

Effects of Information Technology on Performance of Logistics Firms in Nairobi County

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Abstract- Irrespective of the fact that Logistic firms are making much profit, they still suffer from inefficiency and insecurity. Critically evaluating the introduction of information technology owing to its objectives, it is not concern with how much technology is provided but how well it serves potential users. This cloudy atmosphere therefore provides a fertile ground for the researchers to examine the effects of information technology on Logistic firm's performance in Nairobi Kenya to realize its significant impact on their operations in order to guarantee their profitability and growth. The target population was logistic firms within Nairobi County. Data was collected from 10 firms in the logistic industry suppliers in Nairobi. A set of items, based on the research model, was developed, and aggregated into four scales for measuring the use of IT in company, and three scales for measuring the company performance. The data was analyzed using SPSS and result presented in form of tables and charts. The respondent rate was 93%. On the demographic data, the researcher sought to investigate the age of respondent, 10% of the respondents were aged between 18 to 26 years and 27 to 35 years of age respectively, 20% of respondent were aged between the ages of 36 to 45. On the ownership of the firms, majority 70% followed by other firms 20%, foreign firms was 10% while government does not own any logistic firms. On the extent to which the Information and Technology, the findings reveals over (50%) of the firms are not using IT in their departments and service delivering indicating low level of IT usage among logistic firms in Nairobi County. This shows that the factors that are not covered amount only to 20.9%. It is therefore, means the four factors have a big role to play on the performance of logistic firms in Nairobi County. The ANOVA result for all variables indicates that there was a highly significant relationship between the variables at $F = 2.729$ and $P = 0.000$. This implies that there is a strong relationship between the four variables and the performance of logistic firms in Nairobi County

I. INTRODUCTION

New technology in the supply chain can help improve supply chain agility, power up operation, reduce cycle time, achieve higher efficiency and deliver products to customer on time if implemented correctly. It is also to make sure new solution integrate with existing technologies and processes crucial. Integrating new technology into existing operations can help a lot in increasing customer service, reduce costs, and streamline supply chains. The new technology must fit into

existing policies, practices and people and use to it full power. The topic "Information Technology contribution to firm's performance" has been in the focus of research for more than three decades, and a plethora of research has been conducted to understand and evaluate the link between IT investment and organizational performance.

The ongoing diffusion of new Information Communication Technology (ICT) and e-business technologies among firms is a current example of the dynamics of technological change and economic development (Koellinger, 2006). IT can have a significant influence on the mobility of people and goods; IT is potentially important enabler of change in social and organizational practices, thus affecting the demand for transport in spatial and temporal terms. Technological trends will meet the demand for comfort, safety and speed through advances in IT in the field of telemetric (Capgemini, 2008). This covers systems for traffic and transport management, travel information and reservations, vehicle guidance, and mobility cards. Over the last few years, firms operating in the transport and logistics sector have made significant progress in their adoption of new technologies, particularly those linked to the internet and e-business (Koellinger, 2006).

The dissemination of IT has affected the competitive scenario of the third party logistics (3PL) industry in recent years contributing to change the supply chain role of Third Party Logistics (3PLs) significantly. Logistics service companies play a more important function than in the past insofar as they are entrusted with the task of integrating and accelerating physical and information flows at multiple levels of the supply chain (Kenneth & Laudon, 2007). This new supply chain role of 3PLs has emphasized the need to measure their performance. There has been little empirical research focused on 3PLs performance measurement, especially in order to structure 3PIs for the evaluation of value added services. In addition, the impact of IT on logistics service companies has amplified the difficulties in measuring performance, as it is particularly hard to identify the specific contribution of IT in generating superior company performance (Kenneth & Laudon, 2007). Due to growth of information technology, many firms have adopted its application in their business processes to enhance operational excellence. Specifically logistics firms have not been left behind in applying IT in their business processes (Cooper & Schindler, 2013).

The Information Technology Association of America (ITAA) as being the study, design, development, implementation support, has defined information technology and/or management of any computer based information systems (Kenneth & Laudon,

2007). This relates particularly to software applications and computer hardware. Information technology deals with using electronic, computers and software to convert, store, protect, process, retrieve with security or transmit any information (Kenneth & Laudon, 2007). [Information technology](#) is concerned with improvements in a variety of human and organizational problem-solving endeavors through the design, development, and use of technologically based systems and processes that enhance the efficiency and effectiveness of information in a variety of strategic, tactical and operational situations. Ideally, this is accomplished through critical attention to the information needs of humans in problem-solving tasks and in the provision of technological aids, including electronic communication and computer-based systems of hardware, software and associated processes. Information technology complements and enhances traditional engineering through emphasis on the information basis for engineering (Capgemini, 2008).

Everything from data management, networking, engineering computer hardware, software design, database design and management and administration of systems is included in the term of information technology. When covering the aspects of IT

as a whole, the use of computers and information are typically associated. The history of IT goes back several years. In order to perform the functions associated with the field of technology the modern field will use computers, servers, database management systems and cryptography (Kenneth & Laudon, 2007). Due to the nature of logistics firms, globalization and growth of technology, it has necessitated the firms to adapt IT in their operations. The use of IT has been associated with the benefits such as Increased efficiency and effective in business process, facilitates sharing of information quickly and efficiently by bringing down barriers of linguistic and geographic boundaries, it facilitates cheaper, quicker, and more efficient communication ,cost reduction hence increased productivity, increased working hours and bridging cultural gap (Capgemini, 2008). Generally, firms that have adopted IT have achieved high levels of efficiency and effectiveness in their day-to-day business operations hence improving their performance by gaining a competitive advantage, increased profitability and increased market share over their competitors (Capgemini, 2008).

The figure 1.1 below shows the relationship and functions of logistics firms and suppliers

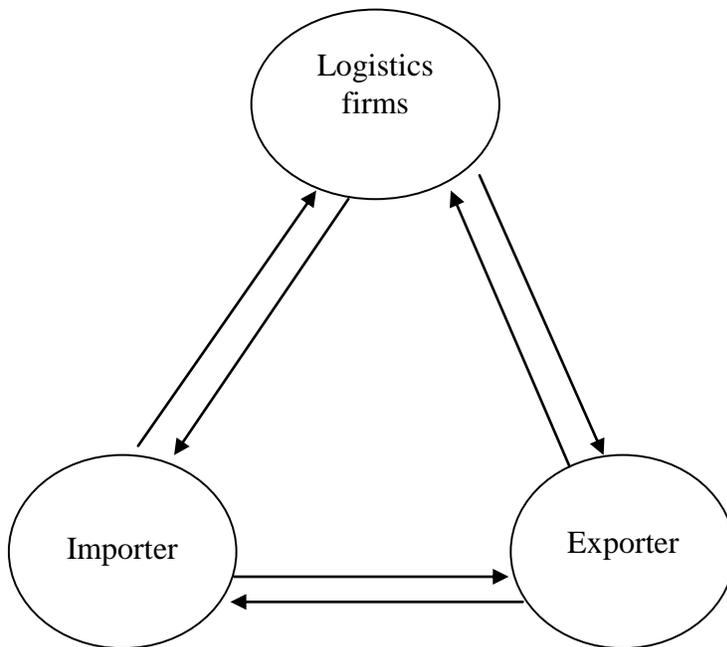


Figure 1.1 Relationship between players in logistic industry

(Source: Cooper & Schindler, 2013)

Once goods have been paid for by importer/exporter he identifies a logistics firms to handle custom clearance, warehousing and transportation to the destination. The logistics firms in Kenya provide the following services to both importers

and exporters: The table below shows the main activities of logistics firms, application of IT in those areas and the associated benefits in those areas.

Table 1.1 Application of IT in different aspects of logistics

Activities/aspects	IT application Areas	Benefits
Transportation	<ul style="list-style-type: none"> Fleet management-car tracking, maintenance, driver management, speed management, fuel management and health& safety management, route management 	<ul style="list-style-type: none"> Recovery of stolen vehicles Increase in personal safety and security Reduction in insurance costs Decrease in unnecessary over time Increased customer satisfaction
Warehousing	Warehouse management- <ul style="list-style-type: none"> Receive goods Identify the goods Dispatch goods to storage Pick goods Dispatch shipment 	<ul style="list-style-type: none"> Reduction in paper work Real time dispatch Time saving in locating of inventory Increase of safety and security of goods Cargo consolidation
Custom clearance	Documentation, duty payment, inspection,	<ul style="list-style-type: none"> Increased customer satisfaction Reduced paperwork in clearance Reduced administrative costs Enhancing compliance with KRA
Cargo management	Container leasing, cargo security, loading and offloading,	<ul style="list-style-type: none"> Improved security and safety Real time cargo tracking Cargo documentation

(Source: Cooper & Schindler, 2013)

The table above highlights activities that logistics firms engage in, the areas that IT is applied and the benefit of using IT in respective areas. Under the IT application areas in logistics, it has provided the following systems: fleet management systems such as GSM/GPRS network, GPS satellites and real time fuel management system, warehouse management systems, cargo management systems such as handling systems and GPS, GSM/GPRS cargo tracking systems and communication and information systems such as EDI (Sullivan, 2005).

Due to technological advancement, the logistics firms have been provided with the opportunity to embrace the above systems in the management of their aspects (Sullivan, 2005). The increasing emphasis of logistics is creating focus on the use of information technology by the firms. Cost reduction focus can become intense as companies continue to adopt use of information technology to leverage competitive advantages and increase efficiency and effectiveness to enhance their profitability, market share and customer satisfaction (Sullivan, 2005). Logistics managers therefore need to understand the

benefit of technology to enable them align information technology with business strategies to be able to make informed business decision. Because of economic integration under the EAC (East African community), the logistic industry is playing a great role in facilitating the exports and imports within the region through Nairobi (Sullivan, 2005).

1.1 Statement of the Problem

Logistic Firms has come of age and as such, competition has alerted Logistic firms to look for innovations that will keep their customers and even win more. Because of the need for efficiency and effectiveness in the logistic sector, the web is introduced and used mostly for commercial purpose through internet trading and information technology. The adoption of information technology in logistic sector is owing to the fact that, linguistic barriers needed to be put to an end to enable easy and cheaper communication during transaction. It is to foster customer-relationship, increase customer satisfaction, improve operational efficiency, reduce the running cost, reduce transaction time, give

Logistic firms competitive edge, provide security to investors fund and promotion of other financial services and movement of goods across the globe.

Despite the adoption of information technology in logistic sectors today with its numerous objectives, observation has however shown that, not all the objectives have been realized and felt by users. It is highly disheartening to observe that, some among many undertaken are not working to standard thereby causing more harm than good to shareholders, potential investors among other users and traders. Logistic firms today seems to be mainly interested in the movement and procurement of goods from one point to the other while maximizing profit, thereby losing sight of the critical and more important areas like making transaction equipments work to standard, providing security to goods on transit. Logistic firms today are unable to comply strictly with the mission statement/corporate mission with information technology. Much of the logistic management does not plan to meet the service quality, and security of goods.

