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## Effect of Logistics Management Practice on Firm Performance of Kenya's Tea Subsector Industry

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### **Abstract:**

*The general objective of this study was to assess the effect of logistics management practice on firm performance of Kenya's tea subsector industry. The specific objectives of the study were to establish the effect of transport management practice on firm performance of Kenya's tea subsector industry; to determine the effect of inventory management practice on firm performance of Kenya's tea subsector industry; to assess the effect of distribution management practice on firm performance of Kenya's tea subsector industry. The theoretical framework of the study was guided by Resource Based View Theory (RBV) and Supply Chain Network Theory. This research adopted a quantitative research design to address the formulated hypotheses. Stratified random sampling technique was used to select a sample size of 155 firms from the target population of 254 firms in the tea subsector industry in Kenya. The study selected 2 respondents from every firm sampled of 155 firms each drawn from top management and middle level management to make a sample size of 310 respondents. Primary data was collected by use of self-administered structured questionnaires which were distributed through the drop and pick method. Secondary data collected from various tea subsector bodies websites, in annual and published financial statements, in national newspapers, during annual general meetings and in-house magazines, important business disclosures in journals, manuals and the various firm's documents were used to cross validate the primary data information collected. A total of 229 questionnaires were completed, returned and used for analysis. Data was analyzed by use of descriptive statistics and inferential statistics using Statistical Package for Social Sciences (SPSS) version 24. The Pearson's product moment correlation analysis and standard multiple regression analysis were used for hypotheses testing. The data was presented using tables, and figures for the purpose of giving a pictorial view of the results. The findings indicated that transport management practice had a statistically significant and positive effect on firm performance of Kenya's tea subsector industry; inventory management practice had a statistically significant and positive effect on firm performance of Kenya's tea subsector industry and distribution management practice had a statistically significant and positive effect on firm performance of Kenya's tea subsector industry. The study recommended for the adoption of logistics management practices by the tea subsector industry in Kenya in order to enhance firm performance of Kenya's tea subsector industry.*

**Keywords:** Logistics, management, transport, distribution, inventory

### **1. Introduction**

Logistics management is that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverse flows and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers' requirements. Logistics management activities typically include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfillment, logistics network design, inventory management, supply/demand planning, and management of third-party logistics services providers (David, 2011). Tilokavichaiyan and Sophatsathit, (2011) assert that effective logistics management provides the right product in the right place at the right time hence the reason why it has received much attention over the past decade from practitioners and governments as it improves overall firm performance.

Supply chain logistics is that part of a firm's resources including all assets, competencies, organizational processes, firm attributes, information, knowledge, etc. Which allow the firm to conceive and implement strategies that improve efficiency and effectiveness (Barney, 1991). Logistics management has been widely studied and measurement scales have been developed to link logistics management with competitive advantage and superior firm performance (Zhao, 2001). These studies found that logistics activities affect performance with regards to revenue enhancement as well as cost

reduction. The use of logistics management as a means to create differentiation was also investigated. These researchers found that logistics management makes a major contribution to corporate strategy and performance and sometimes provides competitive advantage (Marta, *et al.*, 2013). The role of the logistics system is a critical part of the firm's success in time and quality based competition.

## 2. Research Problem

Average prices of tea in Kenya have been declining and the situation has been worsened by the escalating costs of production, labor, fertilizers, electricity, management costs as well as high taxation costs (Wanja & Chirchir, 2013). The main problem of study in this research is that despite the fact that Kenya takes the tea export leadership position in the world in terms of volume, it is ranked second position in terms of earnings after Sri Lanka (ITC/WTO, 2014; Mbui, Namusonge & Mugambi 2016). In 2016, Kenya earned US\$ 1.25 Billion from exports of 529 million kilograms of tea, while Sri Lanka earned US\$ 1.37 Billion (or 12% higher) from export of 320 million kilograms (or 27% lower volumes) (ITC/WTO, 2016; Mbui, Namusonge & Mugambi, 2016).

