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EFFECTS OF INFORMATION TECHNOLOGY ENABLED LOGISTICS BASE STATIONS NETWORK ON OPERATIONAL COSTS OF LOGISTICS COMPANIES: CASE OF KENYA

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MBA/97773/2017

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT FOR THE AWARD OF THE DEGREE IN MASTER OF BUSINESS ADMINISTRATION

STRATHMORE BUSINESS SCHOOL

2021

DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

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DEDICATION

I dedicate this dissertation to my family who were very supportive to me and encouraged me throughout the whole journey. I want to thank the continent of Africa which provided a different environment and inspiration in my life, and Africans who warmly fed me with a new culture. Nevertheless, I would like to thank God for His love and sustenance this far.

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I would like to register my appreciation of the continuous support and motivation I received from my supervisor Dr. Omwenga. His immense knowledge on the area under study is admirable. His support and guidance enabled me to complete the study within the required timelines. My appreciation also goes out to the Strathmore Business School from the hardware and software environments such as school support staff and classmates who provided useful support.

ABSTRACT

Logistics operational costs are among the most critical costs of general goods. The concern of every management of logistics companies is how to manage these costs. Most logistics companies have established logistics base stations network as a means of spreading and reducing the operational costs. However, these costs are still high. The focus of the research was to determine the effect of integrating information technology into operations of the logistics base stations network on the overall operational costs of Kenya based logistic companies. The specific objectives were; to establish the implication of Information Technology enabled logistics base stations on transportation and supply chain costs of Kenya based logistic firms; to investigate the implication of Information Technology enabled logistics base stations on inventory control of a logistic company in Kenya; and to determine the implication of Information Technology enabled logistics base stations on material handling costs of a logistic company in Kenya. The research was anchored on a number of theories namely; technology acceptance model theory, operations management theory and Durkheimian theory. Descriptive research design was used by researcher. Researcher targeted 1602 Kenya based logistic companies which formed study population. Stratified simple random sampling was used to determine the sample which was 160 logistic companies. Semi structured questionnaire was utilized to collect both primary and secondary data. The respondents were the logistic managers of the companies. Descriptive and inferential statistics were utilized by the researcher to carry out data analysis. Research established that there exists considerable relationship between information technologies enabled logistics base stations network and operational costs of logistics companies. The results also showed that IT enabled transport, IT enabled inventory control and IT enabled material handling significantly influenced the operational costs of Kenyan logistic firms with a P-value of 0.000. It was therefore concluded that the three variables significantly influenced the operational cost of Kenyan logistics firms. From the study findings, researcher suggests that logistic firms need to continuously improve their security to meet the global standards and always adopt to the ever changing security measures like the real time and tamper proof systems that alerts them in cases of attacks, change of routes or any suspicious activity during transportation. Also logistics companies need to invest more on the inventory management software programs that lowers cost of managing inventories. The IT based inventory management can be used in both entry and at the terminus when goods are offloaded to ensure that client gets what was intended and not swapped on the way. Further, there is need for the logistics companies to introduce customers' notification systems that can track every stage of the transit goods so as to ensure that customers can monitor the goods and therefore reduce time taken to deliver the cargo.

TABLE OF CONTENTS

ABBREVIATIONS

TPL	-	The Third Part Logistics
5G	-	5 Fifth-Generations (ICT Standard)
AI	-	Artificial Intelligence
BI	-	Business Information
CCM	-	Customer Control Model
DSS	-	Decisions Support Systems
EAC	-	East African Community
EAOTA	-	East African Online Transport Agency
EDI	-	Electronic Data Interchange
EPOS	-	Electronic Point of Sale
FDI	-	Foreign Direct Investment
GDP	-	Gross Domestic Product
GPS	-	Global Positioning System
ICT	-	Information and Communication Technology
IOT	-	Internet of Things
IT	-	Information Technology
KIFWA	-	Kenya International Freight and Warehousing Association
LAN	-	Local Area Network
LIS	-	Logistics Information System
LOS	-	Logistics Operations System
LPS	-	Logistics Planning System
LSP	-	Logistics Service Provider
LSQ	-	Logistics Service Quality
MPSGIS	-	Microprocessor System and Geographic Information System
NM	-	Nanometer
NPD	-	New Product Development
OM	-	Operations Management
PC	-	Personal Computer
PU	-	Perceived Usefulness
R&D	-	Research and Development
RBT	-	Resource Base Theory

RMS	-	Reconfigurable Manufacturing System
S&T	-	Science and Technology
SSA	-	Sub-Saharan Africa
TAM	-	Technology Acceptance Model
TOC	-	Theory of Constraints
TQM	-	Total Quality Management
WAN	-	Wide Area Network
XML	-	Extensive Markup Language

DEFINITION OF TERMS

Logistics base station: Refers to a very large logistics node whose intensive and comprehensive functions are very strong. It is also the product of intensive integration of some small logistics nodes and common intersection of different logistics lines. It is a place where one or more logistics and distribution centers are concentrated in space, and is a logistics assembly point with a certain scale and comprehensive service functions (Wang, 2000).

Logistics Information System (LIS):A logistics information system connects the logistical activities while integrating various sources of information such as the order information, purchasing information, production information schedule, the packaging information schedule, the transport and warehousing information, the distribution information, the payment information and the delivery information. Voortman (2004) posit that LIS empowers logisticians to access data when it is needed, process data on a system and analyze it.

Capacity: The physical facilities, employees and existing systems and structures key in meeting the product requirements of customers. Can also be seen as the highest output or producing potential of machines, individuals, processes or plants.

Cargo: Items being carried during a shipment.

Inventory Control: An organizational strategy and building used to control all inventoried items from one location or group.

Materials Handling: The physical management of goods, services and materials between procurement and shipping.

Materials Management: Inbound logistics from suppliers through the production process. The movement and management of materials, goods and services from procurement through production.

CHAPTER ONE:INTRODUCTION

1.1 Background of the Study

Emerging stiff competition globally has forced organizations including logistics firms to reevaluate their operational activities. There has been a lot of focus on achievement of operational excellence implying that organizations need to consistently produce quality products across all operations. Firms the world over are striving to produce quality products at the lowest possible costs (Gartner, 2014). Most organizations are currently operating in highly competitive and fast changing markets hence the urgent need to be adaptive in order to survive and thrive in such markets (Kathurima, 2018). Effective management of a firm's operational activities has direct impact on performance and eventual survival of firms.

In the current competitive markets, firms need to manage their products in the most effective manner so as to minimize costs while meeting and if possible exceeding service level requirements (Choudhary& Shankar, 2013). This makes logistics such a relevant and indispensable firm activity used by organizations globally and assists in determination if products are received by customers on time and also ensuring that the required quality requirements are met at the lowest possible cost (Campos-Garcia et al., 2011). Adoption of information technology (IT) has played key role on the survival and eventual success of firms operating in different sectors. The world is currently experiencing considerable changes in the field of technology with IT being at the very center.

IT has completely transformed the way in which individuals carry business, live, work and interact. IT has been successfully used by organizations to come up with innovative ways to operate and relay crucial information thereby achieving considerable economic gains (Tambe&Hitt, 2014). Abou-Moghli, Abdallahand Ayed (2012) posit that IT is a multimedia technology that comprises of internet, software, hardware, computer, television, telephone, email, satellite and internetworking projects. Business firms are currently aggressively investing considerable amount of resources to advance their technologies in an attempt to increase their performance and achieve operational

efficiencies so as to gain competitive edge over peers (Loukis, Sapounas & Milionis, 2007).The usage of IT has also been attributed to increased organizational efficiency, quality and enhanced information sharing(Gartner, 2014). Gerald and Anderson (2012) posit that firms that utilize supply chain relationship through IT have reduced their operational costs and increased their performance through integration.

Advancement of IT has greatly contributed to better and easy flow of information across the globe, making consumers to be more informed hence more demanding since they have choices (Delfmann & Gehring 2003). To survive in such markets, firms are forced to constantly lower the prices of their products in addition to regularly improving characteristics of products. Therefore, there is need for organizations to apply modern technologies in all aspects of their operational activities in an effort to manage costs of doing business (Hassini 2008). Efficiency and effectiveness of logistics operational activities have tremendously improved as a result of advancements in IT (Gacuru & Kabare, 2015). The ease of movement of information via systems of information and communication technology (ICT)has also played key role in reduction of cost of logistics operations as a result of better coordination between various activities along the supply chain. Adoption of latest technologies by logistics firms globally has resulted into increased performance and higher efficiency (Atieno, 2014).

The World Bank, African Development Bank and African Union Report (2012) posit that Kenya's ICT infrastructure has undergone dramatic improvements with statistics showing that internet penetration has greatly increased in the country. The country's IT space has greatly benefited from strong environmental factors such as government support and a highly educated populace who are highly exposed to operations of international institutions (Nyamu, 2014). Support received from the government towards the development ICT landscape has greatly contributed to technological advancement in the country. The government has put in place measures aimed at enhancing access to affordable ICT solutions that is expected to propel the country towards being ICT hub in East African region. The government introduced an aggressive ICT master plan (2014-2017) that was anchored on three pillars: ICT human capital and workforce development,

integrated ICT infrastructure and integrated information infrastructure (The Standard, 2014).

Established logistic firms operating in Kenya have aggressively incorporated a number of ICT applications used in their day to day operations enabling them to enjoy numerous benefits. On the contrary, a number of newly established logistic firms are still using manual systems which are not very effective and efficient (Ondabu, 2015). Integration of technology in operational activities has enabled logistic firms to reduce lead times, have better customer service levels in addition to achievement of efficiency in operations. The firms can also track their cargo and fleet with so much ease (Atieno, 2014). Mobile phone technologies have been successfully used by logistic firms to verify status update, strengthen efficiency in operations, check transit time, check customer and supplier's relationships and enhance information sharing. These key benefits are crucial in achievement of sustainable competitive advantage among firms. Improv ICT infrastructure has made it easy for logistics firms in the country to capitalize on a number of viable opportunities (Raisinghani, 2008). Logistics information systems (LIS) is currently being used by every established logistic firm operating in the country. LIS has enabled logistic firms to attain operational efficiency and also to gain end-to-end visibility of finished products or inputs used in production. (Ballou, 2013).

The new technologies adopted by logistic firms need to fit into existing policies and practices of the incorporating firm and employees have a duty to use to it fully. Usage of technology has enabled firms operating in Kenya to automate their processes and re-engineer business process resulting in indirect cost savings such as labor costs, increased productivity and direct cost reduction of firm's input such as information costs (Alchian & Demsetz, 1972). To keep up with the fast-changing technological advancements, most logistic firms in Kenya have established base stations which are technologically enabled key in remitting and sending crucial information used in day to day operations of such firms. Logistic base stations make use of radio-frequency power amplifiers in the transmission and receipt of crucial signals.

1.2 Problem Statement

Garmendia (2008) argued that high road transportation costs driven by high profit margins are due to poor infrastructure and information and communication technologies (ICT) adoptions. Nations within African continent have poor infrastructure, especially in energy and transportation and the possibility of ICT being fully harnessed has not been realized (Ondiege, Moyo& Verdier-Chouchane, 2013). As a result of poor infrastructure leading to high investment threshold from high operational cost, players in the logistics sector can easily increase market price and aggravate high price of final goods and services.

Users in Kenya cannot get sufficient logistics resources in unstable situation which leads to drastic fluctuation in product prices. This can be due to; the high idle ratio of warehouse and vehicles; lack of effective resource information management platform; low coordination ratio of logistics resources; the purchasing price of facilities, constructions, parts and maintenance are high; poor management and unskilled employees; adequate and systematic services are not complete and aggregate. These factors therefore contribute to high logistics operational cost, low efficiency and few entrants in the sector.

Mishra, Heide, and Cort (1998) posit that information asymmetry results into serious moral hazard problem due to the fact that suppliers can easily be motivated and use their capacities cheat. Due to lack of logistics base stations network, multiple participants cannot get effective information and resources and this increases logistics operational cost, service price and price fluctuation from cheating in downstream and upstream of logistics. Akerlof (1970) posits that in instances where these guarantees are indefinite, firms will pay the ultimate price.

A number of past researches focused mainly on the role of information technology on performance of logistic firms with very limited studies looking at the effects of information technology enabled logistics base stations network on operational costs of logistics companies. Past studies reviewed gave results that were inclusive and conflicting. Oyebamiji (2018) studied information technology and its impact on performance of logistics firms in Nigeria with results showing that adoption of information technology positively and significantly influences performance of logistics

firms in Nigeria. A study conducted in Portugal by Azeredo (2007)on the role of logistics' information and communication technologies in promoting competitive advantages of the firm revealed that adoption of new technologies by firms is key in achievement of competitive advantage. These researches were conducted in different geographical areas and hence the findings may not be generalized to the Kenyan context.

Locally, Atieno (2014) investigated the effect of information and communication technology on supply chain performance among logistic firms in Nairobi. Findings from the study revealed that adoption of IT by logistic firms is key in achievement of better firm performance. Another study conducted by Kungu (2014) on the role of information technology on operational performance of firms in the Kenyan hospitality industry revealed that adoption of IT contributes towards improvement of operational efficiency and reduction of operational cost. These studies were too general and was conducted among organizations in different contexts. The current research aims to establish the effects of information technology enabled logistics base stations network on operational costs of logistics companies: case of Kenya.

Kenyan logistics service providers still handle logistics transactions almost the same way as 40 years ago. Poor adoption of information technology causes high operation costs. If the companies fully adopted IT in their operations, there would be a link with all relevant facilities, people and organizations working together, including individual and government resources. This study proposes that technology adoptions enabled logistics base stations, creates a multiple functional logistics service network, optimizing logistics activities in all logistics operational cost aspects to solve logistics problems that the country is currently grappling with. This research therefore sought to address the research gaps identified by answering the question: What are the effects of information technology enabled logistics base stations network on operational costs of Kenya based logistics firms?

1.3 Research Objectives

1.3.1 General Objective

To determine the impact of information technology enabled logistics base stations network on operational costs of Kenya based logistics companies.

1.3.2 Specific Objectives

1. To analyze the implication of information technology enabled logistics base stations on the transportation and operational costs of logistics firms in Kenya
2. To investigate the implication of information technology enabled logistics base stations on inventory control and operational costs of Kenya based logistics firms.
3. To investigate the implication of information technology enabled logistics base stations on material handling and operational costs of Kenyan based logistics firms.

1.4 Research Questions

1. What is the implication of information technology enabled logistics base stations on the transportation and operational costs of Kenya based logistics firms?
2. What is the implication of information technology enabled logistics base stations on the inventory control and operational costs of Kenya based logistics firms?
3. What is the implication of information technology enabled logistics base stations on material handling and operational costs of Kenya based logistics firms?

1.5 Significance of the Study

Kenya plays crucial economic role in EAC therefore this study will provide concepts which can help improve the following aspects in economics and society in Kenya: Reducing investment thresholds in logistics industry will allows individuals or organizational entrants to reduce poverty. The logistics base stations network provides professional venues to entrepreneurs and adequate aggregate and systematic service including technology adoptions that support entrepreneurs to be successful.