In Kenya, the requirement by all truckers to install the Electronic Cargo Tracking System (ECTS) was initially met with opposition. However, truckers have slowly embraced the ECTS, which seeks to replace the security bond while monitoring cargo in transit and providing real time information on location, security and condition of cargo and assets. The ECTS is currently being implemented by customs authorities in many parts of the world to lessen against a range of risks such as significant tax loss, cargo theft, and improving regulatory compliance. However, there is no empirical research that explains the correlation between this enhanced security and the overall performance of Logistic firms. The logistic firm's management needs to keep up with the continuous technological changes taking place around the world as this has the potentiality of affecting their performance in terms of security, clearance and service delivery. Despite this innovation 'information technology', Logistic firms still find it difficult properly sort out transactions, giving goods on transit proper security, and efficient clearance thereby leading to loss of trust by customers. In addition, the Logistic firms have found it a challenge to grow and meet up with their responsibilities as the volume of transaction increases each day. Irrespective of the fact that Logistic firms are making much profit, they still suffer from inefficiencies and insecurity. Critically evaluating the introduction of information technology owing to its objectives, it is not concern with how much technology is provided but how well it serves potential users. This study therefore, sought to examine the effects of information technology on Logistic firm's performance in Nairobi Kenya to realize its significant impact on their operations in order to guarantee their profitability and growth.

1.3 Objectives of the Study

1.3.1 General Objective of the Study

The general objective of this study was to establish the effects of Information Technology on the performance of logistics firms in Nairobi County, Kenya.

1.3.2 Specific Objectives

The study was guided by the following specific objectives

- I. To determine how levels of IT usage affect performance of logistic firms in Nairobi County
- II. To establish the influence of cargo tracking and security system on the performance of logistic firms in Nairobi Count
- III. To establish how use of IT on customer service delivery system affect performance of logistic firms in Nairobi County
- IV. To determine how information integration influence the performance of logistics firms in Nairobi County

1.4 Research Questions

In order to achieve its objectives, the researcher used the following research questions in line with the research objectives. These include the following;

- I. How does the level of IT usage affect performance of logistic firms in Nairobi County
- II. How does cargo tracking and security system on the performance of logistic firms in Nairobi Count
- III. How does IT usage on customer service delivery influence performance of logistic firms in Nairobi County?
- IV. How information integration with influences the performance of logistics firms in Nairobi County?

1.5 Scope of the Study

The study specifically discussed the effect of IT on logistics firms within Nairobi County. Therefore, the scope selected was logistics firms within Nairobi County Kenya. The study will focus on small and medium sized third party logistics firms who offer cargo tracking, fleet management, forward and clearing companies as well as transport and parcel delivery firms within the county. The study interviewed top and middle level management on the selected companies.

1.6 Significance of the study

This study was important to various parties outlined as follows:

1.6.1 Logistic Firms Owners and Managers

To the owners and managers of logistic firms in Nairobi County, it will give new information as to how they can effectively adapt the information technology in the firms' main aspects in order to increase the performance of their firms. The study may also give the managers more insights on the effect of IT on their firms' performance hence they would be in a position to make strategic decisions concerning the use of IT within their organization.

1.6.2. To the Academicians

To the academicians it will be the base for further study on how logistic firms' provider can effectively exploit the benefits of information technology to improve on their performance and managers. For academic purposes, this study serves to increase

knowledge concerning information technology and performance of organization to the already existing body of knowledge.

1.6.3. To the Government

The study might be useful to the government in terms of revealing the benefits of IT use in improving service delivery hence government will be in a position to make strategic decisions concerning IT infrastructure within the country and take initiatives of attracting investors in the country. This would boost economic growth in terms of IT investments within the country.

II. LITERATURE REVIEW

2.1 Introduction

This chapter reviews what other scholars have had to say about the impact of IT on logistics firms and how IT has transformed their operations. It also gives empirical review of the past research both globally, international and nationally. The chapter also focuses on conceptual framework before concluding with the summary of literature review and research gaps

2.2 Theoretical Framework

The theoretical starting point for our analysis is the well-established literature on new technology adoption. This literature points to delays in the adoption of new technologies and differences in adoption rates across firms, industries and countries (Reinganum, 2008). To understand the adoption and diffusion of IT as a new technology it is therefore essential to uncover the factors that explain this delay and the variation in the rates of its adoption. The existing theoretical models focus on a number of factors explaining this delay and the variation in the adoption rates including uncertainty about the characteristics of the new technology.

2.2.1 Instrumental Theory

Instrumental theory offers the most widely accepted view of technology. It is based on the common sense idea that technologies are "tools" standing ready to serve the purposes of their users. Technology is deemed "neutral," without evaluative content of its own. However, what does the notion of the "neutrality" of technology actually mean? The concept usually implies at least four points. First technology, as pure instrumentality, is indifferent to the variety of ends it can be employed to achieve (Kenneth & Laudon, 2007). Thus, the neutrality of technology is merely a special case of the neutrality of instrumental means, which are only contingently related to the substantive values they serve.

This conception of neutrality is familiar and self-evident. Secondly, technology also appears to be indifferent with respect to politics, at least in the modern world, and especially with respect to capitalist and socialist societies. A hammer is a hammer, a steam turbine is a steam turbine, and such tools are useful in any social context. In this respect, technology appears to be quite different from traditional legal or religious institutions, which cannot be readily transferred to new social contexts because they are so intertwined with other aspects of the societies in which they originate (Cappgemini, 2008).

The transfer of technology, on the contrary, seems to be inhibited only by its cost. Thirdly, the socio-political neutrality of technology is usually attributed to its "rational" character and the universality of the truth it embodies. Technology, in other words, is based on verifiable causal propositions. Insofar as such propositions are true, they are not socially and politically relative but, like scientific ideas, maintain their cognitive status in every conceivable social context. Hence, what works in one society can be expected to work just as well in another. Lastly, the universality of technology also means that the same standards of measurement can be applied in different settings (Bitner, Brown, & Meuter, 2000). Thus, technology is routinely said to increase the productivity of labor in different countries, different eras and different civilizations. Technologies are neutral because they stand essentially under the very same norm of efficiency in any and every context.

Given this understanding of technology; the only rational stance is unreserved commitment to its employment. Of course, we might make a few exceptions and refuse to use certain devices out of deference to moral or religious values. Reproductive technologies are a case in point. Even if one believes that contraception, abortion, test tube babies are value-neutral in them, and, technically considered, can only be judged in terms of efficiency, one might renounce their use out of respect for the sacredness of life (Bitner, et al., 2000).

This approach places "trade-offs" at the center of the discussion. "You cannot optimize two variables" is the fundamental law of the instrumental theory of technology. There is a price for the achievement of environmental, ethical or religious goals, and that price must be paid in reduced efficiency. On this account, the technical sphere can be limited by non-technical values, but not transformed by them (Bitner, et al., 2000). The instrumentalist understanding of technology is especially prominent in the social sciences. It appears to account for the tensions between tradition, ideology and efficiency, which arise from socio-technical change. Modernization theory, for example, studies how elites use technology to promote social change in the course of industrialization. In addition, public policy analysis worries about the costs and consequences of automation and environmental pollution. Instrumentalism provides the framework for such research (Howells & Tether., 2004).

2.2.2 Substantive Theory

Despite the common sense appeal of instrumental theory, a minority view denies the neutrality of technology. Substantive theory, best known through the writings of Jacques Ellul and Martin Heidegger, argues that technology constitutes a new type of cultural system that restructures the entire social world as an object of control. This system is characterized by an expansive dynamic, which ultimately overtakes every prôt-technological enclave and shapes the whole of social life (Gray, Matear & Matheson, 2000). The instrumentalization of society is thus a destiny from which there is no escape other than retreat. Only a return to tradition or simplicity offers an alternative to the juggernaut of progress. Something like this view is implied in Max Weber's pessimistic conception of an "iron cage" of rationalization, although he did not specifically connect this projection to technology (Howells & Tether, 2004).

Ellul makes that link explicit, arguing that the "technical phenomenon" has become the defining characteristic of all modern societies regardless of political ideology. "Technique," he asserts, "has become autonomous. Heidegger agrees that technology is relentlessly overtaking us. We are engaged, he claims, in the transformation of the entire world, ourselves included, into "standing reserves," raw materials to be mobilized in technical processes. Heidegger asserts that the technical restructuring of modern societies is rooted in a nihilistic will to power, a degradation of man and Being to the level of mere objects (Gray, et al., 2000).

This apocalyptic vision is often dismissed for attributing absurd, quasi-magical powers to technology. In fact, its basic claims are all too believable. The substitution of "fast food" for the traditional family dinner can serve as a humble illustration of the unintended cultural consequences of technology. The unity of the family, ritually reaffirmed each evening, no longer has a comparable locus of expression. No one claims that the rise of fast food "causes" the decline of the traditional family, but the correlation is surely significant (Howells & Tether, 2004). An "instrumentalist" might reply that well prepared fast food supplies a nourishing meal without needless social complications. This objection is blind to the cultural implications of technology.

