questionnaires to the individual population members. The data was analyzed using both descriptive and inferential statistics with the aid of SPSS computer software and the findings were presented in tables. Before undertaking inferential analysis, the researcher undertook diagnostic tests including; linearity tests, normality tests, multicollinearity and homoscedasticity test

VI. RESEARCH FINDINGS AND DISCUSSIONS

The researcher issued 68 questionnaires, of which 54 correctly filled questionnaires were returned representing a response rate of 79.4%. Getting a response rates of >70% is desirable and thus the response rate of over 79% was deemed sufficient. The researcher sought to find out the distribution of the respondents according to their gender, age, education level and work experience with an aim of deducing any trend from the respondent's profile relating to the study objectives. From the findings, majority of the respondents (68.5%) were male while the female respondents were 31.5%. The trend was attributed to the existing gender gap across many sectors in Kenya. Further, majority of the respondents were of the age group 45-55 years (44.5%) while the least age group were those between 36-45 years (25.9%). Cumulatively, most of the respondents (74%) were aged above 46 years. The study attributed the trend to the stagnation of employment opportunities in many sectors in Kenya.

The study also established that that majority of the respondents (66.7%) had a bachelor's degree level qualification. Furthermore, over 79% had at least a university degree. This trend was attributed to the professionalization of most sectors in Kenya and the increase in advancement opportunities across the country. Finally, majority of the respondents (51.9%) had between 5-10 years working experience. Further, over 85% of the respondents had at least 5 years of work experience. The fact that all respondents had sufficient work experience implied that they were knowledgeable to address the study objectives and how they influence supply chain performance in their export firms.

Logistics Outsourcing and Supply Chain Performance

The findings on various statements on logistics outsourcing and supply performance are shown in Table 1.

Table 1: Logistics Outsourcing and Supply Chain Performance

	SD	D	N	A	SA	Mean	StdDev
We always outsource freight forwarding in our firm	0 (0%)	1 (1.9%)	4 (7.4%)	24 (44.4%)	25 (46.3%)	4.35	.705
All our freights are forwarded to third party logistics firms	1 (1.9%)	2 (3.7%)	9 (16.6%)	31 (57.4%)	11 (20.4%)	3.91	.830
We outsource customs bonded warehousing for our freights	2 (3.7%)	2 (3.7%)	15 (27.8%)	24 (44.4%)	11 (20.4%)	3.74	.955
All our customs processing for all our freights are outsourced	0 (0%)	2 (3.7%)	18 (33.3%)	22 (40.8%)	12 (22.2%)	3.81	.826
We also outsource a majority of our inventories	0 (0%)	3 (5.6%)	14 (25.9%)	24 (44.4%)	13 (24.1%)	3.87	.848
Inventory outsourcing has led to reduced supply chain costs	0 (0%)	2 (3.7%)	14 (25.9%)	33 (61.1%)	5 (9.3%)	3.76	.671

Outsourcing of our logistics has enhanced our performance	0 (0%)	1 (1.9%)	24 (44.4%)	23 (42.6%)	6 (11.1%)	3.63	.708

From the findings in Table 4.5, majority of the respondents (90.7%) agreed they outsourced freight forwarding in their firm while only 1.9% disagreed. Similarly, majority (77.8%) agreed that all their freights were forewarded to third party logistics firms while only 5.6% disagreed. This was an indicator that majority of the export firms outsourced their freight forwarding services and as such managing this outsourcing relationship would play a significant role. Further, majority of respondents (64.8%) agreed that they outsourced customs bonded warehousing for their freights while 7.4% disagreed. Furthermore, 63% agreed that all customs processing for all their freights were outsourced while only 3.7% disagreed. The findings on customs warehousing and processing also point towards these export firms actively engaging third party logistics in logistics outsourcing. Similarly, 68.5% of the respondents agreed that they outsourced majority of their investories while 5.6% disagreed. Similarly, 70.4% agreed that inventory outsourcing had led to reduced supply chain costs while only 3.7% disagreed. The findings on inventory outsourcing indicated that export firms outsourced their inventories with an aim of reducing costs. Finally, 53.7% of the respondents agreed that outsourcing of their logstics had enhanced their performance while only 1.9% disagreed. These findings therefore suggested that logistics outsourcing in terms of warehousing, inventory and freight forwarding outsourcing has some influence on supply chain performance in export firms.