Further, making maximum use of new advanced transport infrastructures will contribute towards improvement of national infrastructures, increasing revenue for national infrastructure investment. More individuals, SMEs or organizations will join the ventures in logistics, more logistics base stations will also be linked by national or international transport infrastructures (including high ways, railways, airport and heavy industry),

hence increasing utilization ratio of transport infrastructures and facilities. This can contribute to the growth of GDP thereby absolutely increasing national revenues. Further it can facilitate transfer of skills and technologies to Kenya and Africa, supporting and speeding up online business among SMEs and concreting regional comparative advantages thereby upgrading quality of life among Kenyans. More sufficient talents would be trained in Kenya which will impact education system, life style and national development progress.

Furthermore, the findings will lead to optimization of social resources thereby reducing idle ratio of resources, minimizing logistics operational cost and final prices of commodities, reducing inflation index, supporting to enhance manufacturing and industrial development making national economics to be healthier and sustainable. Changing current structures of consumption and organizations brings more reforms, technologies and progresses to society and the economy in general.

Researcher will share study findings with NACOSTI who are in a better position to consolidate the findings and disseminate them. The results will also be shared with logistic companies in the hope that implementation of the same will help in reduction of their operational costs. Other beneficiaries will be the government of Kenya and other researchers who might be interested in exploiting the research gaps for potential study areas.

1.6 Scope to the Study

Data used in the study was collected from logistics companies in Kenya. Researcher targeted 1602 logistics companies in Kenya which formed the study population as per International Freight and Warehousing Association (KIFWA) and East African Online Transport Agency (EAOTA) in Kenya. These companies were mostly situated in Nairobi and Mombasa. The study dealt with the operational cost of logistics companies relevant with logistics facilities especially base stations network enabled by technology adoptions. These activities included purchasing, distribution, managing of inventories, packing, marketing management, fix-assets allocation and organizational management in logistics operations field. This study especially highlighted effects of technology adoptions on

logistics operational cost. The logistics operational cost includes; transportation cost, inventory management cost, packing cost, purchasing cost, marketing management expenses, fix-assets expenses and organizational management expenses.

CHAPTER TWO:LITERATURE REVIEW

2.1 Introduction

This chapter looks at reviews of existing literature in line with study objectives. Theoretical framework adopted by the study, empirical literature that supports study objectives and conceptual framework are also presented in the chapter.

2.2 Theoretical Framework

A number of theories were used by the researcher to anchor the study and to measure technology adoptions and logistics base stations network on operational costs of logistics companies in Kenya. The theories included; Technology Acceptance Model (TAM) theory, Operations Management theory and Durkheimian Network theory.

2.2.1 Technology Acceptance Model (TAM) Theory

The information systems literature has come up with various theoretical frameworks in an effort to understand the crucial factors in individuals' decisions to incorporate the usage of information technology. TAM is probably one of the most commonly used framework in explaining user decisions in adoption and usage of information technology (Bienstocket al., 2010). Fishbein and Ajzen (1975) argue that TAM was developed from Theory of Reasoned Action and posit that the best predictor of technology usage is the intention to use technology. There exist two main constructs of TAM namely; perceived ease of use (PEOU) and perceived usefulness (PU) of information technology (Bienstock et al., 2010).

Prahalad and Krishnan (1999) posit that sufficient information technology system support is a crucial element in effective logistics service.IT can have considerable impact on logistics operations, enabling partners of supply chain to collaborate in addition to making possible automation of a number of logistics activities which can be considered routine. This enables professionals within the field of logistics to direct their attention on more strategic issues in management of logistics (Benjamin & Wigand, 1995; Handfield & Nichols, 1999).

Both perceptions of logistics service quality (LSQ) and satisfaction levels are considerably related to future purchase intentions. Additionally, LSQ perceptions mediate the association between the two TAM constructs (PU and PEOU) and satisfaction of customers. Industrial satisfaction of customers with logistics service is primarily driven by the quality of these services instead of their perceptions of IT tools (Bienstock & Royne, 2010). Successful information integration within a firm is key enabler for: enhanced productivity; cost reduction; and lastly improved service to customers (Hammant, 1995). This theory was useful in examining how interlinked logistics base stations and technology adoptions satisfy customers with good perceptions (both PU and PEOU) from good cost performance and friendly interfaces of technology adoptions.

2.2.2 Operations Management Theory

Taylor (1911) came up with four principles of scientific operations management namely; developing true science of management, scientific selection of an effective and efficient employee, education and development of employees and intimate collaboration between management of firms and employees. Since then, researchers worldwide have never stopped to research for scientific operations management theory to improve operations management. There are more than 3000 literatures published on operations management theory, and more theories would be built from the theory. The theory is a set of practices firms make use of in an effort to enhance production efficiency. Investopedia (2019) posits that operations management is concerned with control of production process and business operations in the most efficient ways possible.

Numerous efforts have been made to come up with and propose theories and theory-like principles of operations management. Some of these attempts include: trade-off theory (Skinner, 1969), the process-product matrix (Hayes &Wheelwright, 1979), the customer-contact model (Chase &Tansik, 1983), the TOC (Goldratt& Cox, 1984; Boyd &Gupta, 2004), the cumulative theory (Ferdows & DeMeyer, 1990), the theory of production competence (Cleveland et al., 1989; Vickery, 1991), priority management theory (Westbrook, 1994), the theory of TQM (Flynn et al., 1994; Handfield &Melnyk, 1998), the theory of swift and even flow, and the theory of performance frontiers (Schmenner & Swink, 1998). Resource based theory (Hitt, Xu, & Carnes, 2016), system dynamics as a

structural theory (Growler, Thun, & Milling, 2008). Modern operations management comprises of four theories: business process redesign (BPR), six sigma, lean manufacturing, and reconfigurable manufacturing systems (Kettering University, 2016).

Skinner (1969) warns firms that a production system inevitably involves trade-offs and compromises. Within this initial theoretical construct, any production system need to be designed to carry out well limited operational tasks, with these tasks bounded by corporate strategic objectives. Hayes and Wheelwright (1979) pointed out that process-product matrix is made up of two dimensions, product structure/product life cycle and process structure/process life cycle. Production process used to manufacture a product moves through various stages, much like the stages of products and markets that begins with a highly flexible, high-cost process and progresses towards increased standardization, mechanization, and automation, culminating in an inflexible but cost-effective process. Hammer (1993) posit that Business Process Redesign (BPR) is the crucial rethinking and radical redesign of business processes to attain major improvements in critical, contemporary performance measures such as cost, quality, service and speed. Chase and Tansik (1983) posit that customer contact model (CCM) was developed to assist the service design decision by determining tasks that can be performed in the presence of the customers and those that need to be processed in the back office.

Theory of Constraints (TOC) is a crucial theory with focus on the weakest ring(s) in the chain. Currently the theory can be used as a kind of management philosophy and can be integrated with cost accounting system (Şimşit, Günay, & Vayvay, 2014). The theory gives approaches to operations decisions that avoid pitfalls of local optimization by reaching across functional boundaries within firms. The TOC offers a new paradigm in operations management, one that replaces an over-riding concern for efficiency with achievement of the organization's goal as the primary concern of operations management (Gupta & Boyd, 2008). The cumulative capability or the 'sand cone' model (Ferdows &De Meyer, 1990) pointed out that manufacturing performance is cumulative and sequential, with quality performance forming the foundation.

The theory of production competence (Cleveland et al., 1989) and the ensuing papers directly related to its critical examination and extensions (Vickery, 1991; Vickery et al., 1993; Dro¨ge et al., 1994; Safizadeh et al., 2000).The scholars pointed out that production competence contributes to improved business competitiveness which should be restricted that result to batch operations. Schmener and Vastag (2005) found that production competence impacts performance stronger for line flow-continuous processes with definite limitations. Currently priority management may serve as a general theory which attempts to find solutions to a set of related conflicts (Westbrook, 1994). This theory is important in the examination of IT implementation in logistic service quality since IT facilities changes, "since logistics services are highly dependent on information technology" (Bienstock, Royne,2010).Flynn et al. (1994) described TQM as: An integrated approach to achievement and sustainability of high quality outputs with focus on maintenance and continuous improvement of processes and defect prevention at all levels and in all functions of a company in an effort not only to meet but also exceed expectations of customers. Six sigma is a business management strategy that aims to improve the quality of process outputs by identifying and removing the causes of defects and minimizing variability in manufacturing and business processes. A six sigma process is one in which 99.99966% of the goods manufactured are statistically expected to be defects free (Aized, 2012).

The Theory of Swift, Even Flow addresses the phenomenon of cross-factory productivity differences. The theory holds that the swifter and even the flow of materials through a process, the more productive that process is. The theory further posits that for the coordination of the supply chain, the smoother the relationships and the faster the flow from initial materials to the end customer, the more productive all aspects of the supply chain should be. Resource base theory argues that if companies can collect and integrate rare, valuable, inimitable and non-substitutable resources then they are better placed to create and sustain competitive edge (Barney, 1991; Sirmon et al., 2011). Additionally, Fawcett et al. (2011) posit that research on management of supply chain has revealed that firms need crucial resources case in point information technology, so as to effectively handle relationships with their suppliers.

A reconfigurable manufacturing system (RMS) is a system designed at the outset for rapid change in its structure, as well as its hardware and software components, in order to adjust very fast to its production capability and functionality within a part family in response to sudden changes in the market or intrinsic system change (Koren, Jovane, Heisel, Moriwaki, Ulsoy, &VanBrusell, 1999) System dynamics is a structural theory of social systems and can be fruitfully utilized in OM context to justify a variety of phenomena that may not be easy to get under control. The main characteristic as a structural theory is focus on feedback loops, accumulation processes, and delays and also offers a structural lens on ways to perceive and control supply chains, which focuses on existence of feedbacks, accumulations, and delays.(Größler et al., 2008). Womak and Jones (1996) describe lean manufacturing as doing away with wastes in processes of production.

The list is not exclusive but rather an attempt to highlight key initiatives undertaken in the academic OM literature (Gupta & Boyd, 2008).Schmenner and Swink (1998) argued that the various theories in OM need to be carefully examined, refined and if possible, avoided. OM research does not draw upon management theory to any noticeable degree (Chase, 1980).

Various scholars argue that OM research has greatly drawn from other sources and theory of management.(Walker, Chicksand, Radnor, & Watson, 2015).Thus, OM theories are very useful, but more specific theories of operation management should be chosen to examine improvement base on particular situations for particular project goals in sophisticated logistics operations management for instance trade-offs, BPR, process-product matrix and TOC, TQM and six sigma. Theories are key in optimizing delivery routes, return goods, inventory structure, selecting suppliers and real-time information service; CCM theory is for customer service, the cumulative and production competence. Theories are for talents training and technology adoptions supporting; the swift and even flow, RMS, system dynamics and lean manufacturing. Theories are for changing allocation flow of delivery and warehousing flow, eliminating empty space of containers and balance cost down with efficiency. TAM can therefore be considered as a key models

to use in the current research as it represents a crucial theoretical contribution towards understanding the effect of IT on reduction of operational costs of logistic firms.

2.2.3Durkheimian Network Theory

Durkheinian network theory posits that systemic solidarity flows from dense economic and non-economic relations in local subsystems connected through institutional relations, such as those that obtain within the professions or in the market. If this is not the case, the social system disintegrates into a set of unconnected, or loosely connected clusters (Segre, 2004). This theory may have a wide range of application, deals with centrally important social issues and has stood the test of time (Ritzer, 2000). Network theory is a sociological perspective that focuses on the structural analysis of social networks and views individual behavior as constrained by such networks (Wellman, 1988).

This theory treats 'the network based on each analytically separable type of tie as a separate entity' and considers 'the overall structure' as 'the context' for particular relations (White et al., 1976). It implies an emphasis on interconnected sectors of a system in terms of the relational patterns defining different sectors (Burt, 1982). Segre (2004) pointed out that Durkheimian theory, which has now been reconstructed, shares the following: social structure is conceived as a network of networks. The whole pattern of direct and indirect relations between social actors, such as individuals, firms or groups, constraints not only the actors' behavior, but also dual relations and clusters. Such relations, rather than social actors or their attributes, provide the units of analysis and observation.

As the whole pattern of relations is relevant, ego-centered networks are not the main objects of consideration (Wellman,1988). This theory is important as it examines the outcomes and influences through logistics base stations network with technology adoptions (logistics social network) that is how do the individual, logistics companies and logistics service users work together? What are their contributions for improvement of logistics operations especially for operational cost through network? What are the

interactions between actors and network? What are the benefits that can be produced from logistics network? (Logistics base stations network and technology adoptions).

2.3 Empirical Review

The growth rate Kenya's gross domestic product (GDP) was 5.1% in 2017. East African inflation rate has been the highest on the continent and was 8.0% in 2017 (AfDB, 2018) (Table 2.5). Consistently fragile fundamentals, mainly in emerging markets and less industrialized economies, predominantly as a result of soft commodity prices, reduced investment, contracting trade, frail demand raised inflation rates (AfDB, 2018). Kenya's population is approximately 50 million and growth rate is 2.4% (as see table2.2 &2.4), but the population below poverty line rate was 36.1% in 2015 (as shown in table 2.3) and unemployment ratio was 42.1% at age 15 and above (as shown in table 2.1). Therefore, affordable consumption price is very important for Kenyan people and social sustainability, hence saving costs of consumption has far-reaching significance including logistics costs.

Table 2.1: Structural change, growth and unemployment rate for various years

	Manufactured exports (% of total merchandise trade)	Sectoral share of GDP, 2016 (%)			Unemployment, 2017		
		Agriculture	Industry	Services	International Labour Organization model-based estimate (% of population)	Total (% ages 15 and older)	Youth (% ages 15–24)
Burundi	12.8 (2017)	36.5	15.1	48.4	1.6	22.4	49.0
Comoros	21.7 (2013)	33.6	10.8	55.7	4.3	58.8	87.9
Djibouti	...	2.2	15.5	82.3	5.8	44.4	66.5
Ethiopia	12.5 (2015)	34.1	22.9	43.0	6.4	21.8	36.0
Kenya	36.8 (2013)	31.5	17.5	51.0	5.2	42.1	30.5
Rwanda	12.2 (2016)	31.0	15.8	53.3	11.5	15.0	74.8
Seychelles	8.2 (2016)	2.0	11.4	86.7	3.7	35.6	25.9[a]
Somalia	1.3 (2009)	...	...	...	6.0	56.6	50.8
Sudan	0.5 (2012)	...	...	...	11.5	59.4	80.3
Tanzania	25.0 (2016)	30.5	26.4	67.3	12.7	18.5	50.1
Uganda	25.0 (2016)	30.1	20.0	43.5	2.2	30.8	30.6
Average	14.6	25.7	15.3	59.0	6.4	36.9	48.2

Source: World Bank and AfDB, 2018b.