Instrumentalist theory treats "eating" as if it were merely a matter of ingesting calories, while all the ritualistic aspects of food consumption are secondary to this biological need. In adopting a strictly functional point of view, we have determined that eating is a technical operation that may be carried out with more or less efficiency (Howells & Tether, 2004). This example can stand for a host of others in which the transition from

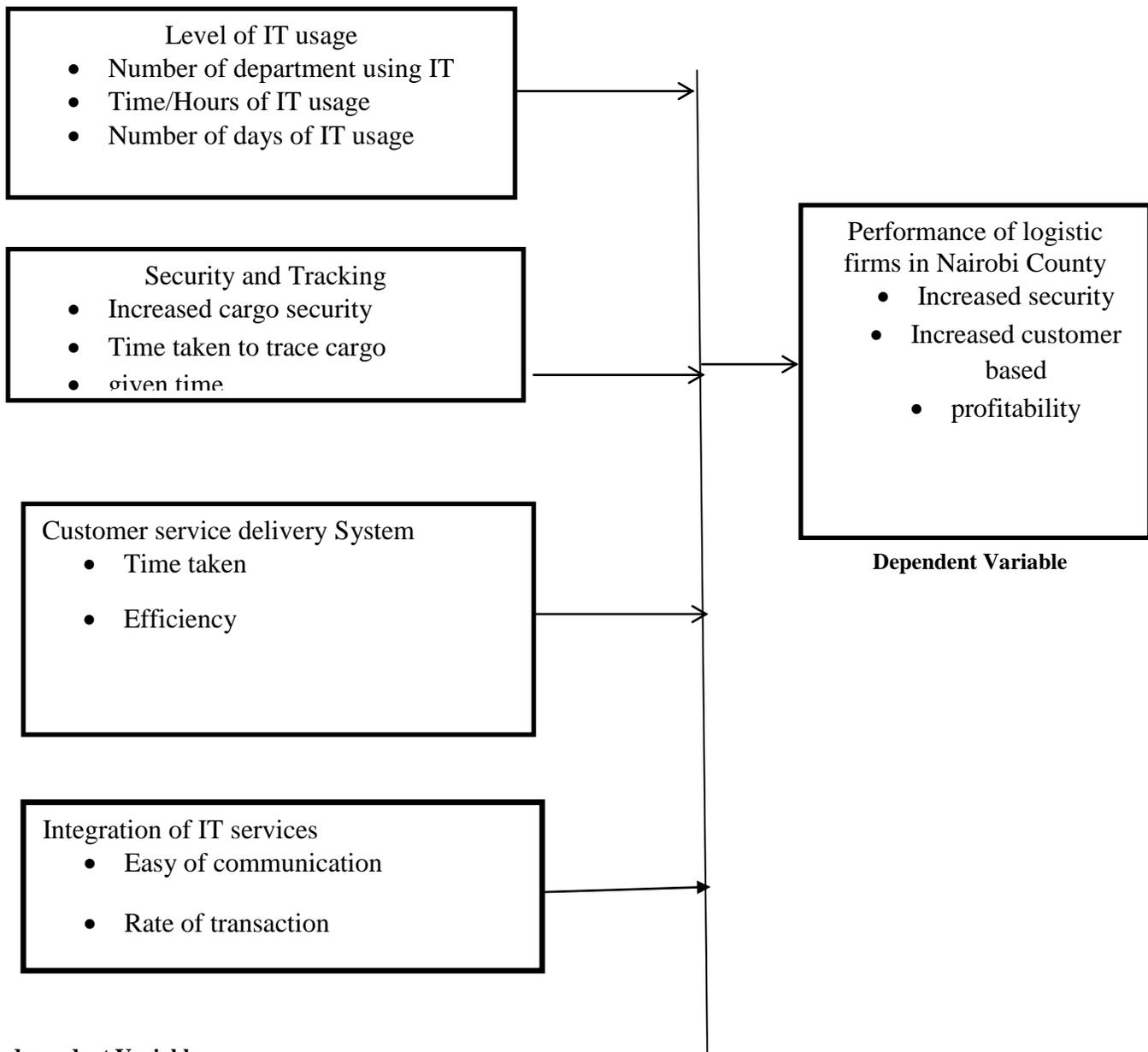
tradition to modernity is judged a progress by a standard of efficiency intrinsic to modernity and alien to tradition.

The substantive theory of technology attempts to make us aware of the arbitrariness of this construction, or rather, its cultural character. The issue is not that machines have "taken over," but that in choosing to use them we make many unwitting cultural choices. Technology is not simply a means but has become an environment and a way of life. That is its "substantive" impact. It seems that substantive theory could hardly be farther from the instrumentalist view of technology as a sum of neutral tools. Yet I will show in the next section that these two theories share many characteristics that distinguish them from a third approach I will introduce, the critical theory of technology (Gray, et al., 2000).

2.3 Conceptual Framework

A good starting point to a study of this nature must be a discussion of the various concept and terminologies that formed pillar of this work and give it a form. In line with the position held by (Lee & Wang, 2001) the conceptual framework of your study, the system of concepts, assumptions, expectation, beliefs, and theories that supports and informs your research is a key part of your design.

A conceptual framework is a visual or written product, one that, "explains either graphically or in narrative form, the main things to be studied, concepts, or variables and the presumed relationship among them (Lee & Wang, 2001). This study was guided by the variables as conceptualized overleaf by the researcher. It consists of the dependent variable and independent variable. The independent variables include level of IT usage, customer service, security tracking and IT adoption while dependent variable is performance of logistic firms.



Independent Variables

Figure 2.1: Conceptual framework

2.3.1 Level of IT Usage

The implementation of new IT and complementary investments can lead to innovations, and innovations are positively associated with turnover growth. In other words, innovative firms are more likely to grow (Seddon, 2005). Several countries display impressive economic growth with the aid of IT. Prior research concerning IT and global economy growth demonstrates the contribution of IT to output growth as being very remarkable for economies during the periods 1990-1995 and 1996-2000 (Bowers ox, 2009). The largest economic benefits of IT are typically observed in countries with high levels of IT diffusion. OECD data shows that the United States, Canada, New

Zealand, Australia, the Nordic countries and the Netherlands typically have the highest rates of diffusion of IT (Bowers ox, 2009). Kenya has been ranked fourth in logistics performance in the region, making it the second last poorest performing country in the bloc, according to a study (Daily Nation 18th August 2014).

The 2014 Logistics Performance Survey (LPS), an annual report published by the Shippers Council of Eastern Africa (SCEA), says Rwanda, Uganda and Tanzania take the first three positions with aggregated scores of 3.52, 3.07 and 2.89, respectively. This poor performance has been attributed to low diffusion of IT among the logistic firms in the country. In some

countries, notably the United States and Australia, there is evidence that sectors that have invested most in IT, such as wholesale and retail trade, have experienced an increase in the overall efficiency of using labor and capital, or multi-factor productivity growth. This could be because these sectors have received productivity gains from IT use over and above the labor productivity gains they received from investment in IT, for instance because of network effects (Bowers ox, 2009).

All the firms covered in the survey had computers and Internet access, though only 62 percent had a web presence on the Internet. This is an indication that size, age together with ownership is not discriminating factors in acquiring IT in Uganda. A finding consistent with Dunne, that young and old firms adopt IT at more or less the same rate. While all these firms had access to IT, it had been acquired at different times. The small firms are faced with limitation of investment capital, tend to be risk averse and conscious of uncertainties, and are more responsive to taxation. The results indicate that most small firms started adopting IT in the last three years when the government started dropping some taxes. Established that the adoption of IT increases with firm size; and larger firms tend to adopt IT earlier than they tend to adopt IT earlier than they tend to adopt IT earlier than the smaller firms do. As for the Internet, there is also significant relationship between firm size and the duration of Internet usage. This is in line with some studies that have established that larger firms due to their capability to have skilled managers and workforce, advanced business practices are more likely to adopt the Internet more quickly than other firms

2.3.2 Cargo tracking and security System

IT has made it possible to track cargo and fleet for Logistic Firms. This has had a lasting impact on the security of both the cargo and fleet. In Kenya, the requirement by all truckers to install the Electronic Cargo Tracking System (ECTS) was initially met with opposition. However, truckers have slowly embraced the ECTS, which seeks to replace the security bond while monitoring cargo in transit and providing real time information on location, security and condition of cargo and assets (Bradawl, 2000). The ECTS is currently being implemented by customs authorities in many parts of the world to mitigate against a range of risks such as significant tax loss, cargo theft, and improving regulatory compliance. The use of modern day technology such as bar codes and RFID makes it possible to access more precise information on the stock. Radio-frequency identification (RFID) is the wireless non-contact use of radio-frequency electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. One of the major advantages of radio-frequency identification is that information exchange between tags and readers is rapid, automatic and does not require direct contact or line of sight (Bradawl, 2000). This will allow for access to more precise inventory management information. The researcher anticipates establishing whether there is any correlation between this and the performance of logistic firms.

2.3.3 IT use on customer service delivery

Business management consists of leading, planning, organizing, monitoring and controlling all the involved actors and activities in a company to achieve goals and objectives.

Sullivan (2005) asserts that, “as the process of managing networking between companies” describe it. Fast changes in customer demand, globalization of markets, and changing technology require companies to focus their efforts on improving competitiveness, trying to achieve customer’s satisfaction through adding more value to their products.

Thus, improving business process performance is critical for business management (Kohli & Devaraj, 2003). In addition, process strategy is used to improve manufacturing performance, and as result business performance (Sullivan, 2005). Managers view marketing strategy as a tool for improvement of their financial returns (Sullivan, 2005). In addition, innovation should be seen as part of business management, allowing the implementation of new processes, products, and services to respond promptly to customers’ requirements (Sullivan, 2005). The customer’s perception is not always the same as the product manufacturer’s perception. Customers may give more value to low cost, on time delivery, delivery date certainty, or receiving a customized product (Simchi-Levi et al., 2003).

According to Bowers ox, (2009) manufacturers and retailers are always looking for practical after-sales policies that will permit them to enhance customer satisfaction levels. Furthermore, an analysis conducted by Kohli & Devaraj, (2003) showed that customer-firm-supplier relationship management improves operational performance and customer satisfaction. Based on this, a sub-factor customer service is identified. The goal of the companies is to give customers the best service in an efficient and effective manner (Closs & Kefen, 2007) without forgetting about information such as product description, product availability, order status, shipping dates, and assisting them in all what they need (Closs & Kefen 2007)). Kohli & Devaraj, (2003) states that customer service is defined by demand forecasting, service levels, order processing, parts/service support, and aftermarket operations

2.3.4 Information Technology Integration

Supply chain relationships play an important role in achieving the firm’s goals. The coordination and integration of activities with suppliers and understanding of customer’s needs results in greater benefits for companies. According to Bradawl, (2000) supply chain management is directly related to relationship management, which includes suppliers and customers. Strategic supplier partnerships and customer relationships are main components in the supply chain management practices (Bradawl, 2000), leading to information sharing, which is one of the five pillars in achieving a solid supply chain relationship (Bradawl, 2000). Two sub-factors are considered in the model relationship with suppliers and customers Companies are inclined to work with different suppliers in different ways. It is important that the relationship with suppliers satisfy their company needs. Bowers, (2009) mentioned that in commodity products, it is common to find an adversarial relationship mainly based on price between buyer and supplier.

This type of relationship with suppliers does not allow for cost reduction in the supply chain. It may be beneficial to network the supplier, to develop partnerships and alliances that will benefit both partners. This could be based on

Production, personal, and or symbolic networking that will turn on strategic alliances (Bradawl, 2000), allowing the information sharing, risk sharing, obtaining mutual benefits and coordinating plans, permitting the improvement of the supply chain. The global markets offer a variety of products of different quality and cost. As a result, companies are always competing and trying to reduce costs and improve quality. According to Bowers ox, (2009) customers look for more choices, better service, higher quality, and faster delivery. The relationship with customers has turned a strategic issue for today's companies.