Secondly, there is a lot of logistics management activities which take place in the tea subsector industry in Kenya as the tea leaves move along the supply chain network from the farmer to the final consumer either locally or internationally. Tea is highly perishable and the industry players face a number of challenges in ensuring that they adopt appropriate logistics management practices that can integrate the upstream and downstream supply chain activities (TBK, 2014). Hence, logistics management needs to be properly coordinated along the supply chain network so as to ensure quality tea and high yield earnings both locally and at international level thus ensuring firm performance in the tea subsector industry (Mbui, Namusonge & Mugambi, 2016).

## 3. General Objective

The general objective of this study was to assess the effect of logistics management practice on firm performance of Kenya's tea subsector industry.

### 3.1. Specific Objectives

- To establish the effect of transport management practice on firm performance of Kenya's tea subsector industry.
- To determine the effect of inventory management practice on firm performance of Kenya's tea subsector industry.
- To assess the effect of distribution management practice on firm performance of Kenya's tea subsector industry.

## 4. Review of Literature

### 4.1. Theoretical Framework

The theoretical perspective relevant to this study was guided by the effect of logistics management practice on firm performance of Kenya's tea subsector industry. The theories discussed in this section are resource based view theory and supply chain network theory.

#### 4.1.1. Resource Based View Theory (RBV)

Barney's 1991 article 'Firm Resources and Sustained Competitive Advantage' is widely cited as a pivotal work in the emergence of the resource-based view. However, some scholars argue that there was evidence for a fragmentary resource-based theory from the 1930s. RBV proposes that firms are heterogeneous because they possess heterogeneous resources, meaning firms can have different strategies because they have different resource mixes (Barney, 1991). The RBV focuses managerial attention on the firm's internal resources in an effort to identify those assets, capabilities and competencies with the potential to deliver superior competitive advantages. Barney (2003) and Peteraf (2011) as cited by Nyang'au, Rotich and Ngugi (2017), discussed the five critical characteristics of a resource that would allow firms to attain a sustainable competitive advantage. First, the resource must be valuable in that it improves firm efficiency and effectiveness in providing unique and distinguished performance from its competitors. Second, the resource must be rare so that by exercising control over it, the firm can exploit it to the disadvantage of its competitors and use it to gain competitive advantage over its competitors. Third, the resource must be imperfectly imitable to prevent competitors from being able to easily imitate innovation and develop the resource in-house. Fourth, the resource must be imperfectly mobile to discourage the ex-post competition for the resource that would offset the advantages of maintaining control of the resource. Fifth, the resource must not be substitutable; otherwise, competitors would be able to identify and innovate different products which can be strategically equivalent resources to be used for the same purpose.

Firms have realized the critical importance and interdependencies that mutually exist between the organization's internal operational processes and those of suppliers and customers (Luo & Child, 2015). Organizations are focusing at improving their operational level performance and as a result a good number of firms are developing explicit linkages with suppliers and customers so as to reap the benefits of such linkages (Regner, 2015). Logistics management linkages refers to the pillar connections that a firm creates with critical entities in its supply chain network in order to fully manage the flow of inputs from suppliers into the firm and outputs from the firm to customers who are end users. These linkages can only be implemented through practices such as seeking suppliers and customers input on innovation of new products and product diversification, vendor management inventory system to allow sharing of information between various parties in the supply chain, supplier and customer relationship management, and value addition management among other critical supply chain components (Rungtusanatham, Salvador, Forza, & Choi, 2013).

#### 4.1.2. Supply Chain Network Theory

It is one of the theories for purchasing and supply management which has been introduced during the last decades (Barasa, Namusonge, & Iravo, 2015). Mainly the supply chain network theory is considered to describe the relationships in which companies, suppliers, customers or buyer are engaged. Barasa, Namusonge and Iravo (2015) assert that the theory was first introduced during the 1970s and the 1980s and developed from the focus on relationships between just two entities, or strategic alliances, towards an approach which entails multiple relationships between different counterparts throughout the supply chain. Harland (1996) as stated by Nyang'au, Rotich, and Ngugi (2017), defines the supply chain network as a specific type of relation linking a defined set of persons, objects or events. Chang, Chiang and Pai (2012) further state that the supply chain network is a complicated network model, and its specific context depends on the relationships among the network members. Moreover, supply chain networks are seen as beneficial for every company embedded through the investments and actions of the other counterparts involved in the process (Chicksand, Watson, Walker, Radnor, & Johnstone, 2012).