Table2.2: Basic indicators

	Population (thousands)	Land area (km^2 thousands)	Population density (people per km^2)	Gross domestic product[a] ($ millions)	Gross domestic product per capita[a] ($)	Average annual real GDP growth, 2010–20 (%)
Burundi	11,216	28	403	8,205	732	2.5
Comoros	832	2	447	1,387	1,666	2.4
Djibouti	971	23	42	3,974	4,091	5.6
Eritrea	5,188	118	44	10,024	1,932	4.7
Ethiopia[b]	107,535	1,104	97	220,681	2,052	9.7
Kenya	50,951	580	88	177,441	3,483	5.9
Rwanda	12,501	26	475	27,068	2,165	7.3
Seychelles	95	0	207	2,914	30,600	4.6
Somalia	15,182	638	24	21,564	1,420	3.0
South Sudan	12,919	620	21	19,819	1,534	–6.0
Sudan	41,512	1,886	22	177,251	4,270	3.5
Tanzania	59,091	947	62	175,929	2,977	6.8
Uganda	44,271	242	183	96,658	2,183	5.1
East Africa	362,265	6,214	58	942,915	2,603	3.5
Africa	1,286,206	30,049	43	6,764,685	5,259	4.0

a. Based on purchasing power parity valuation.

b. Based on fiscal year data (September–August).

Source: UNDESA 2017, African Development Bank statistics and estimates

Table 2.3:Poverty and income distribution indicators

	National poverty line[a]		International poverty line ($1.90 a day)		Gini index[b]	
	Survey year	Population below the poverty line (%)	Survey year	Population below the poverty line (%)	Survey year	Value
Burundi	2014	64.9	2006	71.7	2013	38.6
Comoros	2014	42.0	2013	18.1	2013	45.3
Djibouti	2017	21.1	2013	22.5	2013	44.1
Eritrea		...		...		...
Ethiopia	2015	23.5	2010	33.6	2015	39.1
Kenya	2015	36.1	2005	33.6	2015	40.8
Rwanda	2013	39.1	2013	60.4	2013	45.1
Seychelles	2013	39.3	2014	1.1	2013	46.8
Somalia		...		...		...
South Sudan	2016	82.3	2009	42.7	2009	46.3
Sudan	2009	46.5	2009	14.9	2009	35.4
Tanzania	2011	28.2			2011	37.8
Uganda	2016	21.4	2012	34.6	2016	42.8
East Africa		...		...		...
Africa		...		...		...

a. Defined as two-thirds of average consumption. b. Based on income distribution.

Source: The World Bank and AfDB, 2019

Table 2.4: Demographic indicators

	Population growth rate (%)	Urban population (% of total)	Age distribution (% of population			Fertility rate (births per woman)
			0–14	15–64	65 and older	
Burundi	3.2	13.0	45.1	52.3	2.6	5.5
Comoros	2.3	29.0	39.5	57.5	3.0	4.2
Djibouti	1.5	77.8	30.6	65.1	4.3	2.7
Eritrea	2.3	40.1	41.5	55.0	3.6	4.0
Ethiopia	2.5	20.8	40.0	56.5	3.5	4.0
Kenya	2.5	27.0	40.1	57.2	2.7	3.7
Rwanda	2.4	17.2	39.8	57.1	3.1	3.7
Seychelles	0.5	56.7	22.4	68.7	8.9	2.3
Somalia	3.0	45.0	46.3	50.9	2.7	6.1
South Sudan	2.7	19.6	41.5	55.1	3.4	4.7
Sudan	2.4	34.6	40.5	55.9	3.6	4.4
Tanzania	3.1	33.8	44.7	52.2	3.1	4.9
Uganda	3.3	23.8	47.4	50.4	2.2	5.4
East Africa	2.7	26.8	42.2	54.7	3.1	4.4
Africa	2.5	42.5	40.6	55.8	3.5	4.4

Source: African Development Bank and UNDESA, 2018

Table 2.5: Inflation in East Africa, by country, 2017–20 *(%)*

	2017	2018 (estimated)	2019 (projected)	2020 (projected)
Burundi	16.1	12.7	22.1	23.1
Comoros	1.0	2.0	2.0	2.0
Djibouti	0.6	0.8	2.4	2.7
Eritrea	9.0	9.0	9.0	9.0
Ethiopia	7.2	13.0	9.3	8.5
Kenya	8.0	4.8	5.5	5.4
Rwanda	8.2	0.9	4.1	4.0
Seychelles	2.9	4.4	3.6	3.1
Somalia	2.9	5.1	4.7	4.6
South Sudan	187.9	104.1	108.2	91.4
Sudan	32.6	43.4	35.0	33.1
Tanzania	5.3	4.8	5.2	5.1
Uganda	5.6	3.2	4.3	4.8
East Africa	14.0	14.5	12.5	11.4
Excluding South Sudan	11.3	12.8	10.9	10.2

Source: African Development Bank, 2018

The Big 4 Agenda which is President Uhuru Kenyatta's development plan encompasses Food Security; Affordable Housing; Manufacturing and Affordable Healthcare. Manufacturing is expected to generate biodata on employment status of individuals and main occupation, create job opportunities and assist attract key investors in the manufacturing sector and stimulate growth in the labor market (The Government of

Kenya, 2017). In Kenya where employment is small and technological development is low and the stock of infrastructure in relation to GDP is lower in the region than the 70 percent international benchmark, manufacturing sector contributes to GDP growth (AfDB, 2018). There is urgent need to develop Africa's infrastructure in order to have in place reliable supply of power and well-functioning transport networks and to enhance investment in research and development (UN&AU, 2017). Kenya needs to address multiple legal and regulatory constraints and infrastructure and logistics weaknesses, regional transit agreements and modern risk-based customs procedures are needed to eliminate delays and logistics chain costs (AfDB, 2018).

The extension of Kenyan roads aims to build/rehabilitate 5,500 kilometers of roads. This will contribute towards achievement of 75-80% of the classified roads in excellent condition, and the building of the standard gauge railway connection from Mombasa to Malaba and is anticipated to enlarge the rail transport to take care of 50 % of the freight cargo throughput, thereby reducing pressure on the roads hence enhanced trade and regional integration among East Africa countries (The Principal Secretary Ministry of Transport and Infrastructure of Kenya, 2013). Therefore, supply chain is a key activity for manufacturing's comparative advantage and optimizing logistics operations (including reducing operational costs) is one of most important direct target of transport infrastructure innovation.

2.3.1 Operational Cost of Logistics Company

Logistics firms operate in perfectly competitive markets. Logistics cost is a key comparative advantage. Christopher (1989) and Richardson (1995) posit that integration of multiple logistics activities is key in assisting logistics firms to achieve full capacity and to have access to considerable competitive advantages. The integration of logistics activities also results into reduction in cost of operations and better services to targeted customers.

Logistics operations among logistic companies involve purchasing, distribution, managing of inventories, packing, manufacturing and customer services (Bowers &Closs, 1996). Most companies prefer referring these operations as third-part logistics (3PL) in the new economy, with the focus being on core strengths and on providing real-time

information, globalizing service demand, visibility in key performance indicators, collaboration in supply chain operations, and e-commerce development (Deborah, 1997). Aldin and Stahre (2003) presented a conceptual model（Figure 2.1）for capturing these operations in logistics supply chain management. The model is made up of three main components namely; logistics structure; logistics processes and related activities; and information and reporting system.

All the components are pivotal for successful operation of 3PL. Logistics structure includes the participants in the logistics processes, inventory storage points, multi-echelon distribution centers and warehouses. Logistics processes and related activities is made up of order fulfillment processes, customer relationship management. Lastly, information and reporting systems are essential for any management system, as they drive the decisions based on the data collected. These include the designing and planning of information systems, control and coordination, and cross-organizational coordination. IT elements such as the intranet, extranet, internet, and electronic data interchange (EDI) facilitate the integration of activities in the logistics supply chain (Angeles, 2000; Calza & Passaro, 1997). Some of the logistics activities performed within the identified operations include transport, transshipment, maintenance of the inventory and the assembling or reconditioning of products (Gunasekaran& Ngai, 2003).

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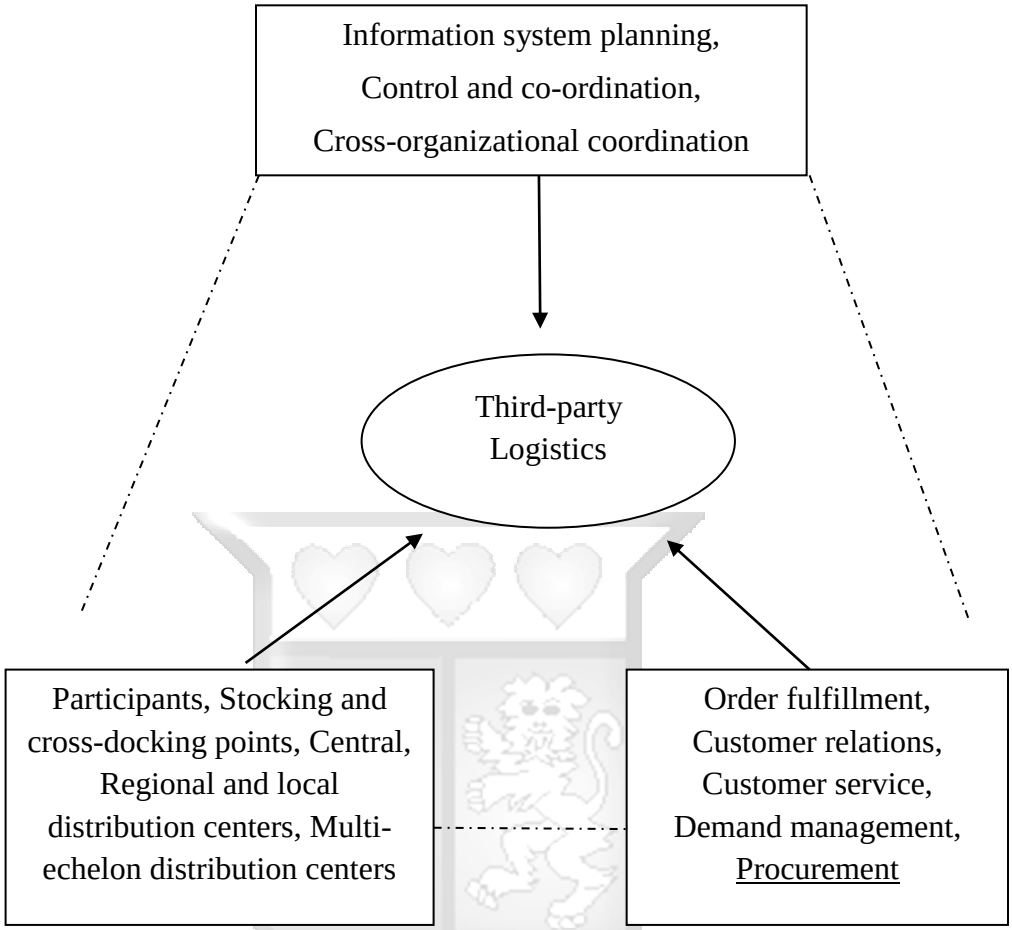


Figure 2.1: A conceptual model for logistics supply chain management

Source: Aldin and Stahre (2003)

The logistics operational cost occurs in the above activities and management, case in point transport/distribution, inventory management, material handling (purchasing, packing), and others (marketing management, fix-assets allocation, organizational management).

2.3.2 Logistics Base Stations and Operational Cost of Logistics Company

The logistics base stations are products from cluster concepts on competition and cooperation (coo petition). Porter (2000) posits that new effects of clusters on

competition have taken on extended significance in an increasingly complex; a cluster approach to economic development stimulates behavior that is in favor of competitiveness. There are many 3PL companies and relevant upstream or downstream companies aggregate in a place which is a logistics base station. It's a critical way to reduce operational cost of logistics in purchasing, distribution, managing of inventories, packing, marketing management, fix-assets allocation and organizational management. The critical jobs are optimizing logistics processes and integrate information services. Such as "in China main land, the interlinked logistics base stations which base on many regional logistics centers, providing transportation/distribution, inventories management, logistics IT infrastructure service and other relevant management and service of logistics activities'', it's a logistics service network which own multiple operational platforms, multiple service and interlinked IT service.

Through this interlinked logistics network, Anji logistics (3PL) can integrate transaction resources and distribution resources, drastically reduce logistics operational cost (transportation, warehousing, real-time information), then get comparative advantage (Shao & Yan, 2007). In logistics base stations, the different 3PL companies can get multiple valuable outsources such as transport, warehouse, packing, procurement and IT services. When the transactions are fluctuant, the facilities utilization of special upstream companies will also be high because they can combine different company's cargo together in a warehouse or vehicle, exchange information or resources in an IT platform with multiple participators and can do packing or processes for all customers efficiently. Based on the infrastructure and intranet, all types of logistics operational cost can be reduced and all relevant efficient service can be available for logistics integration in interlinked base stations. Technology is especially useful in integration of logistics base station's functions and logistics activities, such as the IT system for logistics base stations, AI, big data and cloud computing.

If information technology is part of a logistics base station, then a base station can conduct all social logistics resources with different ownership (facilities, people and organizations). For instance, at Cainiao Logistics (Alibaba group) all logistics actors can be interlinked in a logistics base station and all logistics base stations are linked together

to be a network, maximizing utilization of capacities of warehouse, vehicles, railway carriages, cargo flight and shipment facilities, organizing people, rationalizing processes and improving other relevant services. Integrating all logistics activities contributes to efficiency, reduces operational cost in logistics base stations, and enhances service for people and better cost performance of goods and service.

2.3.3 Operational Cost of Logistics Company in Kenya

Christ and Ferrantino (2009) posit that costs and time delays associated with inland transportation forms a large share of total export costs and time for nations that are landlocked. Logistic firms operating in Kenya incur very high operational costs, with the sunk cost being high and misused social resources. This is due to lack of proper infrastructure, technology adoption, suitable business model, capital support, and professional ICT managers. The logistics base stations in Kenya do not have network or proper IT systems for base stations. Most of the logistics companies in Kenya are actually transport companies and they work in the traditional way with a separate yard, fleet, warehouses and/or intranet information systems. Utilization rates of vehicles and warehouses are low with high maintenance cost and high hiring price (Atieno, 2014).

Furthermore, there are usually many empty vehicles and others are not fully loaded thus making turnover rate (days) of warehouse very high. Many transportation companies only have vehicle GPS and/or office WIFI count as IT facilities. Many logistic companies also lack real-time information service for customers and rely on phone calls which has a lot of cheating, making tracking and tracing a big problem. Generally, there is low efficiency and high operational cost in logistics sector in Kenya (Kibowen, 2012). Therefore, the current research aims to establish the impact of IT enabled logistics base stations network on the costs of operations of logistics companies in Kenya.

2.3.4 Technology Adoptions among Logistics Companies

Technology can be described as a procedure, possibly with a prescribed notation key in performance of a development activity (Brinkkemper, 1996). IT plays a momentous role in integration of supply chain network for achievement of superior performance (Bagchi,2003).IT is key productivity tool which simultaneously increases in capability

and decreases in cost. The usage of information technology in an effort to enhance logistics competence has received wide espouse in these general areas: information as a logistics resource; and information technology as a competitive weapon (Closs et al., 1996). IT capabilities is the application of hardware, software and networks to improve flow of information and facilitate decision making.