2.3.5 Logistic Performance

The complementarily view, which was missing in the traditional technology diffusion literature, signifies that developing a better understanding of the complementary factors that may facilitate or retard the process of a firm's IT adoption is an issue of contemporary importance to both managers and policy makers (Kohli & Devaraj, 2003). First, a firm's technological choices are more likely to come to fruition when they are aligned with its operational and organizational readiness for new technologies. Hence, it is necessary that managers' efforts to maximize the effectiveness of IT adoption and usage be concomitant with their organizations' capacity to accommodate to new technologies. Second, the complementarily view may help policy makers gain new insights into the designing industrial policy to promote the usage of new technologies. For instance, firms across different industries face different business environments in terms of market competitiveness and uncertainty so that their incentive to adopt IT may be influenced by the extent to which industrial policy reflects and conforms to distinct circumstances of their respective industries (Bradawl, 2000).

Lastly, the study of complementary factors to boost IT investments may have some macroeconomic implications as well. There is now quite conclusive evidence of a strong positive correlation between IT investments and economic performance. Logistic performance is empirically measured in terms of turnover growth, market growth and customer base expansion. The hypothesized relationship between IT and turnover growth is straightforward: The implementation of new IT and complementary investments can lead to innovations, and innovations are positively associated with improved performance. The effects of IT on corporate performance are subject to debate because not all studies have demonstrated clear payoffs from IT investments (Kohli & Devaraj, 2003). In addition, the results vary depending on how performance and IT payoffs are measured and analyzed. For example, one empirical study finds positive impacts of IT investments on productivity, but not on profits (Hitt & Brynjolfsson, 2006). Another study did not find positive effects of IT capital on productivity, while IT labor positively contributed to output and profitability (Prasad & Harker, 2007). This ambiguity necessitates this study. The researcher, against this background, wants to establish the relationship between IT and Logistic Firm Performance

2.4 Empirical Review

Several studies have taken an international perspective to the study of SCM and IT. For example the study by Croom (2006) mentioned above involved respondents from the United Kingdom and United States, while the ones conducted by Subramani (2010) and Gall ear, Ghobadian, & Oregon (2008) have

provided empirical insights based on data collected in Canada and UK, respectively. In addition, several studies have investigated IT and supply chain in specific geographical areas. Mzoughi et al. (2008) investigate the impact of supply chain management and Enterprise Resource Systems (ERP) on organizational performance and competitive advantage in Tunisia by conducting a survey on 216 Tunisian managers. Their results show the importance of SCM and ERP systems adoption as well as reveal their positive impact on organizational performance and competitive advantage in Tunisians companies.

From a global supply chain perspective, Reyes, Raisinghani, & Singh, (2012) describe the importance of inter and intra supply chain management through collaboration with supply chain partners and entities both upstream and downstream in order to integrate the information systems. By employing the case study method, they describe how a telecommunications Original Equipment Manufacturer (OEM) had implemented an Advanced Planning and Scheduling (APS) system and how integrating its internal demand flow system with electronic (e)-business software had helped in real time collaboration with trading partners (Bradawl, 2000).

There are a number of studies that investigate the role of culture at individual, organizational and country level, for example in the field of Enterprise Information Systems (ERP), Hwang (2011) investigates the phenomena of cultural orientation, personal innovativeness in IT and general computer self-efficacy in the context of the technology acceptance model (TAM) for ERP system adoption. The results, based on a survey questionnaire of an international user group utilizing an ERP system developed by one of the largest IT solution providers in the world; show that culture in term of power distance negatively affects computer self-efficacy, while collectivism affects usefulness. Livermore and Rippa (2011) investigate the interplay between national culture and the manner in which the ERP project unfolds by conducting two case studies from the US and Italy. Their results also show that indeed the national culture has an impact on the two ERP implementation projects. A classification scheme logistics functions provides a meaningful way to study how IT has affected the various functions of logistics. Previous research in logistics has categorized the use of information systems in logistics in different ways. A system of logistics functions can be divided into following five broad areas by Bowersox, (2009); facility location, transportation, inventory, and communication and material movement.

Based on the problem areas that application addresses, seven areas of logistics has been identified as facility location, inventory control, order entry, vehicle scheduling, and warehouse layout planning, freight rate retrieval, and product and shipment tracing (Ballou, 2006). Another survey by Livermore and Rippa (2011) identified five categories as facility location, inventory control, transportation, production scheduling, and total physical distribution. These categories treated each category as individual entities rather than a whole system. Noting this shortcoming, Anderson, and Quinn, (2006), proposed another classification consisting of transaction systems, short-term scheduling and inventory replenishment systems, flow planning systems, and network planning and design systems

Information and Communication Technologies (ICT) are at the core of the "new" knowledge-based economy (Lee & Wang,

2011). There is growing evidence suggesting that IT-linked knowledge, innovation and ongoing technological change are strong determinants of productivity, growth differentials as well as the ability of countries to benefit from globalization. The impact of IT investment on productivity and growth is found to be greater at firm level in comparison to industry and country-levels. At the firm level, IT use leads to improvements in product design, marketing, production, finance and the organization of firms. Furthermore, IT is an innovation driver through facilitating the creation of new products and services. IT use increases the productivity of R&D activities in downstream sectors, so IT use is the source of “innovation complementarities” (Lee & Wang, 2011). In recent years, there have been many research efforts to identify factors and practices indicating how technological innovation may support company in creating a competitive advantage. The common ground of such research is the relationship between innovation and the development of competitiveness. For example, Porter & Millar, (2005) argued that the possible contribution of innovation to create competitive advantages ranges from the continuous assessment of the cost/performance ratio, as in the case of incremental innovation, to the establishment of completely new competitive rules, as in the case of disruptive innovation. Information and communication technology (ICT) is one of the most important and fast growing technological innovations that provide companies with a wide range of opportunities to improve efficiency and effectiveness and even gain competitive advantage (Porter & Millar, 2005).

The use of IT in supply chain and logistics management has attracted increasing attention of the business and academic world. Lee & Wang (2011) addressed the possibilities of reducing the bullwhip effect in supply chains through Internet based collaboration. Technology application in supply chain context may provide benefits in the following areas: improve supply chain agility, reduce cycle time, achieve higher efficiency, and deliver products to customers in a timely manner (Lee & Wang, 2011). Capgemini (2008) found that supply chain performance would be significantly increased if the members of the supply chain collaborated through Internet tools. However, the diffusion of IT in managing supply chain processes is having a profound impact on supply chains. For manufacturers and retailers, information management has become as critical as the physical movement of goods. As a result, poor IT resource management by one or more actors in the supply chain could have negative repercussions on the performance of the entire supply chain in terms of planning ability, customer service and costs (Lee & Wang, 2011). Furthermore, IT may further reduce existing wastes and inefficiencies along the supply chain through increasing real-time movement of shipment and operational control of logistics activities. However, increasing expenditure on IT in the supply chain process does not automatically result in higher firm performance.

The debate on the “IT-productivity” paradox suggests that the impact of IT on firm performance remains unclear. This appears particularly true in the case of third party logistics service companies (3PLs). The rapid diffusion of technology has had significant impact on their traditional core-competencies - such as inventory management, distribution, and transportation (Evangelista, McKinnon & Sweeney, 2007). In fact, 3PLs are

currently required to offer new and innovative ways to improve logistics effectiveness as result of the evolving business environment that characterized by a growing rate of logistics outsourcing and pressured by ever-increasing customer demands for higher service level at lower costs. As result, IT is increasingly important in the management of 3PLs business. Logistics companies are focusing on the enabling IT as these technologies support the outsourcing of logistics activities from customer companies allowing superior logistics performance at equal or lower cost. Closs & Kefen (2007) provide empirical evidences indicating that technology has the potential to improve overall logistics capabilities. Evidence of the fact that technology capabilities are considered a necessary element of overall 3PL expertise emerges from a recent extensive study examining the perspectives of 3PL users conducted by Capgemini in (2008). The study indicated that IT is a high priority for 3PL users. IT capabilities also are seen as exceptionally critical to the integration of logistics services provided by 3PLs (Baradwaj, 2010). The study also shed light on the reasons behind the gap existing between IT expectation of users and 3PL performance in this area. The most prominent IT-based service problems are the inability to provide sufficient order/shipment/inventory visibility and a lack of integration among internal 3PL systems. Nevertheless, little research has been conducted on performance measurement in 3PL research. Selviaridis & Spring (2007) claimed that empirical research should focus on performance measurement in 3PL relationships and future studies needs to identify specific KPIs for value added services. In addition, the impact of technology innovation on logistics service companies has amplified the difficulties in 3PL performance measurement, as it is particularly hard to identify the specific contribution of IT in generating superior company performance. In order to overcome this void, some empirical studies have been developed in recent years.

2.5 Critiques of existing literature relevant to the study

On the organizational level, as aggregate corporate performance, IT investment has been researched extensively. The results have become known as productivity paradox because the studies have not confirmed the expectations of a positive correlation between IT investment and Logistical firm performance. There is increased use of IT in most organizations ranging from formal, government and informal sectors of economy. Many organization both national and international organizations are transacting online with improved technological development and innovation. The available literature does not give enough evidence concerning the impact of IT on the organization performance rather most of them are dwelling on single business unit performance with most of them giving a general descriptive few of IT without in-depth analysis of their impact. This research on the other hand will be focusing specifically on the supply and chain management companies, which are being contracted to manage the supply of different company’s goods.

2.6 Research gaps

The literature shows that there is a little research, which has been done on the effect of IT on the performance of the logistic firms in Kenya. However, literature has shown very little

concerning the direct impact of IT on the service delivery on the logistic firms. Many research which have been done majorly dwell on the IT impact on the organization in general. This paper intends to explore more on the actual impact of IT on logistic firms.

2.7 Summary of literature review

There are varying conclusions in the literature review with respect to the impact of IT on the performance of logistic firms. Many findings agree that IT in one way or the other, directly influences the operations of most of logistic firms with most researchers agree that they positively influence management systems. It influences firms' infrastructure and asset management system.

III. RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research methodology used in this study and provides a general framework for this research. The chapter presents details of the research design, target population, sample and sampling procedures, description of research instruments, validity and reliability of instruments, data collection procedures, data analysis techniques and ethical considerations while conducting the study.

3.2 Research Design

The study used descriptive survey method is appropriate. Research design is defined as a plan, structure and strategy of investigation conceived to obtain answers to research questions and control variance (Kerlinger, 1964). According to Orodho (2004), research design refers to all the procedures selected by a researcher for studying a particular set of questions or hypotheses. He summarizes it as a programme to guide the researcher in collecting, analyzing and interpreting observed facts. A descriptive survey is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals (Orodho, 2003). Kerlinger (1969) states that descriptive studies are not only restricted to facts finding, but might often results in the formulation of important principles of knowledge and solution to significant problems. This design was therefore, adopted for this study as it enabled the researcher to obtain a cross-referencing data and some independent confirmation of data, as well as arrange of options.