Furthermore, it was found that there are several underlying assumptions, as for instance that a central position of companies within a supply chain network could lead to competitive advantage, or that companies share information and knowledge with their partners (Badar, Sammidi, & Gardener, 2013). Moreover, in terms of the contribution to purchasing it can be said that the theory is applicable to the most important decision points. The theory helps with the demand planning through the simplification of the resource allocation reached through the settlement of strategic long-term partnerships (Barasa, Namusonge, & Iravo, 2015). Moreover, companies embedded in a network have the ability to choose from a greater set of suppliers and through this can even ensure the supply of critical commodities. Furthermore, the relationships among companies are assumed to be trustworthy and thus contribute to the value addition on both sides and further simplify the decision about the selection of the supply strategy. Lastly, the supply chain network theory contributes to the fourth decision point, namely the negotiation, since companies in networks aim to engage in long-term contracts through which strong partnerships between the counterparts are designed (Chicksand, *et al.*, 2012).

Williams, *et al.*, (2008) assert that suppliers are vital to the success of a firm, in terms of their reliability in provision of contractual agreements, availability and on the competitive edge of supplying the final product to the end user. Supplier selection criteria, diversification of suppliers, supplier partnership and alliance, supply chain contract agreement, value chain management along the supply chain, supply chain logistics management, information's sharing along the supply chain and supply chain integration are some of the strategies used as supply chain management practices which if competently administered have got the potential of propelling the firm to a competitive advantage thus ensuring firm performance.

#### 4.2. Conceptual Framework

A conceptual framework is a graphical representation of the theorized interrelationships of the variables of a study Kothari and Gang, (2014). The conceptualization of variables in any academic study is important because it forms the basis for testing hypothesis and coming up with generalizations in the findings of the study (Sekaran, 2015). The independent variables of this study included transport management practice, inventory management practice and distribution management practice while firm performance of Kenya's tea subsector industry represented the dependent variable.

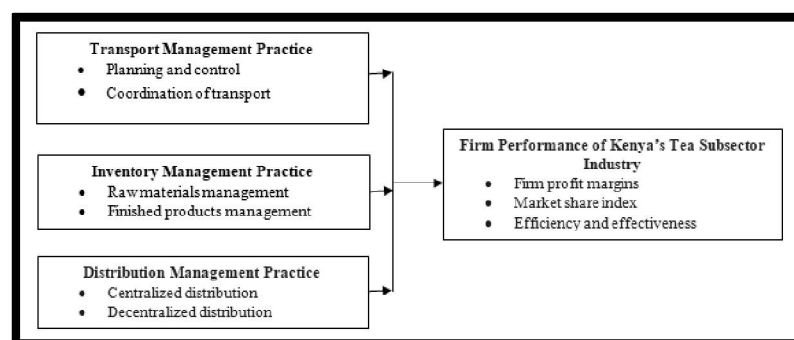


Figure 1: Conceptual Framework

#### 4.3. Review of Study Variables

##### 4.3.1. Transport Management Practice

Transport management system is the planning, controlling and decision making on operational area of logistics that geographically moves and positions inventory (Gimenez & Sierra, 2013). Because of its fundamental importance and visible cost, transportation has traditionally received considerable managerial attention and almost all enterprises, big and small, have managers responsible for transportation (Mentzer, *et al.*, 2014). Transportation occupies one-third to two thirds of the amount in the logistics costs provision hence transport management influences the performance of logistics system immensely (David, 2011). Transporting is required in the whole production procedures, from manufacturing to delivery of the final product to consumers and reverse logistics. Only a good management system and coordination between each component in the transport management system would bring the benefits of logistics to a maximum.