Adoption and successful implementation of IT is regarded as a prerequisite for logistics success (Brook & IL, 1995). Electronic data interchange (EDI) is an inter-organizational system that has been widely utilized to automatically exchange business documents in an effort to lower costs of transaction and enhance the efficiency of supply chains through elimination of human intervention (Mangina & Vlachos, 2005).Kubasakova (2014) argues that IT applications in logistics can be listed as follows: Data collection: optical scanning, electronic-pen notepads, voice recognition, and robotics, Identification: bas codes, radio frequency (RF) tags and antennas, smart cards and magnetic strips, and vision systems, Positional systems (GPS-MPSGIS-Navigator), communication networks and data exchange (EDI-XML Internet-Satellite-LAN-WAN-EPOS), Data storage: data marts and data warehouses, Software: DSSs, artificial intelligence, general software, and LIS modules.

Systems of IT can become more pivotal to an organization's future (Piplani et al, 2004). The systems have been rated particularly high on accuracy, information sharing, timeliness, availability and internal connectivity, internally controlled characteristics generally receive higher evaluations than criteria requiring external co-ordination, IT capacities has considerable influence on overall logistics competence (Closs et al., 1996).

Individuals participating in supply chain can be connected by IT for such logistics activities as inventory management, order fulfillment, production planning and delivery planning and coordination. Businesses are under increased pressures to integrate the supply chain and requires coordination of disparate functions in different geographical areas. Integration of information also involves sharing of crucial knowledge and information among members of a supply chain, sharing of design and manufacturing data among suppliers, focal manufacturer and customers (Bardi et al., 1994). Both suppliers and customers could be requested to be involved in focal firm product design team in an

effort to capture crucial upstream and downstream issues in the product/process design to reduce costly design and/or process changes later (Bagchi & Larsen, 2003).

3PLs service providers are increasingly either planning to include IT in their operations or are deriving benefits from their use. These providers are gaining new knowledge, skills and technologies (Piplaniet al., 2004). In the third wave of TPL/3PL service provider need to focus their IT effort on coming up with high-quality focused system supporting their services, while solution providers should have more versatile systems able to be flexibly adapted to meet the requirements of their customers' information systems. LSPs need to offer more value-added services in order to secure business opportunities. This demands faster data (or order) processing in LSPs and IT obviously plays a greater role in it. LSPs are able to enhance the level of customer service and reduce operating costs on both sides (Piplani et al., 2004). Piplani et al.(2004) further pointed out that top five motivating factors for adoption of information technology in LSPs included; reduced error of data entry; improved levels of customer service; reduced order cycle time; integration of supply chain activities; and reduced customer inventory.

Currently in Kenya, there are no sufficient technology adoptions in logistics companies, no logistics base stations network (hardware) with information system (network software). Usually the logistics companies (most of which are transport companies, few 3PL) only have GPS and/or internal incorporated information system. There is lack of large logistics information system which are supported by government to server the society. Most of Kenya's logistics companies still stay in first wave stage of worldwide logistics standard except few international logistics companies, e.g. DHL and Bollore. Thus, this situation leads to wasting of many logistics resource e.g. empty trucks are running on the roads, high turnover rate (days) of warehouse and high safe stock level and a lot of waiting for information confirmation which lead to high logistics operational cost, efficiency is low and logistics integration is poor. Further, manufacturers do not have effective and efficient interactions with suppliers, there is difficultly in individual joining logistics network and lack of ways to share logistics information. This study discussed how the technology adoptions improve logistics operations and integration to reduce operational cost and increase operational efficiency.

2.3.5 Operational Activities among Logistic Company

Logistics management is made up of process of planning, implementing and controlling efficient flow of raw-materials, work-in-progress and finished goods and related information-from point of origin to point of consumption; with the aim of providing customer satisfaction (Pollitt, 1998).Logistics encompasses all of the information and material flows throughout an organization. It includes everything from the movement of a product or from a service that needs to be rendered, through to the management of incoming raw materials, production, the storing of finished goods, its delivery to customers and after-sales service (Pollitt, 1998). According to this research, the major activities of a logistic company includes: material handling, inventory control, warehousing and storage and distribution.

2.3.5.1 Material Handling

The speed at which inventory moves across the supply chain is dependent on various methods of material handling. Inappropriate methods can add to product damages in addition to delayed deliveries and incidental overheads (Pride et al., 2009).Mechanization and automation in material handling enhance the logistics system productivity. Other considerations for selection of a material handling system are the volumes to be handled, the speed required for material movement and the level of service to be offered to the customer. The storage system is important for maximum space utilization (floor and cubic) in the given size of a warehouse. This research suggests that logistic companies need to automate the material handling function as automation enhances productivity in addition to assisting in gaining cost effectiveness.

2.3.5.2 Inventory Control and Warehousing

Inventory control organizes the availability of items to consumers. It coordinates the purchasing, manufacturing and distribution functions to meet the market needs (Wild, 2002). The aim of inventory management is to keep enough inventories to meet customer requirements and simultaneously its carrying cost should be lowest. A balance need to be arrived at between customer service for not losing the market opportunity and the cost to

meet the same (Pride et al., 2009).Inventory is the greatest culprit in the overall supply chain of a firm because of its huge carrying cost, which indirectly eats away a firm's profit. It consists of the cost of financing the inventory, insurance, storage, damages and pilferages. This research proposes that in order for logistics companies in Kenya to improve their costs, they have to critically manage the inventory function.

Normally, wide inventory management/control includes warehousing which can be described as the safe storage of finished goods until they are ready for sale or usage. Warehousing takes a center stage in logistics operations of a company. Pollitt (1998) posits that effectiveness of a firm's marketing is dependent on the suitable decisions on warehousing. Warehousing is regarded as switching facility rather than a storage of improper warehousing management and is a key decision area in logistics. Firms need to put into consideration a number of factors when putting up or leasing a warehouse for instance size, layout, design, ownership, number and location of warehousing facilities. This research proposes that the warehouse location and layout should be considered for effective cost control.

2.3.5.3 Transportation and Supply Chain / Distribution

Transportation forms a key fundamental and important part of logistics and entails movement of various goods from suppliers to buyers. When orders are made, the transaction is considered incomplete until goods are physically moved to the customer's place (Sink et al., 1996). Various transportation modes can be used to physically move goods. In logistics costs, its share varies from 65 to 70 percent in the case of mass-consumed, very low unit-priced products. For logistic companies to be efficient, they should ensure that the transport mode is cost effective. Further, the vehicle should carry to its maximum capacity otherwise, the company will make loses. This research suggests that logistic companies should manage transportation as it forms part of the highest costs in logistic companies and this will be key in gaining efficiency.

2.3.6. Technology Adoption and Logistics Operational Cost

Logistics information system connects various logistical activities thereby combining various sources of information such as order information, purchasing information,

production information schedule, packaging information schedule, transport and warehousing information, distribution information, payment information and delivery information. Through LIS, logisticians are able to retrieve data as and when required, process the data through the system and analyze it(Voortman, 2004).

Through information system, suppliers, manufacturers and customers are integrated into a logistics network for efficient supply chain management. Capacity of a firm to minimize its cost of logistics and customer levels of service is impacted by LIS an organization uses. Arunkumar (2016) posits that these systems are momentous in reduction of inventory and lead time along the supply chain. Closs et al. (1996) distinguished LIS to two classes for evaluation of overall firm logistics competence which are also two main functions of LIS logistics operating systems (LOS), which include transactional applications such as order entry, order processing, warehousing, and transportation; logistics planning systems (LPS) which include co-coordinating applications such as forecasting, inventory management, and distribution requirements planning (shown in figure 2.1). Through 9 criteria: timeliness, accuracy, availability, exception basis formatted, formatted to facilitate usage, information sharing, flexibility, internal connectivity and external connectivity. Well usage of LIS mostly directly impacts logistics performance, whereas well usage of LIS may have indirect impact on performance of firms through utilization of a corporation's features such as an intermediate mechanism, and that such indirect utilization of LIS has greater effect on logistics performance than the direct utilization of LIS(Kim, 2004). Thus, the most important benefit of LIS is social logistics integration performance.

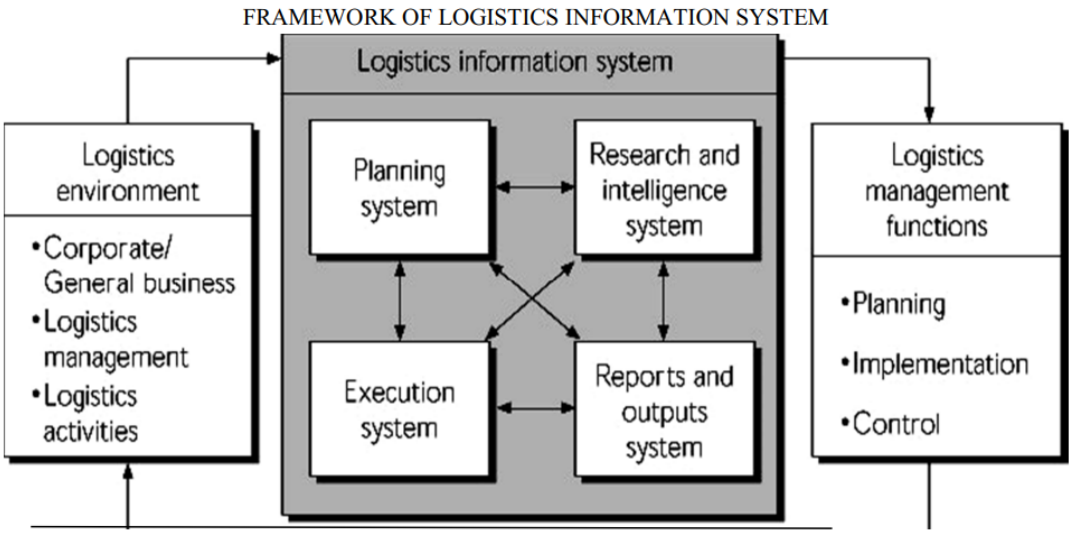


Figure 2.2: Framework of Logistics Information System

Planning system=LPS Execution system =LOS

Currently, upstream and downstream interfaces in the supply chain are constantly enabled by a logistics information system (LIS) giving access to each other's business and manufacturing systems (Bagchi& Larsen, 2003). Suppliers can therefore lower their dependence on forecasts that are uncertain. Manufacturers receive early warning concerning possibility of disruptions of supply as a result of events not foreseen by the suppliers and can reprogram various plans and prevent disruptions which can prove costly (Bagchi & Prabir, 1992; Holmstrom& Jan, 1998; Handfield et al., 1999). These and other related functions of LIS enable seamless flow of information regarding order, payments, design of products and development, market intelligence, production scheduling and other "bullwhip" effects (Lee et al., 1997). Therefore, LIS can enhance logistics performance (operational efficiency and lower operational cost) through LOS and LPS management of logistics activities (purchasing, inventory management, distribution, packing, manufacturing, and other adequate systematical services) to exert significant influence over logistics operational component.

Currently in Kenya, only few international companies are using internal LIS and do not link social logistics resources to integrative logistics activities. This study proposes that logistic companies widely expands LIS to logistics industry in Kenya to optimize

logistics operations for instance logistics companies (especially 3PLs) can fully load cargo to reduce the operational cost per unit of cargo; can get sufficient vehicle resources to reduce the transportation cost per vehicle; can optimize the route design; can reduce safe stock level and optimize inventory management; can get multiple information to easily make right decisions to eliminate waste; and integrate other logistics activities.

2.3.7 Logistics Base Stations

Choice of entry mode is a momentous factor of international entry strategies and has been extensively evaluated in the field. However, results remain mixed, particularly with regards to transaction-cost-related factors in establishing choice ownership-based entry mode (Zhao, Luo &Suh, 2004). In Kenya, some logistics companies can gain high profit ratio because of few competitors at beginning of rebuilding after troublous situation, since social and political situation are stabilized, the logistics industry would be a perfect competitive industry. When price competition happens in logistics industry, the logistics companies need to look at new models to reduce the operational cost and get in new coopetition status for survival. The clusters coopetition is a solution. Porter (2000) posits that the nature of clusters shows crucial insights about the productive potentiality of economies and the limitations on its future development. Logistics base stations provide all aggregate logistics service (purchasing, distribution, inventory management, customer service, information sharing service, packing, manufacturing and other adequate systematical services) at convenient compound which is ideal logistics infrastructure to integrate with all logistics resources and activities.

Currently, the logistics companies in Kenya have independent compounds, sometimes, they do not have sufficient cargo to load in trailers; they do not have enough vehicles to serve customers; and cargo owners cannot get sufficient logistics resources. Further, customers or/and suppliers may not trust each other, and do not trust most of individuals who can offer competitive services, because of recognition issues. They understand competition, but do not understand coopetition. Actually, firms and individuals form the major force of competition. Individuals and small scale companies enjoy competitive edge in a number of roles whereas other companies enjoy their own competitive edge in

other roles and they have different roles concerning productivity impacts (Hammond & Leo Keith, 1961).

Logistics base stations can offer platforms which can collect diverse logistics service resources together in efficient way, including all size of logistics company, warehouse, parking, garages, filling stations, individual trucks, banks and other relevant service organizations or individuals, combine to a cluster environment and build a logistics coopetition ecology to optimize all logistics resources so as to reduce the operational cost of a logistics company. First, logistics base station can collect regional cargo into base station, and then optimize resources and share to particular routes, more efficiently. Secondly, logistics base stations allow all available qualified vehicles register in administration to provide service for particular routes, allow those with vehicles park there, get service there, get business there and manage them in process, the general operational cost would come down for each one of them. If the service price could be transparent; it could reduce information asymmetry. Third, logistics base station can collect all variety of logistics service (e.g. packing, manufacturing, customer service and information service), provide streamline one stop service as mentioned above, even government department service could be available there, and optimize logistics resources to reduce operational cost of logistics company. Fourth, logistic base stations management can provide property solutions which is logistics infrastructure, allow SMEs enter with affordable initiative capital and get peripheral service easily, that fix operational cost would be lower. Therefore, both the variable operational cost (first-third) and the fix operational cost can come down in logistics base stations compared to operating alone.