3.3 Population of the Study

The population of this study involved 10 logistics firms in Nairobi. According to Ogula (2005), a population refers to any group of institutions, people or objects that have common characteristics. It is an entire group of persons or elements that have at least one thing in common (Kombo and Tromp, 2006). The firm's managers and senior procurement and transport managers will be major target group in this study. They will be interviewed to help in achieving study questions and objectives. There are 120 registered logistic firms within Kenya and out of this number; largest percentage 56% is located in Mombasa while only 28% that is 34 are in Nairobi County (Reports by shipper's council EA, 2014). The remaining 16% are spread all over the country major towns. Companies in Nairobi are targeted because Nairobi being a central port handling international cargo,

many firms has been set up to handle goods from/to Nairobi airports such as JKIA and Wilson airport to various destinations hence able to provide necessary information for the study.

3.4 Sampling techniques

The study used simple random sampling technique in selecting firms to be studied. To ensure the elements selected are representative of the population. Sampling is a means or technique used in selecting a given number of subjects from a defined population as a representative of that population. Orotho (2003) states that, random sampling technique is simple and easy to use making the research process simpler and faster. Sampling is the process of selecting a number of individuals for a study in such a way that the selected individuals represent the large group from which they are selected (Mugenda and Mugenda, 2003). The purpose of sampling was to secure a representative group, which enabled the researcher to gain information about a population. Therefore, random sampling technique will help in achieving the required representativeness in the study.

3.5 Sample size

The study used of sample size of 10 logistics firm in Nairobi County. A sample is a smaller group or sub-group obtained from the accessible population (Mugenda & Mugenda, 2009). This subgroup is carefully selected to be representative of the whole population with the relevant characteristics. Each member or case in the sample is referred to as subject, respondent or interviewees. Sampling is a procedure, process or technique of choosing a sub-group from a population to participate in the study (Ogula, 2005). It is the process of selecting a number of individuals for a study in such a way that the individuals selected represent the large group from which they were selected. The study would apply both random sampling procedures to obtain the respondents for questionnaires. The study used 3 respondents from the 10 selected logistics firms. At least 30% of the total population is representative (Borg & Gall, 2003). Thus, 30% of the accessible population is enough for the sample size. Out of 34 logistic firms in Nairobi, the researcher will take 30% of the total population i.e. = $30\% * 34 = 10$ Firms

3.6 Data Collection

The study used both secondary and primary data. The primary data was collected using research questionnaire. The data collected using questionnaires. According to Nkapa (1999) —a questionnaire is a carefully designed instrument for collecting data in accordance with the specification of the research questions. The questionnaires are preferred due to their suitability for this type of study. Mugenda and Mugenda (1999) observed that Questionnaires are commonly used to obtain important information about the population. Each item in the questionnaire was developed to address a specific objective, research question on project of the study. The questionnaire used consisted of both closed and open-ended questions. The closed-ended questions provided data that is easy to compute and analyze, while the open-ended questions permit a greater depth of response, thus adding quality to the data collected. For this study, there was one type of questionnaires to be used. The

secondary data was collected through published reports and other past research papers and peer review on the topic of the study.

3.7 Data Collection Process

Prior to the commencement of data collection, the researcher obtained all the necessary documents, including an introduction letter from the University. Audience with the sampled local authorities in the region was also sought to clarify the purpose of the study. Upon getting clearance, the researcher in person would distribute the questionnaires to the sampled individuals who are the managers and assistant managers of the selected. Use of questionnaires is expected to ease the process of data collection, as all the selected respondents would reach in time. During the distribution of the instruments, the purpose of the research was explained.

3.8 Pilot Testing

The research instruments in this study were carefully constructed to ensure their reliability and validity in the attainment of the objectives of the study. Three individuals from two logistics firms were used. They were thoroughly checked by the supervisors to ascertain their accuracy. They were piloted to ensure that they meet objective of this research. The piloting helped to modify and remove any ambiguous items on the instrument. The data to be collected during the piloting was analyzed and the results used for appropriate amendment of the instruments. The main objective of pilot testing is to ascertain the accuracy and validity of the instruments before they are used in the actual study (Mugenda and Mugenda, 1999). In order to test reliability of the instruments, internal consistence was applied using Cronbach's alpha. The value ranges between 0-1 with reliability increasing with increase in value. Coefficient of 0.6-0.7 is commonly acceptable rule of thumb that indicated acceptable reliability and 0.8 or higher indicated good reliability (Mugenda 2008)

3.8.1 Reliability

Reliability is a measure of the degree to which a research instrument yields consistent results or data after a repeated administration (Mugenda and Mugenda, 2003). According to Borg and Gall (1986), reliability is the level of internal consistency or stability of measuring device overtime. A measuring instrument is only reliable if it provides consistent results. In a research study, reliability coefficient can be computed to indicate how reliable data is. A coefficient of 0.70 or more implies that there is a high degree of reliability of data (Mugenda and Mugenda, 2003) In this study, split half reliability

1.2 Result of the Pilot study

The study involved random selection of a pilot group of 3 individuals from 2 logistics firms each. The findings are recorded below

Variables	Cronbach's
Levels of IT usage	0.701
Customer delivery services	0.769
Information integration systems	0.731
Security and cargo tracking	0.720

The findings of the pilot study showed that the level of IT usage scale had a Cronbach's reliability of 0.701. security and

measure was used in which the instruments was divided into two equal parts on the basis of even and odd appearances. The two parts was therefore, administered for the pretest samples and the result obtained compared using Spearman Product Moment Coefficient of Correlation (r). This would be subjected to Spearman- Brown Prophecy formula in which an alpha value of 0.81 should be obtained to indicating that research instrument is highly reliable.

3.9 Data Analysis and Presentation

Quantitative data was analyzed through statistical techniques and was generated using statistical package for social sciences (SPSS) and data obtained was communicated through pie charts, tables and bar graphs. Qualitative data was analyzed descriptive statistics. Orodho (2004) defines data analysis as a process of systematically searching and arranging interview transcript, field notes, data and other materials obtained from the field with the aim of increasing your understanding of them and enabling you to present them to others.

Mugenda (1999) summarizes it as the process of bringing order, structure and meaning to the mass of information collected. After the fieldwork before analysis, all the questionnaires will be adequately checked for data verification. The data will be tabulated and classified accordingly in line with the objectives of the study (Kombo & Tromp, 2006). The coded, tabulated and classified data was subjected to both quantitative and qualitative analysis. Quantitative data analysis is helpful in data evaluation because it provides quantifiable and easy to understand the result. Quantitative data can be analyzed in a variety of different ways, which can help the researcher to meet his set objectives with much ease (Kombo, and Tromp, 2006). Quantitative data was presented in through statistical techniques such as pie charts, tables and bar charts

IV. DATA PRESENTATION AND FINDINGS

4.1 Introduction

This chapter presents the research findings through data analysis and presentation of the research findings. The chapter begins with demographic data of the research responses, age and ownership of the companies. The chapter presents the findings in line with research objectives and research variables demonstrating the relationship among the various variables, the data is presented in the form of tables, frequencies percentages, graphs and pie charts where possible and in line with research design and objectives.

cargo tracking systems had a reliability alpha value of 0.720, customer service delivery systems had a reliability alpha value of

0.769 and lastly information integration systems had a reliability alpha value of 0.731. Thus therefore indicated that the research tool was sufficiently reliable and valid and needed no amendment.

4.3 Background Information

4.3.1 Response Rate

Table 4.1: Response rate

Population	Frequency	Percentage
30	28	93%

From table 4.1 above, the response rate was 93%. Mugenda & Mugenda 1999, states that a response rate of 60% is good, and above 70% is perfect. Since the response rate is 93%, it is excellent.

4.3.2 Age of respondents

The study sought out the age of the respondents who were working in the various logistic firms within Nairobi. The findings were recorded in the Figure 4.1

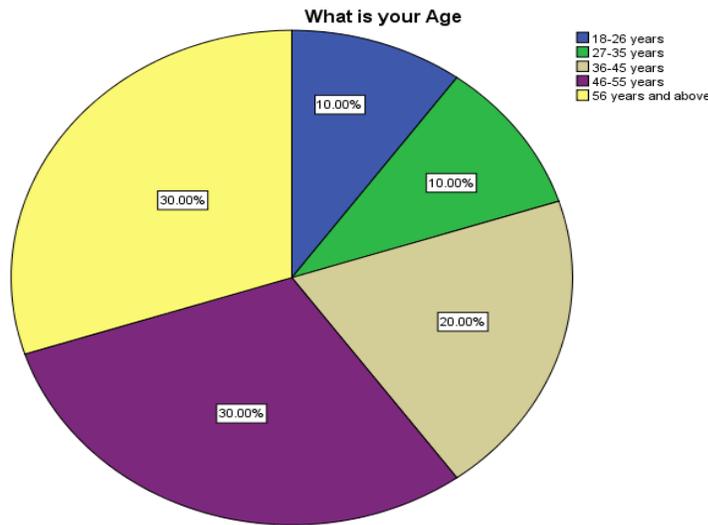


Figure 4.1: Age of the respondents

From the findings in figure 4.1 above, years of age, 30% of the respondents were aged between 46 to 55 years of age and the same percentage 30% had 56 and above years. The findings indicate that most people managing logistic firms are aged above 45 years and above. Supporting a study done by Hwang (2011) in South Africa stating that most young people aged 40 years to 58 years have taken management of most of the international firms,

however, it contradicts study by Jaeger 2008 who found older people heading most of logistic firms in Uganda.

4.3.3 Ownership of the Company

The Study further sought to know the ownership of the various logistic firms within Nairobi County. The findings are recorded in the Figure 4.2 below

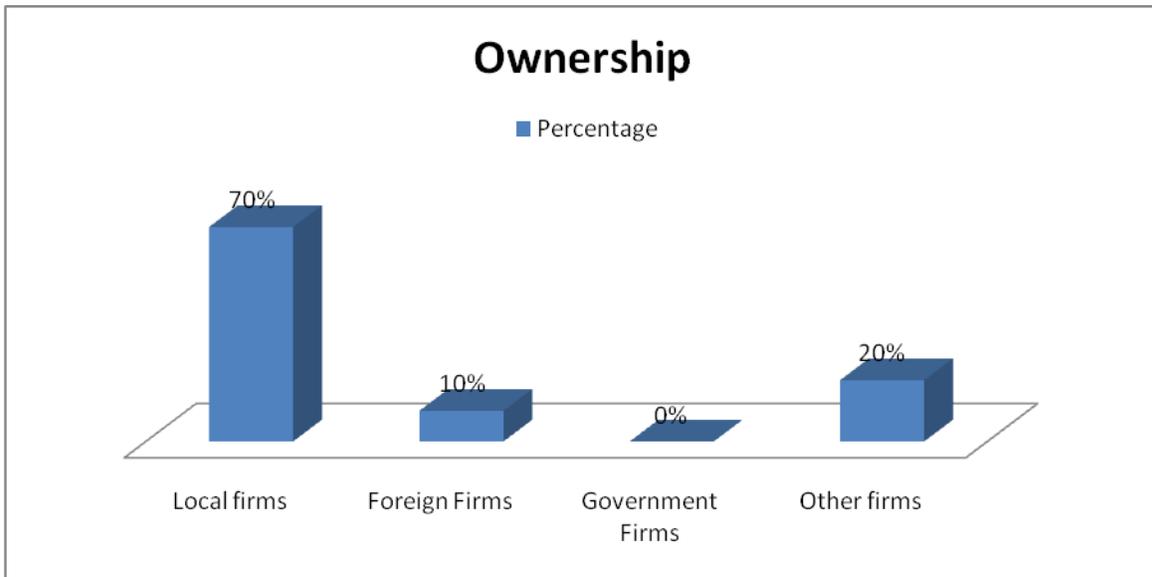


Figure4.2: Ownership

From figure 4.2 above, local logistic firms were the majority 70% followed by other firms 20%, foreign firms were 10% while government does not own any logistic firms. The study result shows that most of the logistics are owned locally. The study supports findings by East Africa shipping council (2012) that finds that most logistics firms within Eastern Africa countries are owned by local investors.