A good transport management in logistics activities could provide better logistics efficiency, reduce operation cost, and promote service quality on firms (Cawley & Snyder, 2012). Obviously, a product has more value at a retail store than it has in a firm's warehouse, because in the retail store it is available for sale (Murray, 2013). At the store it could generate revenue, while in the warehouse it is simply sitting there waiting to be moved. This is where transportation adds value to goods. Whether the good is moved from the manufacturer to the warehouse and then to a retail store, straight from the manufacturer to the retail store, or simply from one warehouse to the next, the product becomes more valuable to the company as it moves closer to the end user (Schmenner, 2012).

In designing a logistical system, a delicate balance has to be maintained between transportation cost and service quality. In some circumstances low-cost, slow transportation is satisfactory while in other situations, faster service is essential to achieving operating goals. Finding and managing the desired transportation mix across the supply chain network is a primary responsibility of logistics management. Transport management efficiency is therefore dependent on how much value a firm is able to gain based on how much they are able or willing to spend on transportation. Lastly it is transport management that makes firm's goods and products move with lower cost, speed and consistency and provides timely and effective delivery of firm products.

#### 4.3.2. Inventory Management Practice

The inventory of company includes its raw materials; work in process; supplies used in operations as well as finished goods (McInerney, 2015). Managing an inventory is aimed at satisfying customer requirement while minimizing total operational cost. (Ellinger, *et al.*, 2012) defines inventory management as an approach to manage the product flow in a supply chain, to achieve the required service level at an acceptable cost. Inventory management basically implies controlling the business stock or controlling the flow of goods and services as per their demand. Controlling inventory is need of the hour as it formulates the business success/failure as competition is intense, growing day by-day. Knowledge about inventory management to academics and managers is vital for reducing costs, enhancing product quality, service enhancement, improving competitive ability and operational flexibility through pull systems (Swami & Shah, 2013).

For proper inventory management, services of middlemen or intermediaries are required which is often known as supply chain management. Supply chain in simple words means sequence of partners/members/intermediaries engaged or involved to supply and manage the flow of manufactured products to the ultimate customers. These partners/members/intermediaries are known as channel functionaries encompassing suppliers, manufacturers, wholesalers, retailers and the ultimate customers. These members collaborate and work together by forming a network chain to ensure the goods are moved to the markets (customers) known as supply chain. Supply chain is often known as all the parties/channel members involved in satisfying the end customers (Charles, 2012).

In lean supply chain thinking, inventory is regarded as one of the seven 'wastes' and, therefore, it is considered as something to be reduced as much as possible. Similarly, in agile supply chains, inventory is held at few echelons, if at all with goods passing through supply chains quickly so that companies can respond rapidly to exploit changes in market demand (Cardy & Munjal, 2016). There have been various supply chain taxonomies based on these concepts and most stress the need for inventory reduction within each of the classifications. For example, Volberda and Karali (2015), state that a lean supply chain 'generates high (inventory) turns and minimizes inventory throughout the chain' in an agile supply chain companies 'make in response to customer demand' and in a hybrid supply chain companies 'postpone product differentiation and minimize functional components inventory'. There is thus an emphasis on inventory reduction in each of these supply chain classifications. Whilst inventories provide some security against fluctuations in the level of customer demand, there is concern that they may reduce the ability of supply chains to respond to changes in the nature of that demand. Inventories in international supply chains may, therefore, act as a buffer against one risk whilst increasing another type of risk.

#### 4.3.3. Distribution Management Practice

A distribution channel is the path by which all goods and services must travel to arrive at the intended consumer (Das & Salwan, 2013). Conversely, it also describes the pathway payments make from the end consumer to the original vendor (Charles, 2012). In a supply chain, a distribution network is an interconnected group of storage facilities and transportation systems that receive inventories of goods and then deliver them to customers (Carneiro, 2015). It is an intermediate point to get products from the manufacturer to the end customer, either directly or through a retail network. A fast and reliable distribution network is essential in today's instant gratification society of consumers. The supply chain for goods can involve a far-reaching distribution network depending on the product and where the end customers are located (Franken, 2014). A manufacturer may have a distribution network to serve wholesalers, who in turn have their own network to ship to distribution networks operated by retailers, who at the last link of the supply chain would sell the goods in their retail stores. Alternatively, a simplified supply chain could involve a manufacturer shipping finished products to its distribution network and then directly to end consumers.