2.3.8 Logistics Base Stations Inter-linkages

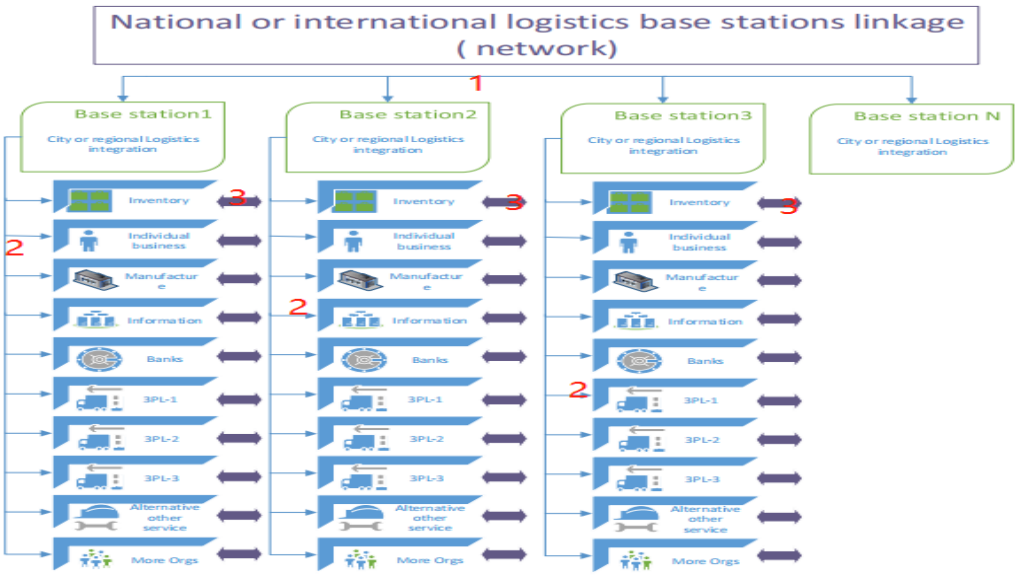
Ohio State University (1998) posits that management of supply chain is the combination of crucial business processes from end user through original suppliers that gives goods and services in addition to information which provides value not only to customers but also to other stakeholders. This description points out that integration is a pivotal mission for logistics or supply chain. Lawrence and Lorsch (1986) posit that the quality of collaboration state existing among departments that is needed to achieve unity of effort

by the demands of the environment. Bagchi and Larsen (2003) argue that supply chain management is made up of a set of processes, business practices, business procedures and supporting institutions that connect buyers and sellers in a market place.

The logistics base stations network provides a marketplace to link buyers and sellers to achieve logistics integration. This marketplace aggregate and integrate with various logistics service organizations, individuals and other adequate systematical service including LIS (as shown in figure 2.2). In each logistics base station, technology adoptions for instance LIS link all logistics facilities as a community to share information and logistics resources to be an organic whole which could be city or regional logistics integrations, some logistics base stations are linked together by technology adoptions (e.g. internet, LIS, WMS, inventory robots, cloud, IOT) to be a logistics network which could be a national or international logistics integration and some of logistics organizations set some branches in different logistics base stations which can be linked by internal information system and/or external base station's information system that could be incorporation logistics integrations. Therefore, base stations network through technology adoptions (software) link logistics infrastructures (hardware) to integrate multiple logistics actors and activities to exert significant influence over logistics operations, finally lead to reduce operational cost and increase logistics operational efficiency.

Wide linkage is very important for logistics base stations, hardware linkage through national or international traffic infrastructure, the location should be convenient and efficient to optimize logistics resources (for example the crosses of roads and railways, big city harbor of river, ocean and airline) software through technology adoption case in point LIS, internet and IOT to be a multiple logistics network, then optimize all resources in network system, running logistics business more efficient, make better offer for every stakeholders. Base stations (BS) location and the allocation of channels are of key significance to performance of networks(Akella et al., 2005). This network can bring a huge innovation and benefits into logistics companies and relevant customers and suppliers for example accumulation and sharing big data resources to all logistics stakeholders to make right decisions; monitor and control all players and ensure

participants are in disciplines, reduce information asymmetry issues in logistics operations; increase utilization ratio of logistics equipment's (warehouses and transport equipment's); make routes to be more frequent and easier, can also create more delivery routes to final small destinations, provide high quality service to customers; complete logistics market service, build more professional green logistics ecology, provide one stop services, bring benefits to whole society, the terminal commodity price would come down due to social logistics operational cost went down ; facilitate logistics to develop sustainably, make society to be more harmonious, break barriers and then SMEs and individual get many stable opportunities and finally reducing poverty issues for society. Those who benefit from logistics integration can be realized when logistics base stations network of Kenya is set.



1. National or international logistics network, wide logistics integration
2. Interlinked logistics base station, small city or regional logistics integration
3 Incorporation linkage, incorporation logistics integration

Figure 2.3: Logistics base stations network

2.4 Summary of Literature Review and Research Gaps

From the literature reviewed, the research has established that technology adoption within base stations network have an effect on the operational cost of a logistic companies. The theories anchoring the study are TAM, operations management, network and sharing theories. Logistics base station network with technology adoption are very important to

integrate with multiple logistics activities and resources to achieve logistics integration, and could increase logistics operational efficiency and reduce operational cost.

A number of research study gaps were identified by the researcher including ; (1) applicable literature which could inform on operational efficiency and cost theories in logistics are restricted as a result of its usage especially in other countries as opposed to Kenya, there are many political and social gaps between other countries （Asian or American countries）and Kenya;(2)none of logistics base station in Kenya which will impact to data collection due to lack relevant experiences by responders to questionnaire, hence an empirical gap; (3) thousands of companies can provide logistics services including factories, wholesalers and retailers which are not main logistic marketing force, this study's target population focus was on KIFWA & EAOTA whose members are willing to align with other logistics companies a bit close a concept of logistics base stations network, need further study for more visible or invisible logistics services providers in Kenya in future, hence a target population gap. Therefore, the current study aims to establish factors hindering logistic companies in Kenya and the various ways in which logistics base stations network with technology adoptions impacts on operational costs of a logistic company in Kenya.

From the review of literature, incorporation of information technology is key in reduction of operational costs of logistic firms thereby enhancing performance of firms. Most of the scholars such as Atieno (2014) focused on impacts of information technology on performance of logistic firms, with the findings being mixed in nature. Therefore, it was evident that there exists limited researches investigating the relationship between effects of information technology enabled logistics base stations network on operational costs of logistics companies. Below is a summary of various studies done in the past looking at the relationship between information technology and operations of logistic firms.

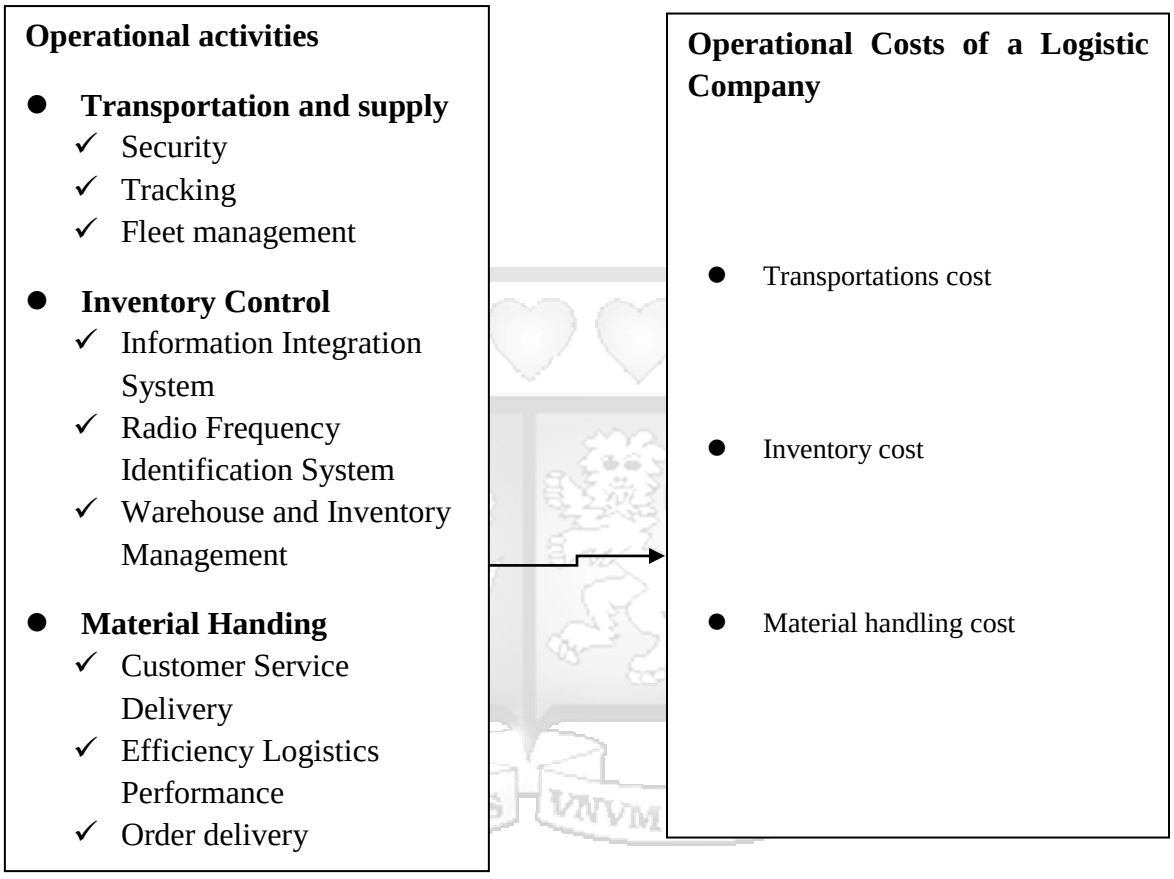
Author(s)	Research Design	Findings	Conclusions
Musyoka (2011)	Explanatory study design	Usage of IT is key in achievement of operational effectiveness thereby reducing the cost of doing business among firms	IT has enabled firms to achieve their goals with ease as a result of efficiency in operations
Ondabu (2015)	Descriptive survey	Incorporation of IT contributes to efficiency and effectiveness in operations	IT positively contributes to better performance of firms
Kungu (2014)	Cross-sectional descriptive survey	Adoption of IT contributes towards improvement of operational efficiency and reduction of operational cost	IT directly influences operational performances of firms
Atieno (2014)	Descriptive research design	Adoption of IT is key in achievement of better firm performance.	Integration of IT among logistic firms is key in achievement of operational efficiency
Opiyo (2016)	Secondary research	Adoption of IT enables firms to achieve operational efficiency	IT is key making logistic activities more efficient and effective
Ndonye (2014)	Descriptive research design	there a significant influence of information technology on logistics performance	Firms need to adopt IT to improve the efficiency and effectiveness of their logistics performance.

Source: Researcher, 2020

2.5Conceptual Framework

Research conceptual framework is presented in figure 2.4.

Figure 2.4: Conceptual Framework



Source: Researcher, (2020)

The research tested below hypothesis;

Hypothesis 1

H1: Transportation and supply has an effect on operational costs of logistic firms

Hypothesis 2

H2: Inventory control has an effect on operational cost of logistic firms

Hypothesis 3

H3: Material handling has an effect on operational cost of logistic firms

2.6 Operationalization of Study Variables

Operationalization of research variables is key to researchers since it enables for measurement of variables quantitatively thereby assisting in testing of the formulated hypotheses. Zikmund (2003) argued that operationalization gives various concepts meaning by specifying the operations key in its measurement.

Transportation and supply has been measured different by various studies. This study measured transportation using mode of transport, fleet management and contracting for other services. Inventory control was measured using order management, demand management and layout/design while material handing was measured using order entry, order processing and order delivery. Operational costs of a logistic company are diverse but this study focused on transportations costs, inventory costs and material handling costs as they are the major costs of a logistic company.

Code	**Variable Name**	**Operationalization**
Independent Variables--Operational Activities and dependent variable		
OA001	Transportation and supply	Evaluate specific items level from 1-5 and quantitative analyzing including security, tracking and fleet management
OA002	Inventory Control	Evaluate specific items level from 1-5 quantitative analyzing including information integration system, radio frequency identification system and warehouse inventory management
OA003	Material Handling	Evaluate specific items level from 1-5 quantitative analyzing including customer service delivery and efficiency logistics performance
OA004	Operational Costs of a Logistic Company	Evaluate specific items level from 1-5 and quantitative analyzing including transportation cost, inventory cost and material handling cost

CHAPTER THREE:RESEARCH METHODOLOGY

3.1 Introduction

This chapter focusses on the methodology that was used by the researcher to carry out the study. Also covered are research design, research population, sampling technique, data collection methods and analysis of data. Further, research quality and research ethical considerations are discussed.

3.2 Research Design

Saunders et al. (2016) describe research design as a blueprint utilized to provide answers to research questions. It entails methods used in gathering, analyzing, and interpreting data. This research made use of descriptive cross sectional research design which enabled researcher to seek answers of research questions at a given point in time. Descriptive research seeks to find out who, what, when, how or how much for all the objectives. A descriptive design aims to describe features of study variables (Mugenda & Mugenda, 2003). Descriptive survey was seen as appropriate for the research because it seeks to find out existing association between research variables at a particular point in time. The design was also considered appropriate since respondents were to describe situations under study the way it was at the various logistic firms in the country. Unit of analysis for this study was a logistic company in Kenya.

Additionally, researcher made use of quantitative methods which allows for easy measurement and analysis of data from respondents. Mugenda and Mugenda (2003) posit that quantitative studies makes use of designs, techniques and measures key in production of discrete quantifiable data that is correlated and can be verified. The respondent data enables researchers to understand existing associations between study variables being investigated for instance service delivery and operational efficiency. Nguti (2014) posits that this method is beneficial in the sense that it needs minimum involvement of researcher hence reducing bias since the findings of a study can be better generalized on the basis of convenient samples of sufficient size. Data collected from respondents allowed the researcher to comprehend the correlation between the variables under research for instance technology adoptions within logistics base stations network and operational cost.

3.3Target Population and Sampling size

Mugenda and Mugenda (2003) describe population as an entire group of persons, events or objects showing common observable features. This study targeted a population of 1602 logistic companies in Kenya with registered membership within Kenya International Freight and Warehousing Association (KIFWA, 892 members) and East African Online Transport Agency (EAOTA, 734 members) and are based in Kenya. Twenty-four duplicative companies were deducted in both two associations. These logistics companies are categorized by employee numbers (company's size as shown in table3.1).

Blumberg, Cooper and Schindler (2014) describe sampling as a deliberate choice of a number of individuals who are to supply data on which research develops conclusions concerning some bigger group whom the individuals under study represent. Sekaran (2003) describes a sample as a carefully selected group that acts as a representative of the study population. Mugenda and Mugenda (2003) argue that for descriptive studies, 10% - 30% of the population can be regarded as adequate sample size. Researcher made use of stratified simple random sampling technique to obtain appropriate sample size. Gay (1996) posits that stratified simple random sampling technique is ideal in research since it ensures that no sub-population is omitted from a sample. Stratification was based on the size of logistics firm (number of employees).

Stratified sampling involves splitting population of study into none overlapping subgroups known as strata which together is made up of the whole population and then coming up with independent samples from individual stratum (Cochran, 2007). Respondents were the logistic managers for each company. Logistics managers were chosen as respondents because they were in a better position to accurately give all the required information. These respondents were best placed to provide credible answers to research questions since they are knowledgeable and define the direction of the organizations they lead. According to Campbell (1995), key informants should be knowledgeable on the issues being studied. Jye and Castka (2009) argue that top management team carry out strategic planning and execution at the corporate level and are therefore well positioned to provide reliable answers to research questions.