The study further analyzed the means on the propositions which with a grand mean of 3.87 indicated an agreement to all the propositions logistics outsourcing influencing supply chain performance in export firms. The findings tally with those of Owuor and Zaman (2019) examined the influence of logistics outsourcing on performance of large retail firms in Nairobi City County, Kenya and established that transport outsourcing and financial services positively and significantly influence performance of large retail firms. Similar findings were reported by Wasike and Juma (2020) who studied the effects of warehouse management practices on organizational performance of logistical firms in Mombasa, Kenya and yielded important information on warehouse management in terms of tracking of goods and receiving process of goods as being significant enhancing organization performance. It can thus be deduced that outsourcing of logistics by export firms may have some influence on the performance of their supply chains.

Supply Chain Performance

The findings in this section involve the measurement of the propositions on supply chain performance and are shown in Table 2.

Table 2: Supply Chain Performance

	SD	D	N	A	SA	Mean	StdDev
Our product quality compared to others is high	1 (1.9%)	2 (3.7%)	21 (38.9%)	14 (25.9%)	16 (29.6%)	3.78	.984
We have reduced the levels of rejected or unusable products	1 (1.9%)	5 (9.3%)	9 (16.7%)	25 (46.3%)	14 (25.9%)	3.85	.979
We have obtainedfaster access to new markets	0 (0%)	5 (9.3%)	11 (20.4%)	21 (38.9%)	17 (31.5%)	3.93	.949
We have increased our efficiency in terms of cost reduction	0 (0%)	5 (9.3%)	14 (25.9%)	18 (33.3%)	17 (31.5%)	3.87	.972
We are now able to obtain better lead times	0 (0%)	2 (3.7%)	20 (37%)	26 (48.1%)	6 (11.1%)	3.67	.727
Our customer satisfaction levels are relatively high	0 (0%)	5 (9.3%)	18 (33.3%)	23 (42.6%)	8 (14.8%)	3.63	.853

From the findings, majority of the respondents (55.5% agreed that their product quality compared to others was high while only 5.6% agreed. Similarly, 72.2% agreed that they had reduced the levels of rejected or unusable products while only 11.2% disagreed. Furthermore, 70.4% agreed that they had obtained faster access to new markets while only 9.3% disagreed. Similarly, 64.8% agreed that they had increased their efficiency in terms of cost reduction while only 9.3% agreed. Further, 59.2% agreed that they were now able to obtain better lead times while only 3.7% disagreed. Finally, 57.4% agreed that their customer satisfaction levels were relatively high while only 9.3% disagreed. Further, the study analyzed the means of the responses and found a grand mean of 3.79 which indicated that majority of the respondents in export firms were in agreement to the propositions on levels of supply chain performance in their firms.

Diagnostic Tests

This section presents the diagnostic tests that were undertaken, namely; normality, linearity, multicollinearity and homoscedasticity. The linearity assumption requires a linear relationship between the dependent and the independent variable (Brymann, 2016). A linear relationship exists when a change in the dependent variable due to one unit change in the independent variable is constant, regardless of the value of the independent variable. To test linearity, a plot of observed cumulative probabilities versus expected cumulative probabilities was obtained as shown in Figure 1.

