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## Effect of Warehouse Consolidation on Performance of Registered Distribution Firms in Nairobi City County, Kenya

**Vincent N. Ogeri**

Lecturer, Department of Procurement,  
Jomo Kenyatta University of Agriculture and Technology Nairobi County, Kenya

**Dr. Anthony Osoro**

Lecturer, Department of Procurement,  
Jomo Kenyatta University of Agriculture and Technology, Nairobi County, Kenya

### **Abstract:**

*The objective of this study was to determine the effect of warehouse consolidation on performance of distribution firms in Nairobi City County. The study was conducted amongst respondents who were targeted in this study from Nairobi City County. It made use of the descriptive research design.; data were collected from 138 respondents via questionnaire. These responses were analyzed via spearman rank order correlation, within the confines of SPSS version 23. This study found out that economic order quantity was significantly related to these performance of distribution firms in Nairobi City County under this study. In conclusion, this study points out that an effective implementation of the performance of distribution firms in Nairobi City County it requires warehouse consolidation on performance of distribution firms to achieve this outcomes using economic order quantity, improved efficiency, lead time and improved customer service would enhance warehouse consolidation on performance of distribution firms in Nairobi City County, Kenya.*

**Keywords:** Economic order quantity, improved efficiency, lead time and improved customer

### **1. Introduction**

Warehousing management is paramount due to the increase in producers (Pourhejazy, 2020). Pourhejazy advises that warehouse management is fundamental in handling goods in the various stages in the supply chain processes. Covid-19 has increased radically changes businesses, especially the e-commerce industry (Kim, 2020). The pandemic increased demand for e-commerce products due to the increase by customers' demands. This has further caused the unprecedented need for implementation of sustainable measures and strategic considerations by the logistics companies. As such, effective warehouse practices have been adopted to reduce excess inventory and enhance operational flexibility. Pourhejazy (2020) noted that inventory management is necessary to reduce lead time and additional logistics costs. Consolidation of warehouse activities enhances organizational costs, improves supply chain performance, and increases the profitability of the business (Parilla&Abadilla, 2021). Parilla and Abadilla further contended that companies consider warehouse consolidation because they should re-evaluate their supply chains to ensure optimal performance. Warehouse consolidation improves customer satisfaction, which increases the return on investment of the firms. Warehouse consolidation eases the process of distribution, increasing their distribution capacity.

#### *1.1. Transactional Cost Economies Theory*

Transaction cost economic theory is thought to be relevant for this study in order to understand the effect of Economic order quantity on performance registered distribution firms in Nairobi City County, Kenya, hence it gives a theoretical background for this study. According to Williamson (1979), who stated that optimum organizational structure minimizes the exchange costs, ensuring economic efficiency? William posited that all transactions in organizations cause coordination costs. Coordination costs are costs incurred by an organization in managing inputs and outputs. Williamson asserted that transactional costs can be reduced by reducing operational expenses by altering the governance structure of a firm. The transactional cost economics theory also suggested that transactions should be considered before making any decisions in a firm.

This theory was supported by Ketokivi and Mahoney, (2020), who posited that a transactional cost economy is efficient in supply chain because it emphasizes on economic organization by enhancing governance of exchange relationships. According to Ketokivi and Mahoney, the transactional cost economics theory is the most applied theory in Supply Chain Management (SCM), especially consolidation. The authors assert that the transaction cost analysis theory emphasizes on minimizing transactional costs, which eventually improves the firm's efficiency. Transactional cost analysis theory demonstrates that businesses should adopt supply chain arrangements that improve efficiency and competitiveness. Zylbersztajn (2018) noted that the transactional cost analysis theory helps to effectively manage costs and governance. Vaillancourt (2017) asserted that the transactional cost analysis theory is crucial in consolidated businesses because it reduces the number of interactions, reducing transactions cost and improving business

performance. The transactional cost economics theory is significant in economic order quantity because it helps to minimize the holding cost and the ordering cost. This theory applies to this study because it is significant in Supply Chain Management (SCM) and it emphasizes on the need of reducing transactional cost to achieve operational efficiency. The theory also states that businesses should enhance competitiveness by improving their organizational structure, such as consolidation of businesses.