Furthermore, to avoid duplication of information from the firms, it was imperative that a single questionnaire be filled by a single respondent. Thus the number of logistics companies in KIFWA & EAOTA was 1602 and the sample size was 10% of the population which translates to 160 companies. The sample size was as below:

Table 3.1: Target Population and Simple Size

Logistics companies size (No. of employee)	**Distribution of Samples**	**No. of logistics companies Sample Size**	**Sample Size of Respondents**
0-10	8.13%	13	13
11-50	21.88%	35	35
51-100	43.13%	69	69
101-200	5.63%	9	9
Above 200	17.50%	28	28
No response	3.75%	6	6
Total	100.00%	160	160

3.4 Data Collection Methods

Both primary and secondary data was collected from respondents. Primary data was collected via closed-ended and open-ended questionnaires. Researcher preferred questionnaires because every individual was asked to give answers to similar set of questions in a predetermined order (Devaus, 2014). Researcher used a five point Likert scale technique. The questionnaire was divided into five sections. Researcher approached directors of logistics companies or administration of the logistics firms for permission to conduct the research within their premises. Once permission was granted, the respondents were given a chance to go through the questionnaires and data collected on the spot. This motivated completion of questionnaires thereby improving the overall response rate.

Researcher collected secondary data from annual accounts statements of the logistics firms under study.

3.5 Data Analysis

Researcher checked completed questionnaires to confirm completeness, coded the data and analyzed it through the usage of descriptive and inferential statistics. The researcher analyzed quantitative data through descriptive statistics (frequencies, means and normal deviations) and present the results in tables and charts. Inferential analysis was done using regression analysis in an effort to determine nature and strength of associations of study variables. Both linear and multiple regression models were used to carry out regression analysis. The regression model was as below:

Regression Equation

$Y = \alpha + \beta iXi + error$ Where i = 1, 2 ……., n

Y = Operational cost of logistic company, α = Constant, βi （β1, β2, β3…βn） = Coefficients, $X1$= Transportations cost, $X2$= Inventory Management cost , $X3$=Material Handing cost

$$Y = \alpha + \sum_{i=1}^{n} \beta iXi + error$$

$$Y = \alpha + \beta 1\,(\text{Transportations cost}) + \beta 2(\text{Inventory Management cost}) + \beta 3(\text{Material Handing cost})$$

In general, descriptive statistics was utilized to analyze data, rank data and central tendency such as line graph, frequency distribution, bar graph/chart, percentages, mean, median, standard deviation and mode were also applied. Correlation between dependent variables and technology adoptions within base stations network and mean differences was determined using parametric analytical techniques and statistics. The techniques used were correlation coefficient, ANOVA and coefficients of determination.

3.6Research Quality

Researcher made use of reliability and validity tests to measure research quality.

3.6.1 Reliability

Churchill and Iacobucci (2010) describe reliability of tool of research as the degree to which the tool gives consistent findings when subjected to repeated trials. Internal consistency test was used to evaluate reliability of the research tool. Cronbach's alpha coefficient (α) was utilized to test internal consistency. Field (2009) argued that a coefficient of $0.6 \leq \alpha < 0.7$ is acceptable while a coefficient of $0.7 \leq \alpha < 0.9$ is good. This study considers a cutoff point of 0.7 as good representation of reliability of the questionnaires.

Table 3.2: Reliability Analysis Results

Variable	Cronbach's alpha	No of items
Transport	.950	18
Inventory control	.866	15
Material handling	.789	10
Operations costs	.752	15

From the table above, it was established that the Cronbach alpha results were almost all greater than 0.7 and the composite alpha were also either equal to or greater than 0.7, hence the reliability was established.

3.6.2 Validity of the Study

Hammer (2011) defines validity as the level of accuracy and meaningfulness of inferences usually based on findings of a research. The two main groups of research validity are internal and external validity. Internal validity is the capacity of study to attain that which it is intended to achieve whereas external validity can be described as the extent to which findings of a research are able to be made general to other parties, situations and times (Saunders et. al, 2016)

This research measured content (internal) validity. A pilot study on 10 randomly selected logistics companies was conducted with the aim of enhancing content validity. The 10 firms on the pilot study did not participate in the final research. Pilot testing was key in fine tuning the questionnaires in an effort to minimize rate of response error by the targeted respondents and carried out some open face to face interviews to complete certain aspects. The researcher consulted faculty members and the supervisor in refining the questionnaire. And the rated results were utilized to calculate content validity index (CVI) using the formula below:

$$CVI = K/N$$

Where K = Total number of items in the questionnaire declared valid by both raters/judges.

N = Total number of items in the questionnaire

Polit and Beck (2006) posit that a research tool can be regarded as valid if the CVI is no less than 0.7. Any item that was found ambiguous was modified by the researcher to elicit relevant information.

3.7Ethical Considerations

Access and ethics are key elements in the success of any research project (Saunders et. al., 2016). Palmer (2013)stated that organizations can pay dearly for unethical behaviors or wrongdoing in several ways and so ethical issues need to be handled with care. Researcher notified the respondents before the start of the study that participation in the study was voluntary and that all participants were to remain anonymous. Respondents were also told that they had the latitude to end their participation from the research at will. There is need for researchers to always seek informed consent from all interviewees in the study in addition to giving assurance that the information provided will be used purely for research and academic purposes. Respondents were also given assurance that all the information they gave out during the study would be handled with uttermost confidentiality hence their participation exposed them to no risk. An introduction letter was issued to the researcher from the institution and NACOSTI giving the researcher permission to conduct the study.

CHAPTER FOUR: DATA ANALYSIS, PRESENTATION, INTERPRETATION ANDDISCUSSION

4.1 Introduction

This chapter focusses on analysis of questionnaire return rate and respondents' profile in terms of their relationship to the operational costs among logistic companies. The main study findings are organized in subsections presented under each study objective. The subsections are implication of information technology enabled logistics base stations on the transportation and operational costs of logistics companies, implication of information technology enabled logistics base stations on inventory control and operational costs of logistics companies and implication of information technology enabled logistics base stations on material handling and operational costs of logistic companies.

4.2 Questionnaire Response Rate

The study administered 160 questionnaires on self- administration basis to the sampled logistic firms by physically visiting the firms in an attempt to achieve a higher response rate. Researcher got assistance from three research assistants during the collection of data. The research assistants were previously trained for a day on applicable research skills. As a result, 119managers answered the questionnaires thus 74.4 % return rate was achieved. Researchers agree that higher response rate is associated with more reliable survey estimates (Dillman, 2000).

4.3 Profile of Respondents

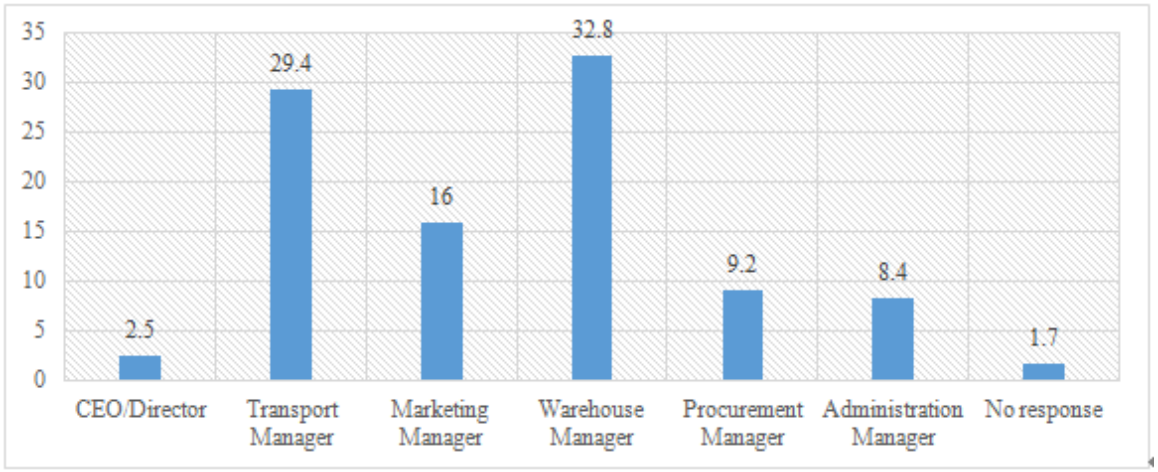
This section gives details of respondents regarding their engagement in the logistics sector. The research looked for information on the relationship that the respondents had to the operational costs in terms of how they were involved. This information was relevant in assessing how respondents' relationship with the logistic firms influenced their level of participation in reduction of operational costs of the companies they worked

for. Respondents were requested to show their relationship by selecting among the options provided. Analysis of findings are presented in this section.

4.3.1 Position/Occupation in Company

The study sought to establish the position that the respondents held at the workplace. From the findings as illustrated in figure 4.1,the respondents were drawn from director, managers of transport, marketing, warehouse, procurement and administration positions.

Figure 4.1: Position/Occupation in Company



This shows that the study findings were based on managers drawn from various departments in the logistic companies including the CEOs. Initially it had been indicated that only logistic managers would be respondents. However, as the data was being collected some organizations did not have the title, so other senior managers as shown above filled the questionnaire.

4.3.2 Years in the Company

Research sought to determine the number of years that the staff interviewed had worked in the company and from the results it was established that 57.1% had worked between 3-5 years as shown in figure 4.2.

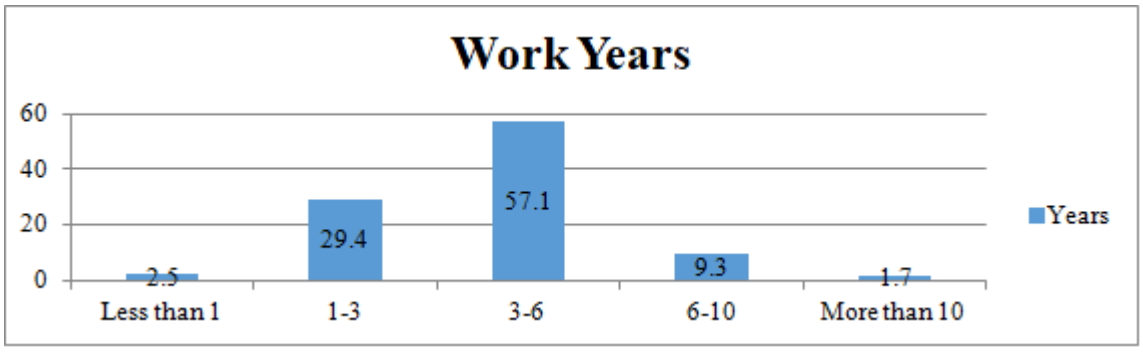


Figure 4.2: Employees years in the Company

As illustrated in figure 4.2, most of the employees had worked between 3-6 years which means they were able to relate the influence of IT implementation on the company's operational costs.

4.3.3 Number of Company Employees

Study found it necessary to establish the number of employees in a firm and from results most of companies 43.13% had 51-100 employees, 21.88% had 11-50 employees while 17.5% had more than 200 employees as indicated in in figure 4.3.

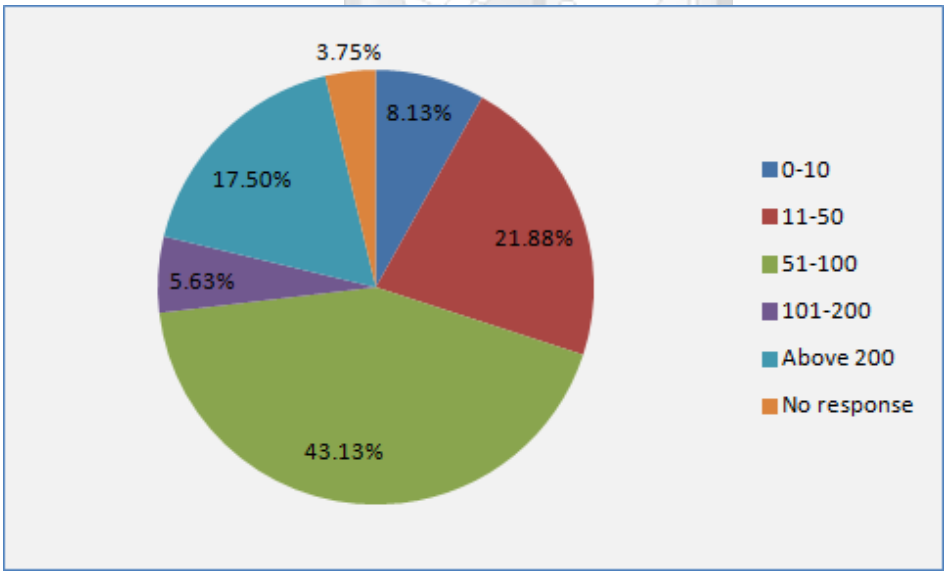


Figure 4.3: Number of Company Employees

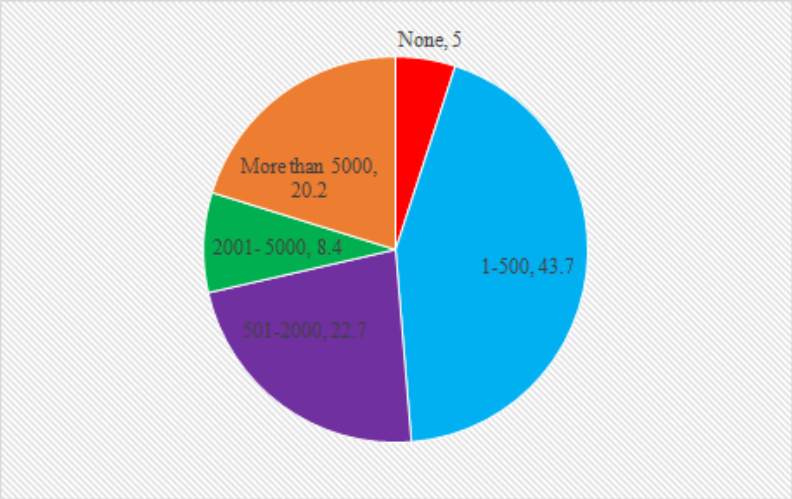
Findings in figure 4.3 shows that most of the companies had over 50 employees meaning that the companies were operating with more employees in logistic process.

4.3.4 Size of the Warehouse

According to the study findings 43.7% of the companies had between 1-500 sq meters of space while 22.7% had between 501-2000sq meters of space as illustrated in figure 4.4.

Figure 4.4: Size of the Warehouse

As illustrated in figure 4.4 it was deduced that most of the firms had up to 2000sq meters of space in their companies.



4.3.5 Warehouse Space Ownership

Study sought to establish if the company owns or hires the warehouse space and from the findings 58.8% hire while 35.3% own the spaces occupied as indicated in below figure 4.5.

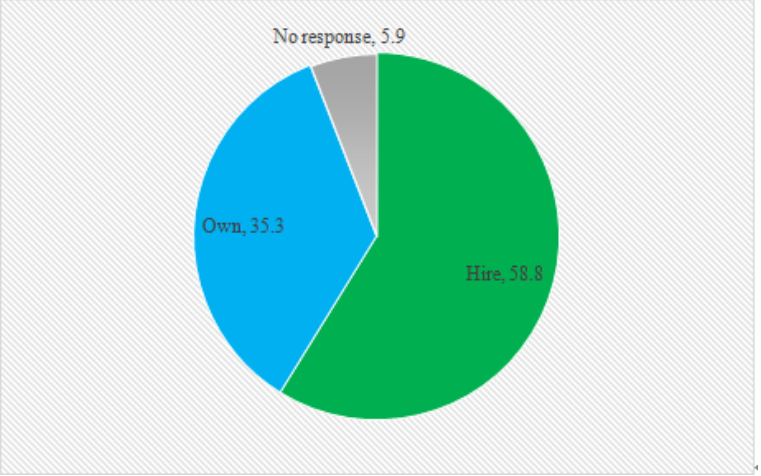


Figure 4.5: Warehouse Space Ownership

The results illustrated in figure 4.5 implies that most of the companies hired warehouse space but also some own their warehouse spaces.