4.3.4 Years of Service

The study sought to know how long the respondents have stayed in their various organizations as this would help in determining their experience and knowledge of the organization. The findings are indicated in the Figure 4.3 below

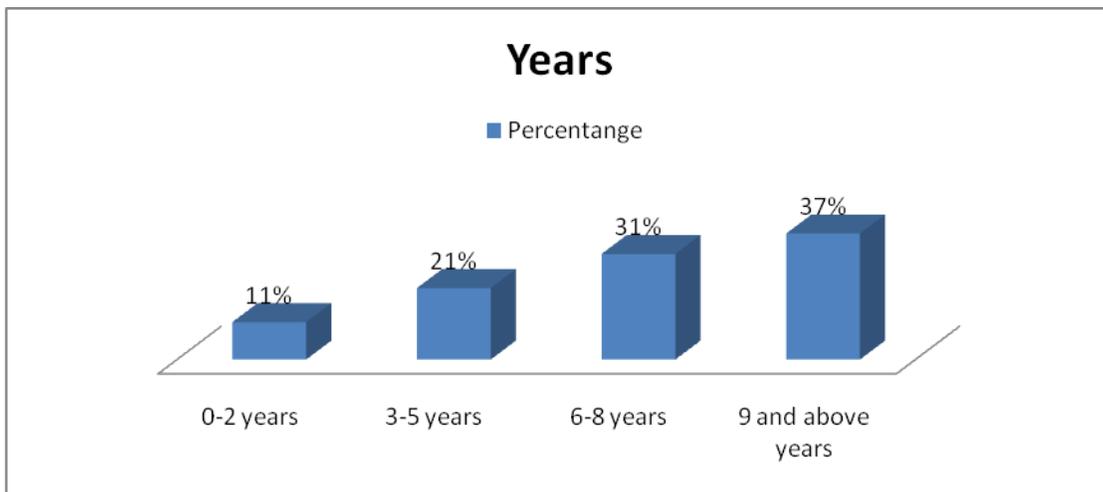


Figure 4.3: Years one has stayed in an organization

From the findings in Figure 4.3 above, minority of the respondents 11% have worked between 0 to 2 years in their various organization, 21% of the respondents have worked between 3 to 5 years, 31% of the respondents have worked 6 to 8 years while majority of the respondents 37% have worked over 9 years in their respective companies. This is a contradiction to the findings by Baraswaj (2000) who found high employee turnover among logistic companies who are embracing the use of technology. He stated that the rate of employee turnover is

alarming within logistic industry attributed by lack of job satisfaction among employees and poor management of innovation.

4.4 Level of Information Technology Usage

One of the objectives the study was to establish the extent and level of IT usage among firms within Nairobi County. The result are recorded in the table 4.2 below

Table 4.2: Level of IT Usage among firms

Statement	strongly agree	Agree	Not Sure	Disagree	Strongly Disagree	Total percentage
The management encourages the use of IT within the company	75%	15%	5%	5%	0%	100%
The level of IT usage is very low within the company	78%	5%	0%	8%	9%	100%
Employees resist the usage of IT within the company	52%	13%	7%	15%	13%	100%
The IT equipment's within the companies are not effective	45%	25%	4%	20%	6%	100%
All activities within the company are computerized	0%	0%	15%	35%	50%	100%
The customers service delivery has improved since the incorporation of IT within the firm	42%	21%	10%	23%	4%	100%

From the findings, majority of the respondent 75% strongly agreed that management encourages the use of IT within their organization, 15% of respondents agree with the same statement, while 5% were not sure and disagreed with the same statement respectively. The findings support the findings by Caldeira & Ward, 2002 that observed that management are always leading in ensuring efficient service delivery hence supports IT innovation and use in the logistic firms. It further reveals that low IT usage within logistic firms 78% of the respondent strongly agreeing with the same statement. Around 70% of respondent's agreed that IT equipments are not very much effective with around 85% strongly disagreeing that all activities of the companies are computerizing making customer service delivery not effective. This finding supports the findings by Shippers Council of Eastern 2014 ranking Kenya fourth in logistics performance in the region, making it the second last poorest performing country

in the bloc with low IT adoption rate. The same findings was echoed by Seddon (2005) who observed that many small and medium enterprises (SMEs) in developing countries continue to be challenged by their information technology (IT) adoption process, which is often characterized by a number of deficiencies and slow to implement them in their various departments. The low level of IT usage among logistic firms has been attributed by high cost of IT facilities, need for additional training and poor infrastructure on IT in the country. The majority of the directors (85%) attributes lack of IT usage to high cost of maintenance which supports Seddon (2005) that high cost of IT infrastructure hinders their performance. At the same time, the finding reveals that management supports the use of IT in but at a lower rate. The study sought to know the number of departments, which uses IT within their organization. The findings were recorded in Figure 4.4 below

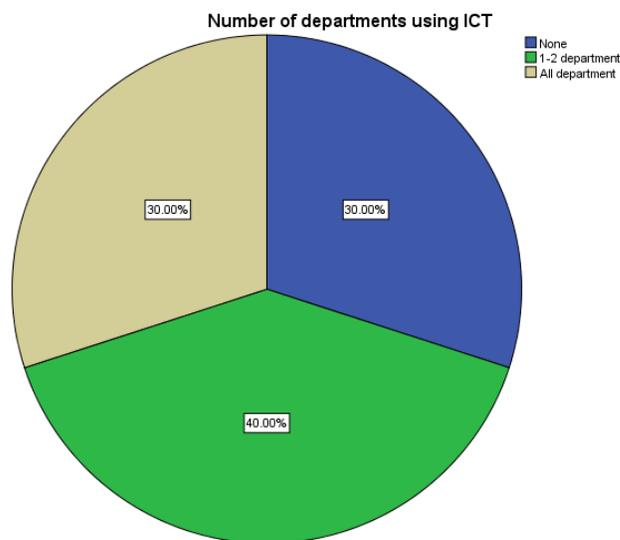


Figure 4.4: Number of department Using ICT

From the findings in figure 4.4 above, 30% of the respondents cited that they do not use integrated technology in delivering their services; majority 40% of respondents uses IT in

1 to 2 departments while 30% of the respondent uses IT in their entire department. The findings of this study indicate that very few logistic firms uses Information Technology in delivering

their services. This finding supports the findings by Shippers Council of Eastern 2014 ranking Kenya fourth in logistics performance in the region, making it the second last poorest performing country in the bloc with low IT adoption rate. The same findings was echoed by Seddon, 2005 who observed that many small and medium enterprises (SMEs) in developing countries continue to be challenged by their information

technology (IT) adoption process, which is often characterized by a number of deficiencies and slow to implement them in their various departments.

In order to interrogate level of usage further the study sought to establish the number of hours that the companies spend using their IT in their operations. The findings are recorded in the Figure 4.5 below

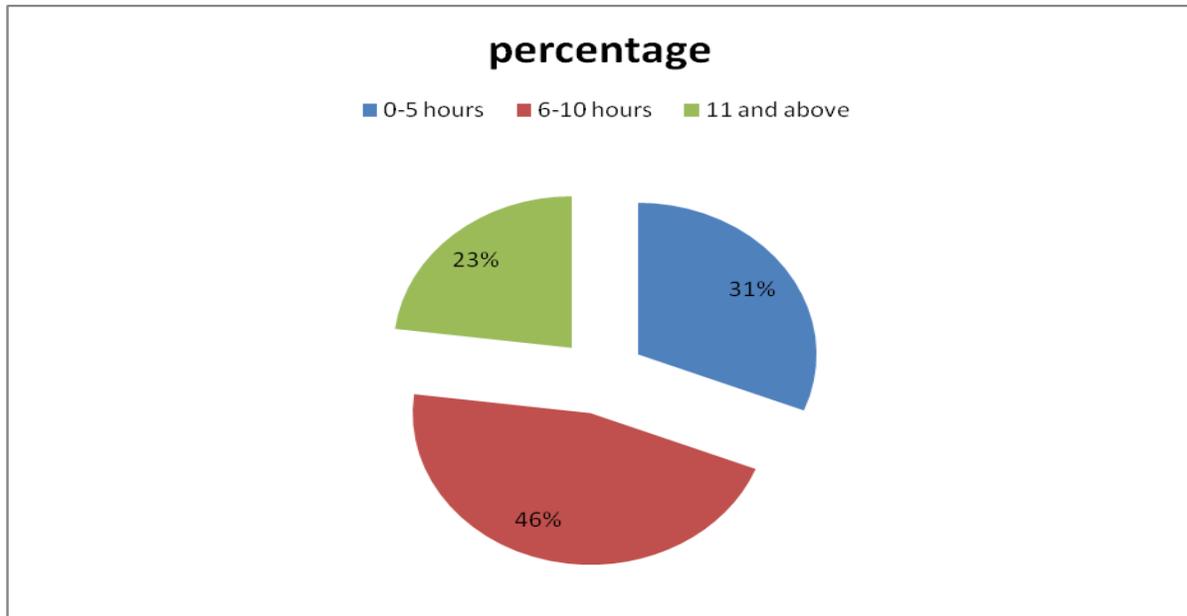


Figure 4.5: Number of hours spends using IT

From the findings, majority of the respondents 46% spend between 6 to 10 hours, 31% of respondents spend between 0 to 5 hours a day, while only 23% of respondent cited that they spent over 11 hours a day using IT. This finding supports earlier findings by Seddon (2005) that only few logistic firms in third world countries embrace the use of IT in delivering services to their audience.