### 1.2. Agency Theory

Agency theory is thought to be relevant for this study in order to understand the effect of improved customer service on performance registered distribution firms in Nairobi City County, Kenya, hence it gives a theoretical background for this study. According to Mitnick (1973) developed the agency theory to explain the concept between agents and principals. According to Mitnick, the agent makes decisions on behalf of the principal. The final decision of agents has a significant impact on the principals because they are the business owners. The theory states that the agents should make decisions that reduce costs while increasing shareholders' wealth. The principal-agent problem or dilemma occurs when agents act in their interests instead of making decisions that affect the principals positively. Further, Mitnick asserted that the management of contractual agreements is essential in improving business performance. Business projects should benefit the owners (Zwikael et al., 2018). Payne and Petrenko (2019) supported agency theory by stating that managers should implement earnings management to reduce business costs.

The agency theory stated that there are two types of agency problems, namely: stockholders' managers, and stakeholders versus stockholders. Stockholders and managers conflict arises when managers disagree with most decisions made by the stockholders. The managers are risk-averse; therefore, they invest in projects with visible returns. The stockholders want to earn the maximum returns from the business, initiating an agency problem. The agency theory affirms that managers should control all supply chain activities to ensure reduced transactional costs and improved business growth. Managers act as agents, and they should ensure that the decision-making process mitigates any abnormalities in the distribution process. The agency theory focuses on managing the business effectively to benefit the owners on the business. This theory applies to this study because it emphasizes reducing transactional costs and maximizing efficiency. The agency theory also provides insights that agents can use to improve business relationships. Warehouse consolidation must ensure reduced cost and improved efficiency of distribution firms.

### 1.3. Network Theory

Network theory is thought to be relevant for this study in order to understand the effect of lead time on performance registered distribution firms in Nairobi City County, Kenya, hence it gives a theoretical background for this study. The network theory explains the relationships between suppliers, buyers, and companies (Yan et al., 2017). The theory stated that enterprises cannot achieve supply chain strategies singlehandedly. The theory asserts that as customer demands increase, enterprises should ensure that all supply chain activities are coordinated to reduce the operational costs and achieve an improved customer service. The theory further states that company's managers should re-think their business strategies to benefit the supply chain strategies. The network theory is significant in supply chain because it shows it shows the relationship between different players in the supply chain management. The network theory supports supply chain because it shows the relationships between companies that are in the same supply chain and how to make effective supply chain decisions.

The network theory holds that market relationship occur between customers, suppliers, or manufacturers (Akar&Dalgic, 2018). The network theory was supported by Möller and Halinen (2017), who stated that enterprises cannot achieve management individually. Enterprises should undertake initiatives to conduct efficient and adequate supply chain coordination to meet the customers' demands, ensuring low operational costs. Network theory applies to lead time because it ensures that there is a reduction in time taken from the process of receiving an order to delivering the order to the consumer. This theory applies to this study because it supports that supply chain activities should network and work in harmony to ensure effective performance. This may involve warehouse consolidation by ensuring that resources are utilised adequately to improve the performance of enterprises.

## 2. Economic Order Quantity

Economic order quantity is the order quantity that a company has to purchase to minimize inventory costs (Nobilet al., 2018). Economic order quantity leads to inventory cost savings, reduction in reorder point, and flexibility. Economic order quantity determines the optimal inventory level (Kumar, 2016). According to Kumar, economic order quantity is an important tool in inventory control and it can be used in working-in-progress inventory, raw material inventory, and finished goods inventory. Economic order quantity enhances performance of distribution firms by determining the optimal level. The economic order quantity model determines the right raw materials to be used in the production process (Melati&Slamet, 2019).

Economic order quantity entails; Inventory cost savings, re-order point and flexibility. According to Möller and Halinen (2017) the reorder point is the level of inventory which triggers an action to replenish that particular inventory stock. It is a minimum amount of an item which a firm holds in stock, such that, when stock falls to this amount, the item must be reordered (Akar&Dalgic, 2018). The EOQ model seeks to ensure that the right amount of inventory is ordered per batch so a company does not have to make orders too frequently and there is not an excess of inventory sitting on hand. It assumes that there is a trade-off between inventory holding costs and inventory setup costs, and total inventory costs are minimized when both setup costs and holding costs are minimized (Möller&Halinen, 2017). The basis for the EOQ formula assumes that consumer demand is constant. The calculation also assumes that both ordering and holding costs remain

constant. These assumptions make it difficult, if not impossible, to account for unpredictable business events, such as changing consumer demand, seasonal changes in inventory costs, lost sales revenue due to inventory shortages, or purchase discounts a company might get for buying inventory in larger quantities (Payne & Petrenko, 2019).