Generally, if there are more intermediaries involved in the distribution channel, the price for a good may increase (Luo & Child, 2015). Conversely, a direct or short channel may mean lower costs for consumers because they are buying directly from the manufacturer. While a distribution channel may seem endless at times, there are three main types of channels, all of which include the combination of a producer, wholesaler, retailer, and end consumer (Stank, *et al.*, 2015). The first channel is the longest because it includes all four: producer, wholesaler, retailer, and consumer (Stank, *et al.*, 2015). The wine and adult beverage industry is a perfect example of this long distribution channel. In this industry, thanks to laws born out of prohibition, a winery cannot sell directly to a retailer. It operates in the three-tier system, meaning the law requires the winery to first sell its product to a wholesaler who then sells to a retailer. The retailer then sells the

product to the end consumer (Stank, *et al.*, 2015). The second channel cuts out the wholesaler whereby the producer sells directly to a retailer who sells the product to the end consumer (Stank, *et al.*, 2015). This means the second channel contains only one intermediary. Dell, for example, is large enough to sell its products directly to reputable retailers such as Best Buy (Stank, *et al.*, 2015). The third and final channel is a direct-to-consumer model where the producer sells its product directly to the end consumer (Stank, *et al.*, 2015). Amazon, which uses its own platform to sell Kindles to its customers, is an example of a direct model. This is the shortest distribution channel possible, cutting out both the wholesaler and the retailer (Stank, *et al.*, 2015).

Not all distribution channels work for all products, so it's important for companies to choose the right one (Kooi, *et al.*, 2013). The channel should align with the firm's overall mission and strategic vision including its sales goals. The method of distribution should add value to the consumer (Kooi, *et al.*, 2013). Do consumers want to speak to a salesperson? Will they want to handle the product before they make a purchase? Or do they want to purchase it online with no hassles? Answering these questions can help companies determine which channel they choose (Kooi, *et al.*, 2013). Secondly, the company should consider how quickly it wants its product(s) to reach the buyer. Certain products are best served by a direct distribution channel such as meat or produce, while others may benefit from an indirect channel. If a company chooses multiple distribution channels, such as selling products online and through a retailer, the channels should not conflict with one another. Companies should strategize so one channel doesn't overpower the other (Keller & Cappelli, 2014).

#### 4.3.4. Firm Performance of Kenya's Tea Subsector Industry

Firm performance refers to how well an organization achieves its market-oriented goals as well as its financial goals (Kim & Choi, 2014). There are two aspects which must be considered when attempting to define performance; its time frame and its reference point. It is possible to differentiate between past and future performance and past superior performance does not guarantee that it will remain superior in the future (Yoo & Kim, 2012). Firm performance is divided into constructs of operational and organizational performance, which was identified as a typical way of measuring firm performance in past studies on supply chain management fit (Bair & Palpacuer, 2015). Lu, Liang and Shan (2015) provide extensive reviews of typical operational performance measures, which cover typically lead times, on-time deliveries, work-in-process inventories, finished goods inventories, value additions and in-stock rates. Typical corporate performance measures are firm average profit, profit growth, market share growth and sales (Richey, *et al.*, 2011).

The profit margin is an accounting measure designed to gauge the financial health of a business or industry (McKinsey, 2014). In general, it is defined as the ratio of profits earned to total sales receipts (or costs) over some defined period. The profit margin is a measure of the amount of profit accruing to a firm from the sale of a product or service. It also provides an indication of efficiency in that it captures the amount of surplus generated per unit of the product or service sold (Eljelly, 2015). In order to generate a sizeable profit margin, a company must operate efficiently enough to recover not only the costs of the product or service sold, operating expenses, and the costs of debt, but also to provide compensation for its owners in exchange for their acceptance of risk. Profit margin measures the flow of profits over some period compared with the costs, or sales, incurred over the same period.