4.5 Security and Tracking System

The study sought to establish was the extent and level of IT usage among firms within Nairobi County. The results we recoded in table 4.2 below

Table 4.3: Security and tracking system

Statement	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree	Total Percentage
The cost of tracking cargo lowers the cost hence high profit	42%	15%	6%	19%	18%	100%
The tracking system increases customers confidence resulting into sales increase	56%	10%	2%	17%	15%	100%
Online tracking and management of cargo is more secure than the manual management system	28%	42%	0%	15%	15%	100%
The online tracking system can be easily be tampered with compared to manual system	15%	23%	12%	31%	19%	100%
Computerized clearing and forward is quicker and faster compared to the manual system	34%	45%	0%	5%	16%	100%
All supply chain employees are trained on supply chain risk	5%	15%	21%	45%	14%	100%

management							
The organization has defined and documented its Occupational Health and Safety (OHS) policy	57%	34%	3%	0%	6%	100%	

From the findings in table 4.2 above, Majority of respondent (42%) strongly agreed the use of IT reduces cost, (15%) also agreed with the same stamen. The findings of this study is in line with the findings Porter & Miller (1980), report, that the utilization of IT has a significant influencing minimizing cost while maximizing value chain activities and guaranteeing competitive advantage. This is also in line with Palvia & Zigli (1990) report which asserted that integrated information system if utilized properly can lead to high quality products and services, enhanced productivity and effectiveness, increased in logistics efficiency. Majority of the respondent further (56%) strongly agreed that online tracking of cargo improve customer confidence hence improving the performance of the logistic firms. Majority further agreed that 34% agreed that computerized cargo clearing system is faster compared to manual system. Majority of the managers (76%) interviewed agreed that computerized clearing and forwarding is quicker and faster than manual but cited cost of the facilities as too high to hinder them from adopting the computerized clearing and forwarding. Majority of managers (94%) admits that there is positive

relationship between use of IT and firm’s performance hence need for them to adopt use of technology. The findings affirms the findings by Long & Long(1999) report which concluded that there was a need for every organization to automate their business processes so as to increase productivity, make their operations effective and efficient and thus giving the organization a competitive edge and hence increases its profitability.

The study sought to establish are the logistic firm’s uses tracking system. Over (86%) of respondents agreed that they use cargo tracking, while (14%). The tracking includes fuel management, routing mapping and car tracking. The findings support reports by Shippers Council of Eastern 2014 that most logistic firms have started embracing tracking of cargo to replace the security bond.

4.6 IT and Customer service delivery

The study sought to investigate how the use of IT improves customer service delivery. The result are presented in Table 4.4 .below

Table 4.4: Customer Service Delivery

Statement	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree	Percentage
Customers can launched complains and get services online with incorporation of IT system	32%	13%	6%	24%	25%	100%
Customers preferred being served manually compared to online services	25%	21%	5%	30%	16%	100%
The time to serve one customer has reduced significantly with incorporation of IT on customer service delivery	62%	18%	0%	13%	7%	100%
The cost of employing customer service attendance has reduced while serving them online	58%	12%	4%	18%	8%	100%
Manual customer attendance is more fulfilling than online attendance	31%	16%	6%	21%	26%	100%

From the findings in the table, majority (49%) disagree with the statement that customers can launched complains and get services online with incorporation of IT system, while smaller percentage 45% agree with the same statement. This supports the findings by Croom (2006) that very few companies integrate customers complains in their system in third world countries as compared to developed countries. The respondents were 50-50 on whether customers are more satisfied being served manually than only. Majority of respondents (80%) agreed with the statement that time to serve one customer has reduced

significantly with incorporation of IT on customer service delivery. This is in line with Christopher (2005) that argues that use of IT in customer service deliver is more efficient than manual system. Majority of respondent (70%) of respondents agreed that the cost of employing customer service attendance has reduced while serving them online. Lastly, the respondents were 50- 50 on whether the manual customer attendance is more fulfilling than online attendance. Logistic firm can gain competitive advantage by operational effectiveness, doing the same as your competitors do but doing it better, and by strategic

positioning, doing things differently from competitors in a way that delivers a unique type of value to customers. The respondent agrees that IT plays important role in the performance of logistic firms. The works of Parsons (1983), Porter and Millar (1985), and also Porter (1985) support the same findings that pointed out the importance of the ICT, in the determination of the firms' competitive advantage. According to Bowersox & Closs (1996)

this is due to the potential that ICT seem to have on lower cost and better services that could be offered.

4.7 Information Integration System

Lastly, the study sought to investigate the integration of IT system on the performance of logistic firms. The table below shows the findings

Table4.5: Information Integration system

Statement	Strongly Agree	Agree	Not sure	Disagree	Strongly disagree	Percentage
Integration helps in easy evaluation of major suppliers	43%	23%	12%	10%	12%	100%
Integration helps easy payment and attendance of major customers	54%	13%	5%	23%	5%	100%
Integration improves internal control system	70%	15%	0%	10%	5%	100%
It is easier an more simple to serve integrate suppliers	13%	45%	2%	14%	26%	100%
Integration increases customer service delivery efficiency	23%	46%	0%	9%	22%	100%
Integration improves control system of an organization	19%	28%	1%	31%	21%	100%

From the findings, majority of respondents (66%) agreed with the statement that Integration helps in easy evaluation of major suppliers, (67%) of the respondents also agreed with the statement that Integration helps easy payment and attendance to customers. majority of respondent (70%) strongly agree with the statement that integration improves service 15% of the respondent agree and only 10% of the respondent disagree. The findings supports report by Kelly(1994), who had investigated

the impact of IT on qualitative performance indicators that is customer satisfaction, company image, job interest of employees, stakeholders confidence and have found positive impact. Lee and Wang (2001) addressed the possibilities of reducing the bull whip effect in supply chains through Internet based collaboration and integration. The same arguments were advanced by the management of the logistic firms within Nairobi.

Regression

Table 4.6 Model Summary for all the Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.828 ^a	.686	.791	.388	1.851

Table 4. 6 above indicate that the value of the adjusted r squared R2 amount to 0.791 which is 79.1%. This shows that the factors that are not coved amount only to 20.9%. it is therefore, means the four factors have a big role to play on the performance

of logistic firms in Nairobi County. This study supports the findings of Lee and Wang (2011) showing the role of IT in the performance of logistic firms.

Table 4.7: ANOVA For All Variables

Model	Sum Squares	ofdf	Mean Square	F	Sig.
Regression	1646.01132	4	.412	2.729	.000 ^b
Residual	75432.123	5	.151		
Total	77078.13432	9			

The ANOVA result for all variables indicates that there was a highly significant relationship between the variables at F = 2.729 and P = 0.000. this implies that there is a strong relationship

between the four variables and the performance of logistic firms in Nairobi County. In support off these findings, Livermore and Rippa (2011) investigated the relationship between customer

service delivery and IT in logistic firms. They found high correlation among the variables.

V. SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter contains the summary of the entire study. The main findings of the study are summarized and conclusions drawn. The recommendations on those findings are discussed and areas of further research suggested.

5.2 Summary of Major findings

5.2.1 Level of IT Usage

The study found that the higher the level of Information Technology usage in the firms, the more effective and efficient the firm is. Therefore, the IT usage increases the performance of logistic firms within Nairobi County.

5.2.2 Security and Cargo tracking

The study found that the use of cargo tracking system increase customers confidence, and reduces cost on the security bonds imposed on logistic firms. This improves the performance of firms in terms of increased profitability and increased security hence customer confidence

5.2.3 Customer service delivery

The study found high relationship between customer deliver and firms performance. Firms that are using IT in customer service delivery perform better than firms that do not integrate IT in customer service delivery. Some of the areas of customer service delivery that can be integrated include generation of invoices, LPOS among other areas.

5.2.4 Information integration system

Organizations with integrated information systems, performs much better than the organizations that are not integrated. The study findings shows that, integrated system enhances communication and information exchange within the organization, with suppliers and other customers hence more efficient and effective.

5.3 Conclusion of the Study.

The study found that the level of information usage among logistics firms in Nairobi County contributed to the performance. Use of information technology on security and cargo tracking affected the performance of the firms. Customer service delivery systems improved the way customers are service satisfying them thus improving the performance of the logistics firms. Lastly information integration systems contributed to the performance of logistics firms in Nairobi County.

5.4 Recommendations for the study

The following are recommendations of the study based on the findings.

5.4.1 Level of IT Usage

The logistic firms should adopt the use of IT in their service delivery in order to improve their efficiencies as the higher the level of usage, the more efficient firms become the more

profitable it is. The management should be in the four fronts in enhancing the level of usage with all activities being technologically integrated.

5.4.2 Security and Cargo tracking system

This boost customer confidence and reduces security bond expenses hence improves the company profitability. The firms should adopt security and cargo tracking system in their service delivery. The cargo tracking system further helps in cost reduction and enhances security of the cargo through real time tracking. The firms should adopt this has it will improve the firms effectiveness and security in general.

5.4.3 Customer service delivery

Firms should adopt IT in their service delivery like invoice generation, communication, feedback and inquiry as this will reduce the number of employed customer attendance hence profitability to the company. The government could also support the logistic by embarking on initiatives to improve accessibility of relevant information for the SMEs as well as offering IT related trainings.

5.4.4 Information integration system

Logistic firms should integrate their departments, their key suppliers and payment system to make it easy for processing of documents which shall result into efficiency hence improved performance.

5.5 Areas for Further Study

From the recommendation, it is clear that integration of IT system, service delivery and security system improves performance in terms of service deliver of logistic firms as the new findings of the study hence need for the logistic firms to integrate their systems. The researcher suggests the following areas for further are as follows. First, the Adoption of Information and Communication Technology by Small Enterprises; Secondly, ICT Adoption and Impact on Logistics Service Providers' Performance and Thirdly, Absorptive Capacity and ICT Adoption Strategies for Logistic firms and lastly, Impacts IT adoption of logistics service performance.

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APPENDICES:

Appendix 1: Letter of introduction

Wilson Macharia
JKUAT WESTLAND CAMPUS
P.O BOX 62000
NAIROBI
November 2014

THE CHAIRMAN

.....

P.O BOX.....

Nairobi

Dear Sir/ Madam

RE: RESEARCH PROJECT

In regard to the above, I hereby wish to introduce myself to your organization. I am Mr. Wilson Macharia a student at Jomo Kenyatta University of Agriculture and Technology pursuing of Master of Science in procurement and logistics

I am currently undertaking a research project entitled "effects of information technology on performance of logistics firms in Nairobi County" as partial fulfillment of the requirements for my degree programme.

The purpose of this letter is to request you to provide me with the necessary support and assistance to enable me to obtain the data necessary for the project. Please note that the information given is purely for academic purposes.