### 2.1. Integrated Information Communication and Technology

Information communication and technology is salient in businesses performance because it is a change catalyst (Ratheeswari, 2018). Information technology makes a business efficient, enhancing faster response to customers' needs. This further causes business growth and improves organizational performance. Zunicet *al.* (2018) accentuated that distribution company's use information communication technology to ensure that all the processes are simple and efficient. Information communication technology improves the working process and saves significant resources if it is implemented properly. In today's business environment, even small and mid-sized businesses have come to rely on computerized inventory management systems. Certainly, there are plenty of small retail outlets, manufacturers and other businesses that continue to rely on manual means of inventory tracking. Indeed, for some small businesses like convenience stores, shoe stores, or nurseries, purchase of an electronic inventory tracking system might constitute a wasteful use of financial resources. But for other firms operating in industries that feature high volume turnover of raw materials and/or finished products, computerized tracking systems have emerged as a key component of business strategies aimed at increasing productivity and maintaining competitiveness. Moreover, the recent development of powerful computer programs capable of addressing a wide variety of record keeping needs—including inventory control—in one integrated system have also contributed to the growing popularity of electronic inventory control options (Ahmad & Zabri, 2018). Information communication and technology also helps in demand forecasting. Demand plays a crucial role in the management of every business. It helps an organization to reduce risks involved in business activities and make important business decisions. Apart from this, demand forecasting provides an insight into the organization's capital investment and expansion decisions, (Nyamao & Ojera, 2012).

### 2.2. Lead Time

This is the time taken between order placement in inventory replenishment and receiving the order (Chang & Lin, 2019). When the lead time is long it has a detrimental effect on the business (Ponte, Costas, Puche, Pino, & De la Fuente, 2018). Therefore, if the lead time is long, companies have to pay more to the store. Lead time has a significant impact of the agility of a business, which affects the adaptability of the business. Minimizing the lead time has a positive and significant influence on the efficiency of the supply chain and the operational costs. Lead time is characterized by competitive advantage, efficiency and improved business. According to Hussein and Makori (2018) a competitive advantage is an attribute that enables a company to outperform its competitors. This allows a company to achieve superior margins compared to its competition and generates value for the company and its shareholders. Mkonu and Gichana (2019) argues that a competitive advantage must be difficult, if not impossible, to duplicate. If it is easily copied or imitated, it is not considered a competitive advantage.

The awareness of a company's lead time urges managers to better reflect on every step that a product takes until its delivery to the customer. Therefore, if this rate is unfavorable, solutions can be conceived and initiatives implemented to force the reduction of such period. It's even possible to do this by identifying and eliminating errors, bottlenecks and waiting times throughout production (Wambua *et al.* 2015). From the moment a company's lead time is discovered, their executives can strive to adopt a leaner and more productive supply chain methodology, in order to decrease supply time and delivery time to the customer. This commitment will translate into more satisfaction from consumers, who will become loyal to the brand (Ahmad & Zabri, 2018).

### 2.3. Improved Customer Service

Customer service is customer support that a business gives to its clients. Improved customer service results in customer satisfaction, brand loyalty, and customer referral. Improved customer service causes an improved performance in distribution firms. Businesses must integrate customer relationship management to improve their customer service (Badwan *et al.*, 2017). Customer relationship management identifies customers' needs and meets those needs. Meeting customers' needs helps in customer retention. Customer retention fuels business growth and organizational performance (Ascarza *et al.*, 2017). Brand loyalty is the positive feelings towards a brand and dedication to purchase the same product or service repeatedly, regardless of deficiencies, a competitor's actions or changes in the environment. It can also be demonstrated with other behaviors such as positive word-of-mouth advocacy (Muhalia *et al.* 2021). A referral program is a word-of-mouth marketing tactic that encourages customers to advocate on behalf of your brand. Rather than writing reviews online, or submitting customer feedback surveys, referral programs let customers share their brand experience with partners, colleagues, and friends. The purpose of a referral program is to attract new leads to your business. But, you're not just bringing in anyone. By asking customers to think about people who would benefit from your product or service, they'll refer leads that are a good fit for your brand (Mumelo *et al.*, 2017).