A market share index is a hypothetical portfolio of investment holdings which represents a segment of the financial market (Apuoyo, 2014). The calculation of the market share index value comes from the prices of the underlying holdings. Some indices have values based on market-cap weighting, revenue-weighting, float-weighting, and fundamental-weighting (Atrill, 2013). Investors follow different market share indexes to gauge market movements (Botlhale, 2017). Market share indices measure the value of a portfolio of holdings with specific market characteristics (Gitman, 2014). Each market share index has its own methodology which is calculated and maintained by the market share index provider (Kamula, 2012). Market share Index methodologies will typically be weighted by either price or market cap. A wide variety of investors use market indices for following the financial markets and managing their investment portfolios (Kiraka, Kobia, & Kattulo, 2013). Market share Indexes are deeply entrenched in the investment management business with funds using them as benchmarks for performance comparisons and managers using them as the basis for creating investable market share index funds (Lyrondi & Lazardis, 2015).

Efficiency means whatever a firm produces or performs; it should be done in a perfect way (Linton, Klassen, & Jayaraman, 2017). Although, effectiveness has a broader approach, which means the extent to which the actual results have been achieved to fulfill the desired outcome i.e. doing accurate things (Mason-Jones, Naylor, & Towill, 2015). These are the metric used to gauge the performance of an organization. Efficiency and Effectiveness are the two words which are most commonly juxtaposed by the people; they are used in place of each other, however they are different. While efficiency is the state of attaining the maximum productivity, with least effort spent, effectiveness is the extent to which something is successful in providing the desired result (Ray, Barney, & Muhanna, 2014).

Performance measurement is intended to produce objective, relevant information on program or organizational performance that can be used to strengthen management and inform decision making (Galbreath, 2012). Galbreath (2012) further notes that organizational performance can be measured using profitability measures such as return on assets (ROA) and return on Equity (ROE). The performance of some organizations such as humanitarian organizations is affected by a number of factors such as good supplier relationship management, the existence of effective and efficient internal operations, ensuring that there is continuous improvement in the supply chain, having in place flexible production processes, use of technology to speed up humanitarian work, inter-organization integrations and simplicity in internal operations are among the practices prevalent among humanitarian organizations in the world (Hunt, 2011).

## 5. Research Methodology

This research adopted a quantitative research design to address the formulated hypotheses. Stratified random sampling technique was used to select a sample size of 155 firms from the target population of 254 firms in the tea subsector industry in Kenya. The study selected 2 respondents from every firm sampled of 155 firms each drawn from top management and middle level management to make a sample size of 310 respondents. Primary data was collected by use of self-administered structured questionnaires which were distributed through the drop and pick method. Secondary data collected from various tea subsector bodies websites, in annual and published financial statements, in national newspapers, during annual general meetings and in-house magazines, important business disclosures in journals, manuals and the various firm's documents were used to cross validate the primary data information collected.

## 6. Data Analysis and Results

### 6.1. Correlation Analysis

		TMP	IMP	DMP	FPM	MSI	EE
Transport Management Practice	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	229					
Inventory Management Practice	Pearson Correlation	.582**	1				
	Sig. (2-tailed)	.000					
	N	229	229				
Distribution Management Practice	Pearson Correlation	.153*	.297**	1			
	Sig. (2-tailed)	.021	.000				
	N	229	229	229			
Firm Profit Margins	Pearson Correlation	.660**	.171**	.238**	1		
	Sig. (2-tailed)	.000	.009	.000			
	N	229	229	229	229		
Market Share Index	Pearson Correlation	.186**	.564**	.534**	.223**	1	
	Sig. (2-tailed)	.005	.000	.000	.001		
	N	229	229	229	229	229	
Efficiency and Effectiveness	Pearson Correlation	.273**	.219**	.520**	.139**	.388**	1
	Sig. (2-tailed)	.000	.001	.000	.000	.001	
	N	229	229	229	229	229	229
** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed). KEY:TMP=Transport Management Practice, IMP=Inventory Management Practice, MP=Distribution Management Practice, FPM=Firm Profit Margins, MSI=Market Share Index, EE=Efficiency and Effectiveness							