4.4Information Technology enabled Transportation and Operational Costs of Logistic Companies

The first objective of study was to establish the implication of IT enabled logistics base stations on the transportation and operational costs of logistic companies in Kenya. This section analyzes the survey results and presents them and makes discussion.

4.4.1 Transportation Security and Operation Cost

The research aimed to establish how the adoption of IT in transportation process by logistic companies has increased the security of goods being transported and thus reducing the operational costs. The study results showed that the mean was >2.975 and therefore it was generally revealed that the respondents agreed that IT had reduced the operational costs by improving security.

According to the study, 63.9% of respondents agreed that IT adoption had increased the cargo security, 50.4% agreed that the time taken to trace cargo had been improved while 56.3% also agreed that the customer based profitability had been increased as indicated in table 4.1.

Table 4.1: Transportation Security and Operation Cost

S.N	ITEM	N	Strongly Disagree	Disagree	Not Sure	Agree	Strongest Agree	M	SD
1.	Increased cargo security	119	22 (18.5%)	22 (34.7%)	8 (6.7%)	76 (63.9%)	10 (8.4%)	**3.571**	**0.971**
2.	Time taken to trace cargo	119	17 (14.3%)	29 (24.4%)	12 (10.1%)	60 (50.4%)	2 (0.8%)	**2.975**	**1.158**
3.	Increased customer based profitability	119	2 (1.7%)	5 (4.2%)	2 (1.7%)	67 (56.3%)	43 (36.1%)	**4.210**	**0.812**

The results as illustrated in table 4.1 imply that after IT adoption security of goods and transportation had been improved through enhanced cargo security, reduced duration taken to trace the cargo and increased customers based profitability.

4.4.2 Transportation Goods Tracking

Additionally, the survey aimed to establish how IT adoption by the logistic firms had improved goods tracking while under transportation so as to reduce operational related costs. From the findings most of the respondents mean>3.370 which shows that they agreed with the statements asked in relations to goods tracking.

According to 56.3% of the respondents, IT had reduced the costs of tracking cargo and thus lowering operational costs, 55.5% of those interviewed agreed that adoption of tracking systems increased the confidence of the customers resulting into sales increase,72.3% agreed that more security is guaranteed via tracking online and management of cargo compared to manual management systems. Also 46.3% support that online tracking systems are easy to tamper with when compared to manual systems while 73.9% support that the computerized clearing and forwarding is more efficient and effective in comparison to manual system Table 4.3 represents the findings.

Table 4.2: Transportation Goods Tracking

S.N	ITEM	N	Strongly Disagree	Disagree	Not Sure	Agree	Strongest Agree	M	SD
1.	The cost of tracking cargo lowers the cost hence high profit	119		2 (1.7%)	3 (2.5%)	67 (56.3%)	47 (39.5%)	**4.336**	**0.614**
2.	The tracking system increases customers confidence resulting into sales increase	119			3 (2.5%)	66 (55.5%)	50 (42%)	**4.395**	**0.540**
3.	Online tracking and management of cargo is more secure than the manual management system	119			18 (15.1%)	86 (72.3%)	15 (12.6%)	**3.975**	**0.528**

4.	The online tracking system can be easily be tampered with compared to manual system	119	8 (6.7%)	23 (19.3%)	19 (16%)	55 (46.3%)	14 (11.8%)	**3.370**	**1.126**
5.	Computerized clearing and forward is quicker and faster compared to the manual system	119		12 (10.1%)	3 (2.5%)	88 (73.9%)	16 (13.4%)	**3.931**	**0.743**

As was shown in table 4.2, the goods tracking IT lowers the costs related to tracking, improves the confidence of the customers, IT related tracking is more secure than the manual systems and using computerized clearing and forwarding makes work easier and faster unlike the manual systems.

4.4.3 Transport Fleet Management System

Study also sought to establish how IT implementation in transport fleet management system is in relation to operational costs. It was revealed that most of respondent's mean was >3.448 which implied that they agreed with statements related to fleet management systems.

Most of them 52.1% agreed that IT had improved the route planning and scheduling in fleet management system, 73.9% agreed that it has improved tracking systems through radio frequency identification, 74.8% agreed that fuel management system has improved while 58.8% agreed that IT has increased container leasing, cargo security, loading and offloading process as shown in table 4.3.

Table 4.3: Transport Fleet Management System

S.N	ITEM	N	Strongly Disagree	Disagree	Not Sure	Agree	Strongest Agree	M	SD
1.	Route planning and scheduling	119		14 (11.8%)	38 (31.9%)	62 (52.1%)	5 (4.2%)	**3.448**	**0.726**
2.	Tracking systems (Radio Frequency identification)	119		2 (1.7%)	10 (8.4%)	88 (73.9%)	19 (15.9%)	**4.017**	**0.543**
3.	Fuel management system	119	4 (3.4%)	10 (8.4%)	6 (5.0%)	89 (74.8%)	10 (8.4%)	**3.733**	**0.838**
4.	Container leasing, cargo security, loading and offloading	119	4 (3.4%)	4 (3.4%)	6 (5.0%)	70 (58.8%)	35 (29.4%)	**4.076**	**0.885**

It was therefore concluded based on results in table 4.3 that IT had changed fleet management system through route planning and scheduling, the tracking systems and fuel management systems. It has also improved container, leasing, cargoes security, loading and offloading of goods.

4.5Information Technology enabled Inventory Control and Operational Costs of Logistic Companies

The study's second objective was to analyze the implication of information technology enabled logistics base stations on inventory control and operational costs of logistic companies in Kenya. This section presents the findings from the survey.

4.5.1 Inventory Information Integration System

In relation to inventory management, this research aimed to determine how IT adoption by logistic companies has improved on inventory management through information integration systems. Study revealed mean>3.658 which meant that respondents were in agreement with statements asked on information integration system.

It was shown that 64% of the respondents were in agreement that integration of information assists in making of evaluation of major customers easier, 53.8% agreed that it enables easy payment and attendance to major customers, 71.4% agreed that it improves

inventory internal control system. Additionally, 48.7% were in agreement that it makes inventory management easier and simpler to offer service to integrate customers, 64.7% agreed that it increases customer service delivery efficiency, while 63.9% agreed that it improves on inventory control system of a firm as shown in table 4.4.

Table 4.4: Inventory Information Integration System

S.N	ITEM	N	Strongly Disagree	Disagree	Not Sure	Agree	Strongest Agree	NR	M	SD
1.	Integration makes evaluation of major	119	4 (3.4%)	8 (6.7%)	9 (7.6%)	64 (53.8%)	34 (28.6%)		**3.975**	**0.970**
2.	Integration helps easy payment and attendance of major customers	119	1 (0.8%)	7 (5.9%)	2 (1.7%)	69 (58.0%)	39 (32.8%)	1 (0.8%)	**4.170**	**0.799**
3.	Integration improves internal control system	119	2 (11.8%)		14 (11.8%)	85 (71.4%)	17 (14.3%)	1 (0.8%)	**3.992**	**0.577**
4.	It is easier and more simple to serve integrate customers	119	4 (3.4%)	13 (10.9%)	14 (11.8%)	58 (48.7%)	29 (24.4%)		**3.805**	**1.040**
5.	Integration increases customer service delivery efficiency	119	2 (1.7%)	9 (7.6%)	15 (12.6%)	77 (64.7%)	14 (11.8%)	2 (1.7%)	**3.786**	**0.818**
6.	Integration improves control system of an organization	119	11 (9.2%)		24 (20.2%)	76 (63.9%)	6 (5.0%)	2 (1.7%)	**3.658**	**0.721**

It was concluded based on findings on table 4.4 that IT implementation has influenced inventory information integration system and improved ease of evaluation of major customers, eased payments and attendance to major customers, made it easier and simpler to serve and integrate customers, improved customer service delivery efficiency and improved the companies' system of organization unlike manual systems.

4.5.2 Inventory Radio Frequency Identification Systems

The study sought to establish how inventory management through radio frequency identification system and according to results mean>2.882 revealing that majority of

those who were interviewed in the research agreed with asked statements. Additionally, 78.2% agreed that firm uses RFID for efficient management of records, 75.6% support that the use of RFID had improved effectiveness in management of stock, 53.8% agreed that use of RFID minimized theft, 57.1% agreed that use of barcodes in tracking stock items has improved availability of items while 41.2% were in concurrence that the use of RFID has made records management efficient. Table 4.5 is a representation of findings

Table 4.5 (a): Inventory Radio Frequency Identification Systems

S.N	ITEM	N	Strongly Disagree	Disagree	Not Sure	Agree	Strongest Agree	NR	M
1.	The firm uses RFID for efficient management of records	119		2 (1.7%)	7 (5.9%)	93 (78.2%)	15 (12.6%)	2 (1.7%)	**4.034**
2.	Use of RFID had improved effectiveness in stock management	119	4 (3.4%)	7 (5.9%)	9 (7.6%)	90 (75.6%)	7 (5.9%)	2 (1.7%)	**3.761**
3.	Use of RFID have minimized theft	119	8 (6.7%)	18 (15.1%)	21 (17.6%)	64 (53.8%)	6 (5.0%)	2 (1.7%)	**3.359**
4.	Use of barcodes in tracking stock items has enhanced availability of items	119	8 (6.7%)	9 (7.6%)	15 (12.6%)	68 (57.1%)	19 (16.1%)		**3.681**
5.	The use of RFID has improved efficiency in records management	119	22 (18.5%)	23 (19.3%)	23 (19.3%)	49 (41.2%)	2 (1.7%)		**2.882**

Table 4.5(b): Inventory Radio Frequency Identification Systems

S.N	ITEM	N	Strongly Disagre	Disagree	Not Sure	Agree	Stronges t Agree	NR	SD
6.	The firm uses RFID for efficient management of records	119		2 (1.7%)	7 (5.9%)	93 (78.2%)	15 (12.6%)	2 (1.7%)	**0.507**
7.	Use of RFID had improved effectiveness in stock management	119	4 (3.4%)	7 (5.9%)	9 (7.6%)	90 (75.6%)	7 (5.9%)	2 (1.7%)	**0.795**
8.	Use of RFID have minimized theft	119	8 (6.7%)	18 (15.1%)	21 (17.6%)	64 (53.8%)	6 (5.0%)	2 (1.7%)	**1.029**

9.	Use of barcodes in tracking stock items has enhanced availability of items	119	8 (6.7%)	9 (7.6%)	15 (12.6%)	68 (57.1%)	19 (16.1%)		**1.049**
10.	The use of RFID has improved efficiency in records management	119	22 (18.5%)	23 (19.3%)	23 (19.3%)	49 (41.2%)	2 (1.7%)		**1.187**

It was therefore concluded that radio frequency identification systems had improved the inventory management because its use contributes to efficiency, improves effectiveness in stock management, minimizes the theft of goods, enhances availability of items and also improves the efficiency in records management among the logistic companies.

4.5.3 Warehouse and Inventory Management

The research also aimed to determine how IT enabled inventory management has influenced warehouse inventory management. 44.5% of those interviewed were in agreement that it has enhanced receiving and identification of goods, 63.9% agreed that it has improved the dispatch of goods and storage, 52.9% agreed that it has improved picking and dispatch of goods for shipment while 41.2% agreed that it has improved the documentation, duty payments and inspections. Table 4.6 represents the findings

Table 4.6: Warehouse and Inventory Management

S.N	ITEM	N	Strongly Disagree	Disagree	Not Sure	Agree	Strongest Agree	NR	M	SD
1.	Receive and identify goods	119	11 (9.2%)	34 (28.6%)	5 (4.2%)	53 (44.5%)	14 (11.8%)	2 (1.7%)	**3.214**	**1.251**
2.	Dispatch of goods to storage	119	4 (3.4%)	4 (3.4%)	12 (10.1%)	76 (63.9%)	21 (17.6%)	2 (1.7%)	**3.906**	**0.851**
3.	Pick goods and dispatch for shipment	119	4 (3.4%)		2 (1.7%)	48 (40.3%)	63 (52.9%)	2 (1.7%)	**4.419**	**0.833**

4.	Documentation, duty payment and inspection	119	5 (6.7%)	9 (7.6%)	46 (38.7%)	49 (41.2%)	10 (8.4%)	**3.420**	**0.907**

Findings illustrated in table 4.6 means that the warehouse inventory management had improved because they can receive and identify the goods, they can also monitor dispatch of goods to storage, the companies can dispatch goods easily and do the documentations, duty payments and inspections has been made seamless and easy.

4.6 Information Technology enabled Material Handling and Operational Costs of Logistics Companies

The third and last aim of the research was to analyze the implication of IT enabled logistics base stations on material handling and operational costs of logistics companies in Kenya. The survey results are presented under this section.

4.6.1 Customer Service Delivery

The survey also sought to analyze implication of information technology on material handling and customer service delivery was one of sub-variables and results showed that mean was > 2.504 which meant that those interviewed concurred with the statements asked by the study. It was shown that 73.5% concurred that customers were able to launch complains and access services online with adoption of IT systems, 63.0% disagreed that customers had preference on manual service compared to online services, 63% agreed that duration taken to offer service to a single customer had considerably reduced with adoption of IT on customer service delivery, 42% agreed that the cost of employing customer service attendance had reduced while offering services online and 41.2% disagreed when asked whether they derived more fulfilment from manual customer attendance than online attendance. Table 4.7 represents the findings

Table 4.7: Customer Service Delivery

S.N	ITEM	N	Strongly Disagree	Disagree	Not Sure	Agree	Strongest Agree	NR	M	SD
1.	Customers are able to launch complains and get services online with	119		9 (7.6%)	3 (2.5%)	88 (73.5%)	19 (16%)		**3.983**	**0.701**
2.	Customers prefer manual services to online services	119	2 (1.7%)	75 (63.0%)	5 (4.2%)	31 (26.1%)	6 (5.0%)		**3.458**	**0.728**
3.	Duration taken to offer service to one customer has considerably reduced with adoption of IT on customer service delivery	119	4 (3.4%)	11 (9.2%)	22 (18.5%)	75 (63.0%)	7 (5.9%)		**3.588**	**0.868**
4.	The cost of employing customer service attendance has reduced while offering online	119	4 (3.4%)	21 (17.6%)	35 (29.4%)	50 (42.0%)	9 (7.6%)		**3.328**	**0.966**
5.	More fulfilment is derived from manual customer attendance compared to online attendance	119	18 (15.1%)	49 (41.2%)	31 (26.1%)	16 (13.4%)	5 (4.2%)		**2.504**	**1.040**

As shown in table 4.7 it was concluded that IT has improved customers' services delivery by the logistic companies and reduced operational costs because if customers can launch complaints online and get feedback, the time taken to offer service to a single customer reduces considerably with adoption of IT on customer service delivery, it has also reduced the costs related to employments of customer service attendants and the online customer attendance is fulfilling and engaging.