Consumer spending is what households buy to fulfill everyday needs. This private consumption includes both goods and services. Every one of us is a consumer. The things we buy every day create the demand that keeps companies profitable and hiring new workers. Almost two-thirds of consumer spending is on services, like real estate and health care. Other services include financial services, such as banking, investments, and insurance. Cable and internet services also count, and even services from non-profits. The remaining one-third of our personal consumption expenditure is on goods. These include so-called durable goods, such as washing machines, automobiles, and furniture. More frequently, we buy non-durable goods, such as gasoline, groceries, and clothing (Basheer *et al.*, 2019).

#### 2.4. Performance of Distribution Firms

This is the achievement of organizational goals and objectives of distribution firms. Profit margin, return on investment, and reduced cycle time help in the achievement of organizational goals and objectives, resulting to the improved performance of distribution firms. Firms' capabilities enhance the firm's resource base, enhancing organizational performance (Sraha et al., 2020). Business growth influences a firm performance and causes it to have a competitive advantage in the market. Distribution firms must produce quality products and ensure timely supply of the goods to the customers (Kahia&Iravo, 2014). Profit margin is one of the commonly used profitability ratios to gauge the degree to which a company or a business activity makes money. It represents what percentage of sales has turned into profits (Nyamao&Ojera, 2012). Simply put, the percentage figure indicates how many cents of profit the business has generated for each dollar of sale. There are several types of profit margin. In everyday use, however, it usually refers to net profit margin, a company's bottom line after all other expenses, including taxes and one-off oddities, have been taken out of revenue (Muhaliaet al., 2021). According to Karimi and Namusonge (2014) return on investment or return on costs is a ratio between net income and investment. A high ROI means the investment's gains compare favourably to its cost. As a performance measure, ROI is used to evaluate the efficiency of an investment or to compare the efficiencies of several different investments. Mumeloet al. (2017) argued that customer satisfaction is a term frequently used in marketing. It is a measure of how products and services supplied by a company meet or surpass customer expectation.

### 3. Research Design

A research design is the set of methods and procedures used in collecting and analyzing measures of the variables specified in the problem research (Kothari, 2011). This study utilized the descriptive research design. The census survey descriptive research design involves posing a series of questions to willing participants, summarizing their responses with percentages, frequency counts, and other statistical indexes and then drawing inferences about a particular population from the responses of the sample (Osei-Tutu, 2016).

#### 3.1. Descriptive Statistics

##### 3.1.1. Economic Order Quantity and Performance of Distribution Firms

The first specific objective of the study was to determine the effect of economic order quantity on performance of distribution firms in Nairobi City County. The respondents were requested to indicate their level of agreement on various statements relating to economic order quantity and performance of distribution firms in Nairobi City County. A 5-point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 4.3.

From the results, the respondents agreed that economic order quantity has minimized the buying costs. This is shown by a mean of 3.830 (std. dv = 0.928). In addition, with a mean of 3.817 (std. dv = 0.858), the respondents agreed that their company orders appropriate quantities to minimize inventory costs. The respondents also agreed that the formulation and implementation of inventory order quantity policies are in line with the overall goal. This is supported by a mean of 3.755 (std. dv = 0.834). With a mean of 3.632 (std. dv = 0.974), the respondents agreed that economic order quantity is important in enhancing cash flow. In addition, the respondents agreed that sufficient inventory helps to meet the customers' needs. This is supported by a mean of 3.617 (std. dv = 0.958).

|   | 1    | 2    | 3    | 4    | 5    | Mean  | Std. Deviation |
|---|------|------|------|------|------|-------|----------------|
| My company orders appropriate quantities to minimize inventory costs                                      | 6.9  | 6.9  | 22.8 | 34.5 | 29.0 | 3.817 | 0.858          |
| The formulation and implementation of inventory order quantity policies are in line with the overall goal | 14.0 | 12.4 | 13.8 | 3.5  | 27.6 | 3.755 | 0.834          |
| Economic order quantity is important in enhancing cash flow   | 9.7  | 10.3 | 8.3  | 40.0 | 31.7 | 3.632 | 0.974          |
| Sufficient inventory helps to meet the customers' needs   | 6.9  | 6.9  | 16.8 | 40.5 | 29.0 | 3.617 | 0.958          |
| Economic order quantity has minimized the buying costs  | 11.7 | 12.4 | 13.8 | 34.5 | 27.6 | 3.830 | 0.928          |

Table 1: Economic Order Quantity and Performance of Distribution Firms

The respondents were further requested to indicate how else economic order quantity influence performance of distribution firms in Nairobi City County. From the results, the respondents indicated that economic order quantity leads to inventory cost savings, reduction in reorder point, and flexibility. In addition, the respondents revealed that economic order quantity determines the optimal inventory level. According to the respondent's economic order quantity is an important tool in inventory control and it can be used in working-in-progress inventory, raw material inventory, and finished goods inventory. Economic order quantity enhances performance of distribution firms by determining the optimal level. The economic order quantity model determines the right raw materials to be used in the production process.