Table 2: Pearson Correlation

Pearson Bivariate correlation coefficient was used to compute the correlation between the independent variables transport management practice, inventory management practice and distribution management practice and the dependent variable firm performance of Kenya's tea subsector industry measures (firm profit margins, market share index and efficiency and effectiveness). Sekaran, (2015), asserts that this relationship is assumed to be linear and the correlation coefficient ranges from -1.0 (perfect negative correlation) to +1.0 (perfect positive relationship). The correlation coefficient was calculated to determine the strength and nature of the relationship between the independent variables transport management practice, inventory management practice and distribution management practice and the dependent variable firm performance of Kenya's tea subsector industry measures (firm profit margins, market share index and efficiency and effectiveness). In trying to show the relationship between the independent variables transport management practice, inventory management practice and distribution management practice and the dependent variable firm performance of Kenya's tea subsector industry measures (firm profit margins, market share index and efficiency and effectiveness), the study used the Karl Pearson's coefficient of correlation ( $r$ ). This is as shown in Table 2 above.

Findings presented in Table 2 above indicated that there was a significant correlation effect between transport management practice and firm performance of Kenya's tea subsector industry ( $r = 0.660$ ,  $p$  value = 0.000), market share index ( $r = 0.186$ ,  $p$  value = 0.005) and efficiency and effectiveness ( $r = 0.273$ ,  $p$  value = 0.000) at 0.01 significance level (2-tailed) and this was within the threshold  $p$ -value of 0.01. The findings also indicated that there was a significant correlation effect between inventory management practice and firm performance of Kenya's tea subsector industry ( $r = 0.171$ ,  $p$  value = 0.009), market share index ( $r = 0.564$ ,  $p$  value = 0.000) and efficiency and effectiveness ( $r = 0.219$ ,  $p$  value = 0.001) at 0.01 significance level (2-tailed) and this was within the threshold  $p$ -value of 0.01. The findings also indicated that there was a significant correlation effect between distribution management practice and firm performance of Kenya's tea subsector industry ( $r = 0.238$ ,  $p$  value = 0.000), market share index ( $r = 0.534$ ,  $p$  value = 0.000) and efficiency and effectiveness ( $r = 0.520$ ,  $p$  value = 0.000) at 0.01 significance level (2-tailed) and this was within the threshold  $p$ -value of 0.01. This meant that there was a significant positive relationship between the independent variables transport management practice, inventory management practice and distribution management practice and the dependent variable firm performance of Kenya's tea subsector industry measures (firm profit margins, market share index and efficiency and effectiveness).

### 6.2. Coefficient of Determination (R<sup>2</sup>)

To assess the research model, the independent variables transport management practice, inventory management practice and distribution management practice and the dependent variable firm performance of Kenya's tea subsector industry measures (firm profit margins, market share index and efficiency and effectiveness) were subjected to linear regression analysis in order to measure the success of the model and predict causal relationship between the independent variables transport management practice, inventory management practice and distribution management practice and the dependent variable firm performance of Kenya's tea subsector industry measures (firm profit margins, market share index and efficiency and effectiveness). The results in Table 3 below showed that transport management practice, inventory management practice and distribution management practice had explanatory power on firm performance of Kenya's tea subsector industry as it accounted for 56% of its variability (R Square = 0.560) hence the model was a good fit for the data.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.748 <sup>a</sup>	.560	.554	.79819

Table 3: Model Summary

a. Predictors: (Constant), Distribution Management Practice, Inventory Management Practice, Transport Management Practice.

c. Dependent Variable: Firm Performance

### 6.3. Analysis of Variance

The study used ANOVA to establish the significance of the regression model. In testing the significance level, the statistical significance was considered significant if the p-value was less or equal to 0.05. Table 4 below shows the significance of the regression model on transport management practice, inventory management practice and distribution management practice and firm performance of Kenya's tea subsector industry with P-value of 0.000 which is less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship exists between transport management practice, inventory management practice and distribution management practice and firm performance of Kenya's tea subsector industry with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting firm performance of Kenya's tea subsector industry. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at  $F = 95.452$ ,  $p = 0.000$ .