Thank you

Yours faithfully,

Wilson Macharia

Appendix 2: Questionnaire

Dear Sir/Madam,

Dear respondent, am conducting a research study on the effects of information technology on performance of logistics firms in Nairobi County. The questionnaire items are about the study and you are kindly requested to participate in responding to the questions below. The information given will be treated as confidential and the results of the study will be used for academic research purposes only.

Part A: Bio Data

Please tick where appropriate

- 1) Name of company _____
- 2) Title of respondent _____
- 3) Division/Department _____
- 4) What is your age bracket?
 18-26 [] 27-35 [] 36 -45 [] 46-55 [] 56 and above []
- 5) Indicate ownership of your company
 a) Local [] b) Foreign [] c) Government [] d) Others (Specify) ...
- 6) How many years have you worked in your organization?
 a) Less than 3 years [] b) 3 – 5 years [] c) 6 – 7 years [] d) Above 8 years []

SECTION I: EFFECTS OF INFORMATION TECHNOLOGY ON PERFORMANCE OF LOGISTICS FIRMS IN NAIROBI COUNTY

SECTION A: Level of ICT usage

- a) How many departments are using ICT in your company?
 None -2 3-5 all department
- b) How many hours to you spend using IT in performing your duty in the company?
 0-5 hrs. 6-10hrs and above
- c) Using a scale of 1 to 5 Tick as an appropriate using the key ;where 1-strongly agree, 2- agree, 3- Not sure, 4- disagree, 5- strongly disagree. To what extent do you agree with the following statements IT usage in your company?

Statement	1	2	3	4	5
The management encourages the use of IT within the company					
The level of IT usage is very low within the company					
Employees resist the usage of IT within the company					
The IT equipment's within the companies are not effective					
All activities within the company are computerized					
The customers service delivery has improved since the incorporation of IT within the firm					

SECTION B: Security & Tracking

- a) Do you offer cargo tracking services
 Yes No
- b) What are the tracking system and services do your company offer
 (a) Car tracking (b) Fuel management (c) Driver management (d) Routing, mapping and scheduling
- c) Using a scale of 1 to 5 Tick as an appropriate using the key; where 1-strongly agree, 2- agree, 3- Not sure, 4- disagree, 5- strongly disagree. To what extent do you agree with the following statements IT usage in your company?

Statement	1	2	3	4	5
The cost of tracking cargo is more expensive hence lowers the profit					
The tracking system increases customers confidence resulting into sales increase					
Online tracking and management of cargo is more secure than the manual					

management system					
The online tracking system can be easily be tampered with compared to manual system					
Computerized clearing and forward is quicker and faster compared to the manual system					
All supply chain employees are trained on supply chain risk management					
The organization has defined and documented its Occupational Health and Safety (OHS) policy					

SECTION C: Customer service delivery

- a) Using a scale of 1 to 5 Tick as an appropriate using the key; where 1-strongly agree, 2- agree, 3- Not sure, 4- disagree, 5- strongly disagree. To what extent do you agree with the following statements IT usage in your company?

Customers can launched complains and get services online with incorporation of IT system					
Customers preferred being served manually compared to online services					
The time to serve one customer has reduced significantly with incorporation of IT on customer service delivery					
The cost of employing customer service attendance has reduced while serving them online					
Manual customer attendance is more fulfilling than online attendance					

Part D: Integration of IT services

1. Has the company integrated the customer and major supply in their system?

Yes [] No []

2. If yes what are the major activities that has been integrated?

3. Using a scale of 1 to 5 Tick as an appropriate using the key; where 1-strongly agree, 2- agree, 3- Not sure, 4- disagree, 5- strongly disagree. To what extent do you agree with the following statements IT integration in your company?

Integration helps in easy evaluation of major suppliers					
Integration helps easy payment and attendance of major customers					
It is easy and simple to handle integrated clients within the system					
It is easier an more simple to serve integrate suppliers					
Integration increases customer service delivery efficiency					
Integration improves control system of an organization					

Part E: Performance

Indicate the average sales increase in your company over the following years

Average sales per year (Kshs)

After ICT Adoption 2013 []

2012 []

2011 []

Before ICT adoption 2010 []

2009 []

2008 []

The following areas compare your firm performance with other firm in the industry. Tick as appropriate which you feel best estimates how your firm currently compares to other firms in the industry on each item.

	Lowest (0%-20%)	Lower (20%-40%)	Mid (40%-60%)	Next (60%-80%)	Top (80%-100%)
After tax return on total assets					
After tax return on total sales					
Firms total sales growth					

over past 5 years					
Overall firm performance and success					
Our competitive position					
Net profit					
Gross profit					
Return on Investment					

Summary

Objectives	High	Middle	Low	Percentage
Levels of IT usage				
Security tracking system				
Customer service delivery				
Information integration system				
Performance				

**END
THANKS YOU**

Appendix 3: List Of The Licensed Logistics Firms For The Year 2013

1. ACME CONTAINERS LTD
2. ACTIVE CARGO SERVICES LTD
3. ACTIVE LINE LIMITED
4. ADAIR FREIGHT SERVICES LTD
5. AERO CARGO EXPRESS LTD
6. AEROMARINE CARGO SERVICES LTD
7. BEST FAST CARGO KENYA LTD
8. BLUE WAVES LOGISTICS LTD
9. BLUESTAR FREIGHTERS
10. BLUEWAVE LOGISTICS
11. BOKHARI FREIGHT LIMITED
12. BONFIDE CLEARING & FORWARDING CO. LTD
13. BORDERLESS LOGISTICS COMPANY
14. BOSMAR C & FOWARDING ENTERPRISES
15. CARGILL KENYA LTD
16. CARGO CARE INTERNATIONAL LTD
17. CARGO FRONT INTERNATIONAL LTD
18. CARGO LINE EXPRESS LTD
19. CARGO LINK SERVICES LTD
20. CARGO LOGISTICS SERVICES LTD
21. CARGO NEST KENYA LTD

22. CARGO POINT INTERNATIONAL LTD
23. CARGO ROLLERS
24. CARGO STARS KENYA LTD
25. CARGO WORLD CONVEYORS
26. CATESAM ENTERPRISES
27. CEBIT CARGO LTD
28. CHARITIES LOGISTICS
29. DEAN LOGISTICS LTD
30. DEDICATED CARGO FORWARDERS
31. DEEPMARK CARGO
32. DEL-RAY CARGO SERVICE
33. DELTA EXPRESS LTD
34. DESERT COMMERCIAL SHIPPING LTD
35. DHL WORLDWIDE EXPRESS
36. DIGITAL CARGO FORWARDERS
37. DIVERSE CARGO MARINE & AIR C&F
38. EAST AFRICA CARGO LOGISTICS LTD
39. EAST AFRICA CHAINS LTD
40. EAST AFRICAN COURIER
41. EAST AFRICAN EXPRESS LTD
42. ECU-LINE KENYA LTD
43. ELKA CARGO KENYA LTD
44. EMPIRE LOGISTIC SERVICES LTD
45. ESTON CARGO LINKS LTD
46. EURASIAN FREIGHT FORWARDERS
47. EXPORT CONSOLIDATION SERVICES (K) LTD
48. EXPRESS KENYA LTD
49. FAIDA CARGO SERVICES
50. FAST CARGO MASTERS KENYA
51. FAST FREIGHT SERVICES LIMITED
52. FREIGHTCARE LOGISTICS LTD
53. FREIGHTWIDE CARGO
54. FREIGHTWINGS LTD
55. FREIGHTWORX LOGISTIX LTD
56. G4S SECURITY SERVICES KENYA LTD
57. GENERAL CARGOS SERVICES LTD
58. GENERAL FREIGHTERS LTD
59. GEOMWA CARGO SERVICES
60. HIGHLAND FORWARDERS LTD
61. HOMELAND FREIGHT LTD
62. IMPEX FREIGHT LIMITED
63. INCHCAPE SHIPPING SERVICES K LTD
64. INCOTERMS LOGISTICS SOLUTIONS KENYA LTD
65. INLAND AFRICA LOGISTICS
66. INTERCITIES FREIGHT & SHIPPING LTD
67. INTERFREIGHT EAST AFRICA LTD
68. INTERGRATED LOGISTISCS COMPANY LTD
69. INTERNATIONAL FOREIGN TRADE CO. LTD
70. INTERPORT CARGO LOGISTICS
71. INTIME FREIGHT & CARGO SERVICES
72. ISALILY LOGISTICS SERVICE
73. KANA FREIGHT LOGISTICS
74. LOGISTIC FREIGHT LTD
75. LOGISTIC SOLUTIONS LTD
76. LOGISTICS CENTRE SERVICES
77. LOGISTICS SERVICES LTD
78. MILLENIUM FREIGHT LOGISTICS
79. MISHALE FREIGHTERS LTD
80. MITCHELL COTTS FREIGHT KENYA

81. MODERN LOGISTICS LTD
82. NEW PLANET EXPRESS
83. NIBAL FREIGHTERS LTD
84. NICAH LOGISTICS LTD
85. OCEAN PACIFIC LINE INTERNATIONAL LTD
86. OCEAN STAR GENERAL AGENCIES
87. OCEANLINES FREIGHT FORWARDERS
88. OKAMOTO FREIGHT SERVICES LTD
89. PRECISE LOGISTICS LTD
90. PRIMCARGO AGENCIES LTD
91. PRINCIPAL FORWARDERS LTD
92. PRIORITY LOGISTICS LTD
93. PROTEX KENYA (EPZ) LTD
94. PROVINCIAL CLEARING & FORWARDING
95. QUEST MARITIME LTD
96. QUICK CARGO SERVICES LTD
97. RAJOSCA FREIGHT FORWARDERS LTD
98. RAMO FORWARDERS LTD
99. RAPAT FREIGHT KENYA LTD
100. RAVI CLEARING AND FORWARDING COMPANY
101. RAY CARGO SERVICES LTD
102. RED ANCHOR FREIGHT FORWARDERS
103. SDV-TRANSAMI KENYA LTD
104. SEAGATE LOGISTICS LTD
105. SEALAIR FREIGHT CO. LTD
106. SEALAND LOGISTICS LTD
107. SEALINE FREIGHT SERVICES
108. SHARIS LOGISTICS LTD
109. TRANSFREIGHT LOGISTICS LTD
110. TRANSONIC LOGISTICS
111. TRIPPLE TWIN LOGISTICS LTD
112. UNICON LOGISTICS
113. UNIFREIGHT TRUCKING SERVICES LTD
114. UNIGLOBE LOGISTICS
115. UNION LOGISTICS LTD
116. VICTORIA INTERNATIONAL LOGISTICS
117. WESTERN LOGISTICS SERVICES LTD
118. WESTON LOGISTICS LTD
119. WETAA INVESTMENT LTD
120. WORLD CARGO LOGISTICS LTD (SOURCE KRA)