### 3.1.2. ICT and Performance of Distribution Firms

The second specific objective of the study was to determine the effect of Information, Communication and Technology on performance of distribution firms in Nairobi City County. The respondents were requested to indicate their level of agreement on various statements relating to Information, Communication and Technology and performance of distribution firms in Nairobi City County. A 5-point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 4.4.

From the results, the respondents agreed that ICT has had a positive impact on the optimization of stock control. This is shown by a mean of 3.917 (std. dv = 0.805). In addition, with a mean of 3.849 (std. dv = 0.923), the respondents agreed that ICT has enabled faster data sharing. The respondents also agreed that ICT has resulted in business growth. This is supported by a mean of 3.758 (std. dv = 0.913). With a mean of 3.655 (std. dv = 0.981), the respondents agreed that ICT has helped the company to avoid inaccurate inventories. In addition, the respondents agreed that ICT has helped in streamlining the processes in the company. This is shown by a mean of 3.544 (std. dv = 0.989). This finding is in line with the findings Waithaka (2015).

|  | 1    | 2    | 3    | 4    | 5    | Mean  | Std. Deviation |
|--|------|------|------|------|------|-------|----------------|
| ICT has helped in streamlining the processes in the company        | 13.8 | 11.7 | 11.0 | 33.1 | 30.3 | 3.544 | 0.989          |
| ICT has had a positive impact on the optimization of stock control | 9.7  | 12.4 | 7.6  | 37.2 | 33.1 | 3.917 | 0.805          |
| ICT has helped the company to avoid inaccurate inventories         | 2.8  | 9.0  | 27.6 | 41.4 | 19.3 | 3.655 | 0.981          |
| ICT has enabled faster data sharing                                | 13.1 | 9.0  | 20.0 | 31.7 | 26.2 | 3.849 | 0.923          |
| ICT has resulted in business growth                                | 5.5  | 8.3  | 18.6 | 40.0 | 27.6 | 3.758 | 0.913          |

Table 2: ICT and Performance of Distribution Firms

The respondents were further requested to indicate how else ICT influence performance of distribution firms in Nairobi City County. From the results, the respondents indicated that Information technology makes a business efficient, enhancing faster response to customers' needs. This further causes business growth and improves organizational performance. In addition; the respondents indicated that distribution companies use information communication technology to ensure that all the processes are simple and efficient. Further, it was revealed that information communication technology improves the working process and saves significant resources if it is implemented properly.

### 3.1.3. Lead Time and Performance of Distribution Firms

The third specific objective of the study was to determine the effect of lead time on performance of distribution firms in Nairobi City County. The respondents were requested to indicate their level of agreement on various statements relating to lead time and performance of distribution firms in Nairobi City County. A 5-point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 4.5.

From the results, the respondents agreed that they meet deadlines easily and consistently. This is shown by a mean of 3.897 (std. dv = 0.987). In addition, with a mean of 3.758 (std. dv = 0.913), the respondents agreed that training helps improve the growth of the organization. The respondents also agreed that they have quicker replenishment of stock. This is supported by a mean of 3.744 (std. dv = 0.976). With a mean of 3.698 (std. dv = 0.981), the respondents agreed their company has more efficient output. The respondents agreed that warehouse consolidation has helped to reduce the lead time. This is shown by a mean of 3.558 (std. dv = 0.963).

|  | 1    | 2    | 3    | 4    | 5    | Mean  | Std. Deviation |
|--|------|------|------|------|------|-------|----------------|
| Warehouse consolidation has helped to reduce the lead time | 4.1  | 6.2  | 34.5 | 40.0 | 15.2 | 3.558 | 0.963          |
| Training helps improve the growth of the organization.     | 5.5  | 8.3  | 18.6 | 40.0 | 27.6 | 3.758 | 0.913          |
| Our company has more efficient output                      | 2.8  | 9.0  | 27.6 | 41.4 | 19.3 | 3.698 | 0.981          |
| We have quicker replenishment of stock                     | 13.8 | 11.7 | 11.0 | 33.1 | 30.3 | 3.744 | 0.976          |
| We meet deadlines easily and consistently                  | 11.5 | 8.5  | 10.0 | 40.0 | 30.0 | 3.897 | 0.987          |