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	182.441	3	60.814	95.452	.000 <sup>b</sup>
	Residual	143.350	225	.637		
	Total	325.790	228			

Table 4: ANOVA<sup>a</sup>

a. Dependent Variable: Firm Profit Margins

b. Predictors: (Constant), Distribution Management Practice, Inventory Management Practice, Transport Management Practice

### 6.4. Regression Analysis

Regression analysis was conducted to empirically determine whether transport management practice, inventory management practice and distribution management practice had any significant effect on firm performance of Kenya's tea subsector industry. Table 5 below displays the regression coefficients results of transport management practice, inventory management practice and distribution management practice on firm performance of Kenya's tea subsector industry.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.947	.836		11.902	.000
	Transport Management Practice (X <sub>1</sub> )	.551	.035	.701	15.514	.000
	Inventory Management Practice (X <sub>2</sub> )	.146	.074	.090	1.977	.049
	Distribution Management Practice (X <sub>3</sub> )	.196	.027	.328	7.191	.000

Table 5: Regression Coefficients

a. Dependent Variable: Firm Performance

From Table 5 above, the results indicated that transport management practice (with  $\beta = 0.701$ , p value 0.000), inventory management practice (with  $\beta = 0.090$ , p value 0.049) and distribution management practice (with  $\beta = 0.328$ , p value 0.000) were positively correlated and statistically significant in explaining firm performance of Kenya's tea subsector industry. Table 5 above further illustrated that a 0.551 point increase in transport management practice led to a 1 point increase in firm performance of Kenya's tea subsector industry, a 0.146 point increase in inventory management practice led to a 1 point increase in firm performance of Kenya's tea subsector industry and a 0.196 point increase in

distribution channel network led to a 1 point increase in firm performance of Kenya's tea subsector industry *ceteris paribus*.

The regression model was summarized by equation 1 below.

$$Y = 9.947 + 0.551x_1 + 0.146x_2 + 0.196x_3 \dots\dots\dots \text{Equation 4.22}$$

Where,

Y – Firm Performance

X<sub>1</sub> – Transport Management Practice

X<sub>2</sub> – Inventory Management Practice

X<sub>3</sub> – Distribution Management Practice

It was concluded that transport management practice, inventory management practice and distribution management practice had significant positive correlation effect on firm performance of Kenya's tea subsector industry.

## 7. Conclusions and Recommendations

### 7.1. Conclusions

It can be concluded that transport management practice, inventory management practice and distribution management practice had a statistically significant and positive correlation effect on firm performance of Kenya's tea subsector industry linked to firm profit margins, market share index and efficiency and effectiveness. The regression and correlation results revealed a statistically significant positive linear relationship effect between transport management practice, inventory management practice and distribution management practice and firm performance of Kenya's tea subsector industry linked to firm profit margins, market share index and efficiency and effectiveness. This was attributed to firms in the tea subsector industry deploying strategies to deal with transport management systems, inventory management systems and distribution channel network in order to enhance logistics management and overall firm performance of Kenya's tea subsector industry.

### 7.2. Recommendation

The study therefore recommends the inclusion of inventory management systems in the strategic plans of the tea subsector industry firms in Kenya. The study also recommends that managers in the tea subsector industry firms in Kenya should incorporate transport management systems and distribution channel network within the performance strategies of their firms so as to ensure smooth and efficient flow of tea products across the supply chain network and hence eventually to the final consumer both locally and internationally. This will significantly improve the firm performance of Kenya's tea subsector industry thus increasing firm profit margins, market share index and efficiency and effectiveness.

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