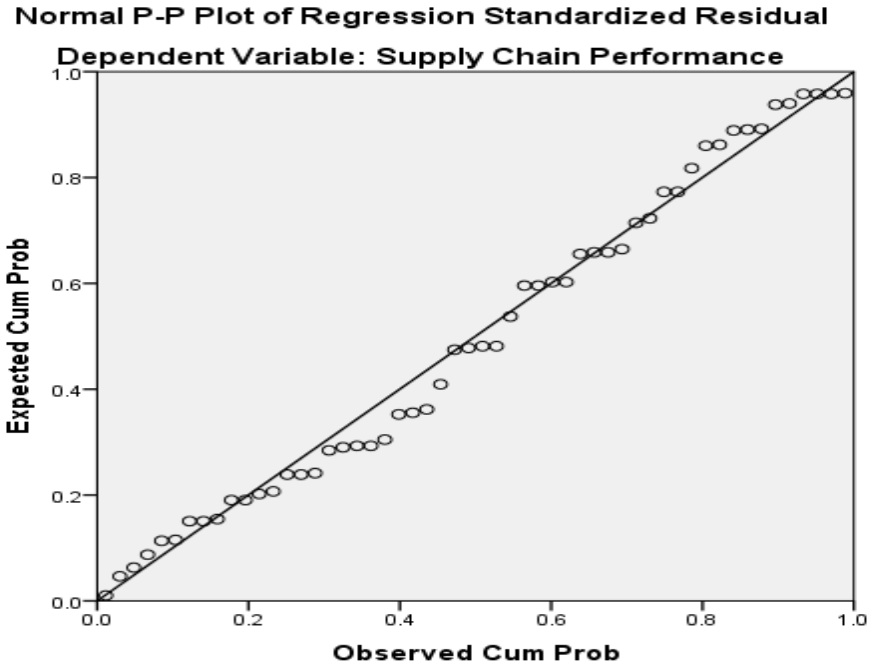

Figure 1:Test of Linearity

From the plot in Figure 1, the expected cumulative probability scatter lied along observed cumulative probabilities which were an indication of linearity of variables. Linear regression analysis assumes that data comes from a population that is normally distributed (Brymann, 2016). In testing for normality, the null-hypothesis is that the population is not normally distributed. If the p-value is less than the chosen alpha level, then the null hypothesis is rejected and thus the population from which the sample was obtained is normally distributed. If the p-value is greater than the chosen alpha level, then the null hypothesis is not rejected and thus data is not normally distributed. The findings of the normality test are presented in Table 3.

Table 3: Test of Normality

	Kolmogorov-Smirmov			**Shapiro_Wilk**		
	Statistic	df	Sig	Statistic	df	Sig.
Supply Chain Performance	.129	54	.026	.968	54	.151

From the findings, using Kolmogorov-Smirnov test, the p-value of 0.026 is less than the chosen 0.05 and thus the null hypothesis is rejected and the study therefore concluded that the population from which the sample was obtained was normally distributed. Multicollinearity is a phenomenon that occurs one independent variable is highly correlated with another independent variable which makes it impossible to differentiate the independent influence of each of these variables on the dependent variable (Cooper & Schindler, 2014). Furthermore, presence of multicollinearity makes it difficult for the true relationship between the each independent and the dependent variable to be identified and in the presence of highly correlated independent variables, the standard errors are overestimated, thus leading to less precise parameter estimates. In order to test for multicollinearity, Variance Inflation Factors (VIF) scores were analyzed with the thumb of rule that VIF values of less than 5 are widely accepted as an indication of absence of multicollinearity. The findings of the test of multicollinearity are presented in Table 4.

Table 4: Collinearity Statistics

	Tolerance	**VIF**
Logistics Outsourcing	1.000	1.000

From the findings in Table 4, the VIF values for all the four independent variables were found to be less than five, an indication that there was absence of multicollinearity.Homoscedasticity occurs when there is constant variance in the error term, an assumption that is violated in the presence of outliers or extreme values (Byrmann, 2016). To test this assumption, a residual versus-predicted values plot was used. Data can be deemed homoscedastic if the scatter does not take any particular shape otherwise it is deemed heteroscedastic. The scatter plot for the test is shown in Figure 2.