Table 3: Lead Time and Performance of Distribution Firms

The respondents were further requested to indicate how else lead time influence performance of distribution firms in Nairobi City County. From the results, the respondents indicated that when the lead time is long it has a detrimental effect on the business. Therefore, if the lead time is long, companies have to pay more to the store. The respondents further revealed that lead time has a significant impact of the agility of a business, which affects the

adaptability of the business. Minimizing the lead time has a positive and significant influence on the efficiency of the supply chain and the operational costs.

### 3.1.4. Improved Customer Service and Performance of Distribution Firms

The fourth specific objective of the study was to determine the effect of improved customer service on performance of distribution firms in Nairobi City County. The respondents were requested to indicate their level of agreement on various statements relating to improved customer service and performance of distribution firms in Nairobi City County. A 5-point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 4.6.

From the results, the respondents agreed that most the customers are satisfied with the services offered. This is shown by a mean of 3.996 (std. dv = 0.933). In addition, with a mean of 3.879 (std. dv = 0.863), the respondents agreed that their firm has many loyal customers. The respondents also agreed that the company has an enhanced brand reputation. This is supported by a mean of 3.771 (std. dv = 1.241). With a mean of 3.737 (std. dv = 0.984), the respondents agreed that they get a lot of word-of-mouth recommendations. The respondents agreed that they have acquired a lot of new customers. This is shown by a mean of 3.621 (std. dv = 0.705).

|  | 1    | 2    | 3    | 4    | 5    | Mean  | Std. Deviation |
|--|------|------|------|------|------|-------|----------------|
| Our firm has many loyal customers                          | 4.1  | 4.1  | 20.0 | 33.1 | 38.6 | 3.879 | 0.863          |
| The company has an enhanced brand reputation               | 10.6 | 11.7 | 1.7  | 31.3 | 54.8 | 3.771 | 1.241          |
| We get a lot of word-of-mouth recommendations              | 8.3  | 7.6  | 13.8 | 42.8 | 27.6 | 3.737 | 0.984          |
| We have acquired a lot of new customers                    | 11.0 | 10.5 | 8.5  | 12.0 | 39.0 | 3.621 | 0.705          |
| Most the customers are satisfied with the services offered | 8.7  | 7.2  | 13.8 | 38.3 | 32.0 | 3.996 | 0.933          |

Table 4: Improved Customer Service and Performance of Distribution Firms

The respondents were further requested to indicate how else improved customer service influence performance of distribution firms in Nairobi City County. From the results, the respondents indicated that improved customer service causes an improved performance in distribution firms. The respondents indicated that businesses must integrate customer relationship management to improve their customer service. In addition, the respondents agreed that customer relationship management identifies customers' needs and meets those needs. Further, the respondents indicated that meeting customers' needs helps in customer retention. Customer retention fuels business growth and organizational performance

### 3.1.5. The Performance of Distribution Firms

The respondents were requested to indicate their level of agreement on various statements relating to performance of distribution firms in Nairobi City County. A 5-point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 4.7.

From the results, the respondents agreed that they have received many referrals from our customers. This is shown by a mean of 3.986 (std. dv = 1.084). In addition, with a mean of 3.875 (std. dv = 0.275), the respondents agreed that the firm has shown an upward trend in profitability. The respondents also agreed that there is increase in return on investment. This is supported by a mean of 3.827 (std. dv = 0.920). With a mean of 3.569 (std. dv = 0.889), the respondents agreed that there are few customer complaints. The respondents also agreed that they satisfied with the general performance of our firm. This is supported by a mean of 3.558 (std. dv = 0.963).