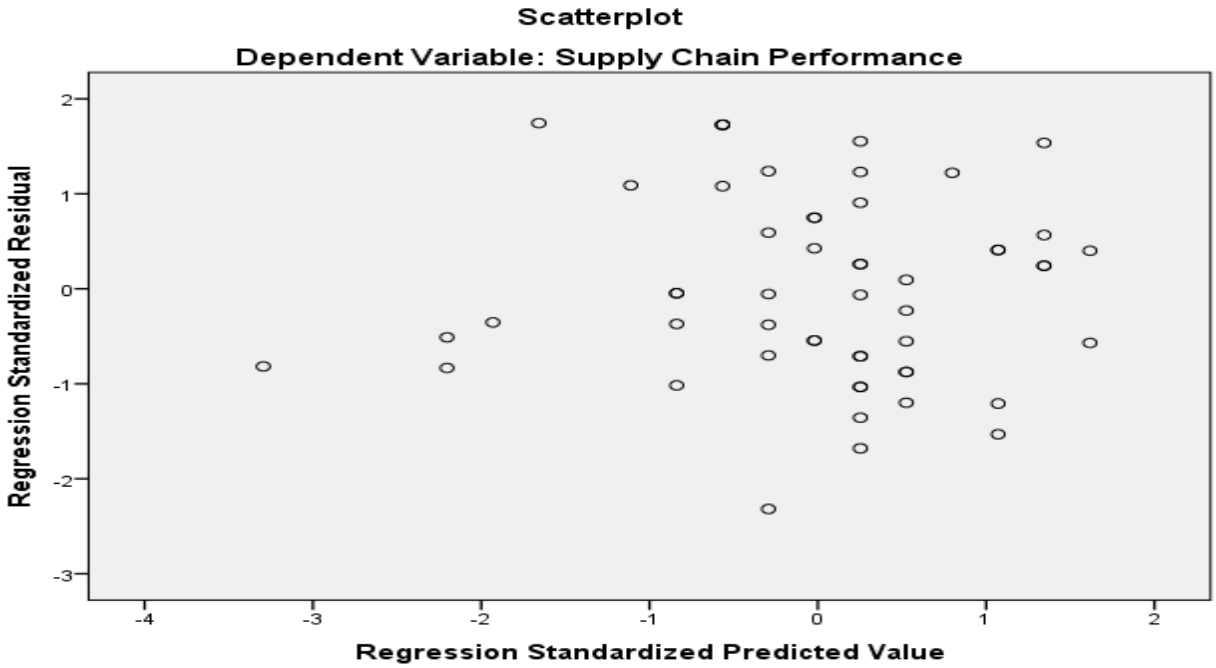

Figure 2: Homoscedasticity Scatter Plot

From the scatter plot in Figure 2, the scatter points of residual versus predicted values spreads evenly and does not take any particular pattern across the plot area which is an indication of homoscedasticity.

Correlation Analysis

Before undertaking correlation analysis, the responses on the propositions related to the variables were cumulated to obtain a composite score. The composite scores were then used to determine correlations as shown in Table 5.

Table 5: Correlation

		Logistics Outsourcing
Supply Chain Performance	Pearson Correlation	.523**
	Sig. (2-tailed)	.000
	N	54

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

From the correlation analysis, it was established that there was a moderately strong positive correlation between logistics outsourcing and supply chain performance (r =.523**, p=.000). The moderate and positive nature of the correlation implied that higher levels of supply chain performance could be achieved if logistics outsourcing practices are enhanced. The findings tally with those of Owuor and Zaman (2019) who established that transport outsourcing and financial services positively and significantly influence performance of large retail firms. Similar findings were reported by Wasike and Juma (2020) who found that warehouse management significantly enhanced organization performance.

Regression Analysis

Since the collected data met all the regression assumptions, regression analysis was undertaken and the model summary results are presented in Table 6.

Table 6: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate

.523[a]	.274	.260	.51553

From the findings in Table 6, it was established that the R-square of 0.274 implied that logistics outsourcing explained 27.4% of variation in supply chain performance of export firms. The ANOVA findings were as shown in Table 7.

Table 7: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.203	1	5.203	19.577	.000[b]
Residual	13.820	52	.266		
Total	19.023	53			

From the findings in Table 7, the overall model was found to be statistically significant (F = 19.577, p=.000). The regression coefficients were as shown in Table 8.

Table 8: Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.472	.528		2.789	.007
Logistics Outsourcing	.599	.135	.523	4.425	.000

From the fitted model, the study established the following regression function:

$$Y = 1.472 + 0.599X_1$$

Where: Y= Supply Chain Performance, X_1 = Logistics Outsourcing

From the model, it can be seen that holding logistics outsourcing constant, supply chain performance would decrease by a factor of 1.472 and a unit increase in logistics outsourcing would cause an increase in supply chain performance by a factor of 0.599. The study undertook hypothesis testing at 5% significance level using p-values obtained from linear regressions with the rule of thumb being that the null hypothesis would be rejected if the p-value obtained is less than 0.05 otherwise the null hypothesis is accepted. The first null hypothesis stated: $\mathbf{H_{01}}$: Logistics outsourcing does not significantly influence supply chain performance of export firms in Nakuru County, Kenya. From the findings of the regression analysis in Table 8, logistics outsourcing (t= 4.425, p=.000<.05], the null hypothesis was rejected and the study concluded that logistics outsourcing significantly influences supply chain performance.

VII. CONCLUSIONS AND RECOMMENDATIONS

The study concluded that export firms outsourced freight forwarding and that all their freights were forewarded to third party logistics firms. Further, it was also concluded that export firms outsourced customs bonded warehousing and custom processing for all their freights to third party logistics. The study also concluded that export firms outsourced majority of their investories and that inventory outsourcing had led to reduced supply chain costs. Similarly, it was concluded that outsourcing of logstics in export firms had enhanced their performance. Finally, the study concluded that there was a moderately strong positive correlation between logistics outsourcing and supply chain performance and thus logistics outsourcing was a significant predictor of supply chain performance in export firms. The study recommends that since it significantly contributes to supply chain performance, export firms should widen the scope of the logistics outsourcing activities in order to cut down costs and enhance the performance of their supply chains.

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