|   | 1    | 2    | 3    | 4    | 5    | Mean  | Std. Deviation |
|---|------|------|------|------|------|-------|----------------|
| Our firm has shown an upward trend in profitability   | 8.3  | 9.7  | 14.5 | 38.6 | 29.0 | 3.875 | 0.275          |
| There is increase in return on investment             | 5.5  | 8.3  | 14.5 | 41.4 | 30.3 | 3.827 | 0.920          |
| We have received many referrals from our customers    | 6.9  | 6.9  | 8.3  | 36.6 | 41.4 | 3.986 | 1.084          |
| There are few customer complaints                     | 15.9 | 12.4 | 4.1  | 44.1 | 23.4 | 3.569 | 0.889          |
| Am satisfied with the general performance of our firm | 4.1  | 6.2  | 34.5 | 40.0 | 15.2 | 3.558 | 0.963          |
| Aggregate   |      |      |      |      |      | 3.755 | 0.8747         |

Table 5: Performance of Distribution Firms

### 3.2. Regression Analysis

Multivariate regression analysis was used to assess the relationship between independent variables (economic order quantity, Information, Communication and Technology, lead time and improved customer service) and the dependent variable (performance of distribution firms in Nairobi City County)

| Model   | R    | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|------|----------|-------------------|----------------------------|
| 1   | .919 | .845     | .846              | .10182                     |
| a. Predictors: (Constant), economic order quantity, Information Communication and Technology, lead time and improved customer service |      |          |                   |                            |

Table 6: Goodness Fit Model Summary

When R square is 0.845 meaning 84.5% this finding has greatly contributed new knowledge so as to improve performance of distribution firms in Nairobi City County, Kenya if fully implemented the remaining variance of 15% were other factors or variables which were not included in this research study. This goodness fit model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The r-squared for the relationship between the independent variables and the dependent variable was 0.845. This implied that 84.5% of the variation in the dependent variable (performance of distribution firms in Nairobi City County) could be explained by independent variables (economic order quantity, Information, Communication and Technology, lead time and improved customer service).

| Model  | Sum of Squares | df      | Mean Square | F      | Sig.    |                   |
|--|----------------|---------|-------------|--------|---------|-------------------|
| 1  | Regression     | 119.027 | 1           | 29.756 | 531.360 | .000 <sup>b</sup> |
|  | Residual       | 4.568   | 85          | .056   |         |                   |
|  | Total          | 123.595 | 86          |        |         |                   |
| a. Dependent Variable: Performance of distribution firms in Nairobi City County  |                |         |             |        |         |                   |
| b. Predictors: (Constant), Economic Order Quantity, Information, Communication and Technology, Lead Time and Improved Customer Service |                |         |             |        |         |                   |

Table 7: ANOVA Test (Analysis of Variance)

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 531.360 while the F critical was 2.484. The p value was 0.000. Since the F-calculated was greater than the F-critical and the p value 0.000 was less than 0.05, the model was considered as a good fit for the data. Therefore, the model can be used to predict the influence of economic order quantity, Information, Communication and Technology, lead time and improved customer service on the performance of distribution firms in Nairobi City County.

| Model |                           | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig.  |
|-------|---------------------------|-----------------------------|------------|---------------------------|-------|-------|
|       |                           | B                           | Std. Error | Beta                      |       |       |
| 1     | (Constant)                | 0.331                       | 0.079      |                           | 4.190 | 0.001 |
|       | economic order quantity   | 0.366                       | 0.102      | 0.367                     | 3.588 | 0.002 |
|       | ICT                       | 0.472                       | 0.107      | 0.473                     | 4.411 | 0.000 |
|       | lead time                 | 0.389                       | 0.104      | 0.392                     | 3.740 | 0.001 |
|       | Improved customer service | 0.415                       | 0.098      | 0.417                     | 4.235 | 0.000 |

Table 8: Regression Coefficients Results

## 4. Conclusion

The study concludes that economic order quantity has a positive and significant effect on the performance of distribution firms in Nairobi City County. Also, this finding revealed that economic order quantity such as inventory cost savings, re-order point and flexibility can influence the performance of distribution firms. Additionally, the study concludes that Information and Communications Technology has a positive and significant effect on the performance of distribution firms in Nairobi City County. Findings revealed that Information and Communications Technology in issues such as streamlines processes, optimize stock control and avoid inaccurate inventories) influence the performance of distribution firms. Further, the study concludes that lead time has a positive and significant effect on the performance of distribution firms in Nairobi City County. Findings revealed that lead time (competitive advantage, efficiency and improved business) influence the performance of distribution firms. The study also concludes that improved customer service has a positive and significant effect on the performance of distribution firms in Nairobi City County. Findings revealed that improved customer service (increased customer expenditure, brand loyalty and customer referral) influence the performance of distribution firms.

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