4.6.2 Efficiency in Logistics Performance

The study sought to analyze implications of IT on materials handling by the logistic companies in Kenya, the study looked at the efficiency in logistics performance and

findings showed that mean>3.789 which indicates that those interviewed concurred with statements asked.

Additionally, 51.3% agreed that IT adoption has reduced transit time of materials, 49.6% agreed that it has cut the enhanced cost reduction in operations of materials handling, 63.9% supported that it had increased company profits, 68.9% agreed that it had improved security of materials and tracking of cars handling the materials, 42.9% agreed that it has reduced the transit time of materials. Table 4.8 represents the findings

Table 4.8: Efficiency in Logistics Performance

S.N	ITEM	N	Strongly Disagree	Disagree	Not Sure	Agree	Strongest Agree	NR	M	SD
1.	Reduced transit time	119	6 (5.0%)	5 (4.2%)	12 (10.1%)	61 (51.3%)	35 (29.4%)		**3.958**	**1.012**
2.	Cost reduction in operations	119	13 (10.9%)	10 (8.4%)	15 (12.6%)	59 (49.6%)	22 (18.5%)		**3.563**	**1.205**
3.	Increased profits	119			3 (2.5%)	40 (33.6%)	76 (63.9%)		**4.387**	**1.539**
4.	Improved security and tracking of cars	119			28 (23.5%)	82 (68.9%)	9 (7.6%)		**4.160**	**1.537**
5.	Reduced transit time	119	6 (5.0%)	4 (3.4%)	16 (13.4%)	51 (42.9%)	32 (26.9%)	10 (8.4%)	**3.789**	**1.046**

As illustrated in table 4.8 it was concluded that IT adoption by the logistic companies had enhanced materials handling and reduced costs because it has reduced transit time taken, enhanced the cost reduction in materials handling, increased the profits from materials handling, enhanced the security and tracking f cars transporting materials and also it has reduced time taken in transit which translates to reduced cost.

4.7Operational Costs of Logistic Companies

The dependent variable of the study was the operational costs of logistics companies and the research aimed to determine how the independent variables relates with the dependent variable. This section focusses on the study findings.

4.7.1 Reduction of Transport Cost

Study aimed to investigate if IT adoption in transport has reduced operational costs and findings showed that it had a mean>3.210 which shows that majority of those interviewed agreed with statements asked. This indicates that 92.4% agreed that companies have gained more return cargo easily, 47.9% agreed that there are better allocations of vehicles space/tonnage, 55.5% agreed that companies have gained better prices per trucks/trainers while 54.6% agreed that they were able to hire other company vehicles easily and safely. Table 4.6 represents the findings

Table 4.9: Reduction of Transport Cost

S.N	ITEM	N	Strongly Disagree	Disagree	Not Sure	Agree	Strongest Agree	NR	M	SD
1.	Gain more return cargo easily	119				110 (92.4%)	9 (7.6%)		**4.076**	**0.266**
2.	Complete your delivery route capacity	119		47 (39.5%)	3 (2.5%)	40 (33.6%)	18 (15.1%)		**3.210**	**1.127**
3.	Better allocation of vehicle space and/or tonnage	119	8 (6.7%)	10 (8.4%)	27 (22.7%)	57 (47.9%)	17 (14.3%)		**3.546**	**1.056**
4.	Gain sufficient individual trucks/trailers with better price in safe way	119		43 (36.1%)	10 (36.1%)	66 (55.5%)			**3.193**	**0.941**
5.	Hire other company vehicles easily and safely	119	8 (6.7%)	18 (15.1%)	28 (23.3%)	65 (54.6%)			**3.261**	**0.952**

On transport cost reduction as shown in table 4.9 it was concluded that logistic companies have been able to cut transport operational costs because they have gained

more return cargo easily, the companies are able to complete delivery routes faster, there is better allocation in vehicle space/tonnage, gain better prices per truck/trailers and they are able to easily hire vehicles from other companies.

4.7.2 Reduction of Inventory Management Cost

The research also aimed to determine the impact of IT in relation to reduction of operations related costs and this section asked respondents how inventory management costs has been reduced and results showed that majority of those interviewed agreed with the questions asked as supported by mean>3.126.

Also 37.8% agreed that through IT they have hired low cost warehouse, 77.3%, they have let their warehouses to customers to increase utilization, 44.5% of them have gained through outsourcing their warehouses in easy manner and 38.7% have increased their warehouses incomes. Table 4.10 represents the findings

Table 4.10: Reduction of Inventory Management Cost

S.N	ITEM	N	Strongly Disagree	Disagree	Not Sure	Agree	Strongest Agree	NR	M	SD
1.	Hire warehouse which is low cost	119	8 (6.7%)	27 (22.7%)	30 (25.2%)	45 (37.8%)	9 (7.6%)		**3.168**	**1.076**
2.	Let warehouse to customer to increase utilization	119	9 (6.7%)		19 (16%)	92 (77.3%)			**3.639**	**0.800**
3.	Gain outsources of whole warehouse service easily	119	19 (16%)	18 (15.1%)	20 (16.8%)	53 (44.5%)	9 (7.6%)		**3.126**	**1.239**
4.	Gain whole warehouse businesses	119	8 (6.7%)	10 (8.4%)	29 (24.4%)	46 (38.7%)	26 (21.8%)		**3.462**	**1.126**

As illustrated in table 4.10 it was concluded that logistics companies have reduced inventory management costs through hiring low cost warehouses, increased their

warehouse utilization, outsourced their warehouses services and through gaining from their warehouse businesses.

4.7.3 Material Handling Costs

The study also looked at implications of IT on logistic company materials related operations costs and how they have been reduced. According to this study, most of respondents with mean>3.441 implying that most of them were in concurrence with the questions asked by the study. According to 47.1% agreed that they have gained through outsourcing of low materials packing easily and efficiently, 37% agreed that they have gained from packing businesses, 37% agree that they have gained through efficient purchasing of more materials, 31.9% disagreed when asked if they have gained through selling idle services faster, 36.1% agreed that the company have reduced materials handling costs by exchanging business opportunities in win-win situation effectively and efficiently and 43.7% agree that they have increased their customers service satisfaction for materials handling. Table 4.11 represents the findings.

Table 4.11: Material Handling Costs

S.N	ITEM	N	Strongly Disagree	Disagree	Not Sure	Agree	Strongest Agree	NR	M	SD
1.	Gain outsources of low cost packing service easily and efficiently	119		19 (16.0%)	18 (15.1%)	56 (47.1%)	26 (21.8%)		**3.748**	**0.976**
2.	Gain packing businesses efficiently	119	8 (6.7%)	18 (15.1%)	31 (26.1%)	44 (37.0%)	26 (21.8%)		**3.387**	**1.121**
3.	Gain more purchasing resources easily and	119		30 (25.2%)	19 (16.0%)	44 (37.0%)		9 (7.6%)	**3.151**	**0.884**
4.	Selling your idle service capacity faster	119		38 (31.9%)	9 (7.6%)	29 (24.4%)		10 (8.4%)	**3.486**	**1.222**

5.	Exchange business opportunities in win-win situation effectively and efficiently	119	29 (24.4%)	27 (22.7%)	43 (36.1%)	19 (16.0%)	1 (0.8%)	**3.441**	**1.034**
6.	Increase customer service satisfaction	119	11 (9.2%)	27 (22.7%)	52 (43.7%)	20 (16.8%)	9 (7.6%)	**3.736**	**0.874**

It was concluded that companies have gained through materials handling because they have outsourced packing services at low costs easily and efficiently because of IT, the companies have gained from packing business, gained from being able to purchase resources easily and efficiently and through increasing their customers' satisfaction.

4.7.4 Identification Methods in Determining Factors that Influence Operational Cost of a Logistic Company

The research revealed that methods used by logistics companies to single out factors that affect operational cost of a logistic company were 33.6% the company's profitability and comparative advantage over others, 32.8% through the industrial benchmarks and historical data, 26.9% through the customers' feedback and 18.5% through Social commodity price index (CPI) as indicated in figure 4.6.

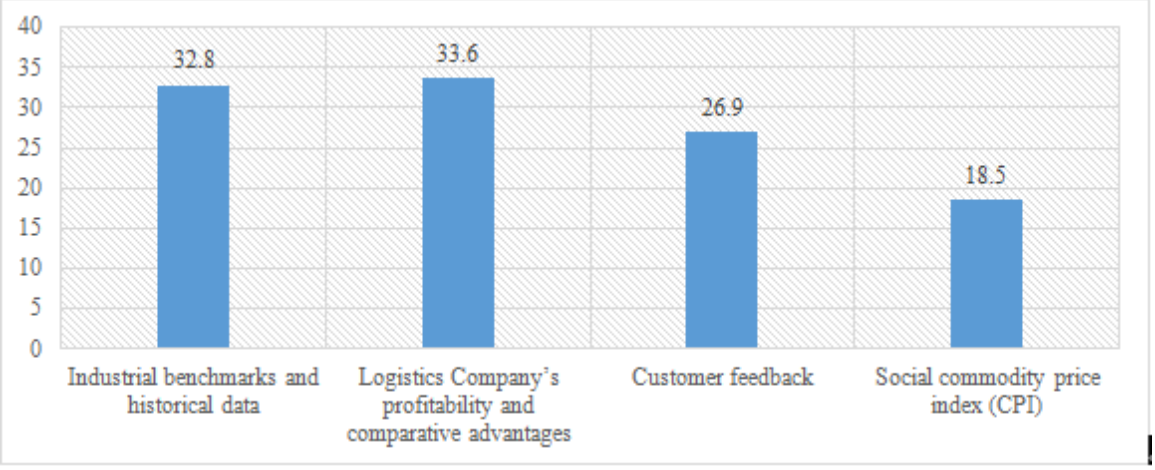


Figure 4.6: Identification Methods in Determining Factors that Impact Operational Cost of a Logistic Company

The findings show that the companies identify factors that influence their operational related costs through company's profitability and comparative advantage over others, through the industrial benchmarks and historical data, through the customers' feedback and finally through Social commodity price index (CPI).

4.8 Regression Analysis

This section of study presents findings of statistical tests conducted to determine correlation between variables of study. The study variables were; Information Technology enabled transportation, Information Technology enabled inventory control and Information Technology enabled material handling (Independent variables), and operations costs (dependent variable).

4.8.1 Information Technology Implication on Transportation and Operational Costs of Logistics Companies

The first objective of research aimed at establishing the implication of technology on transportation and how it has influenced the operation costs of the companies, the study used linear regression to investigate the significance of the relationship.

Table 4.12: Model Summary for Information Technology Implication on Transportation and Operational Costs of Logistics Companies

Model Summary

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.224[a]	.050	.042	.130329	.050	6.185	1	117	.014

a. Predictors: (Constant), Transportation

Results in table 4.12 above indicate that the value of R Square (R^2) was 0.050 implying that the model predicted 5%, meaning IT based transportation explains 5% of the changes in operations costs in Logistics companies in Kenya, Kenya. These results also show that

95% of changes in operations costs by different factors other than IT based transportation.

The researcher further conducted Analysis of variance (ANOVA) and findings are indicated in Table 4.13.

Table 4.13: ANOVA for Information Technology Implication on Transportation and Operational Costs of Logistics Companies

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.105	1	.105	6.185	.014[b]
	Residual	1.987	117	.017		
	Total	2.092	118			

a. Dependent Variable: Operational Costs of Logistics Companies

b. Predictors: (Constant), Transportation

Findings in Table 4.13 indicates that the calculated F-statistic was 6.185 implying that the model was fit in explaining association between IT based transportation and Operations costs. The basis of either rejecting or accepting the null hypotheses was determined by whether the p-value was greater or less than 0.05. In this research p-value was 0.000, which was <0.05 and therefore the null hypothesis was rejected, which confirms that IT based transportation is important in predicting Operations costs.

The research also aimed at determining the coefficients of the independent variable and the findings obtained are indicated in Table 4.14.

Table 4.14: Coefficients for Information Technology Implication on Transportation and Operational Costs of Logistics Companies

Coefficients[a]

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.

		B	Std. Error	Beta		
1	(Constant)	.649	.050		12.987	.000
	Transportation	.159	.064	.224	2.487	.014

a. Dependent Variable: Operational Costs of Logistics Companies

The IT based transportation had Beta value of 0.159 indicating that IT based transportation has positive association with Operations costs of Logistics companies in Kenya. This implies that unit change in IT based transportation contributes to 0.159 change in operations costs of Logistics companies in Kenya

4.8.2 Implication of Information Technology based Inventory Control and Operational Costs of Logistics Companies

The study second objective sought to find the implication that IT based inventory control has on the logistic company's inventory control and to establish the relationship. Linear regression was conducted and results presented under this section.

Table 4.15: Model Summary for Implication of Information Technology based Inventory Control and Operational Costs of Logistics Companies

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.340[a]	.116	.108	.125760	.116	15.298	1	117	.000

a. Predictors: (Constant), Inventory Control

The linear regression analysis shows a relationship, $R^2 = 0.116$ which means that 11.6% of the change in Operations costs can be justified by a unit change in IT based inventory control while 88.4% is explained by other factors in Logistics Companies.

Researcher also carried out Analysis of variance (ANOVA) and the findings are as shown in Table 4.16.

Table 4.16: ANOVA for Implication of Information Technology based Inventory Control and Operational Costs of Logistics Companies

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.242	1	.242	15.298	.000[b]
	Residual	1.850	117	.016		
	Total	2.092	118			

a. Dependent Variable: Operational Costs of Logistics Companies

b. Predictors: (Constant), Inventory Control

From the findings in Table 4.16, calculated F-statistic was established as 15.298 meaning that the model was fit in explaining Operations costs. The basis of either rejecting or accepting the null hypotheses was determined by whether the p-value was greater or less than 0.05. If the p-value > 0.05, the null hypotheses was not rejected and if the p-value <0.05 then the null hypotheses was rejected. Similarly, the P-value for the regression model was 0.000, which confirms that IT based inventory control is significant in predicting operational costs in Kenya and thus null hypothesis was rejected and alternative accepted.

Research further sought to investigate the coefficients of the independent variable and the findings shown in Table 4.17 were obtained.

Table 4.17: Coefficients for Implication of Information Technology based Inventory Control and Operational Costs of Logistics Companies

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1	(Constant)	.593	.047		12.720	.000
	Inventory Control	.288	.074	.340	3.911	.000

a. Dependent Variable: Operational Costs of Logistics Companies

Table 4.17 indicates that IT based inventory control had Beta value of 0.288 which indicated that a unit change in IT based inventory control results into 0.288 change in operations costs in Logistics Companies in Kenya.

4.8.3 Information Technology based Material Handling and Operational Costs ofLogistics Companies

The third objective of the study aimed to establish the implications of IT based materials handling on operations costs of the logistics companies and to establish the relationship. The linear regression was conducted and results presented under this section.

Table 4.18: Model Summary for Information Technology based Material Handling and Operational Costs of Logistics Companies

Model Summary

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.502[a]	.252	.246	.115632	.252	39.487	1	117	.000

a. Predictors: (Constant), Material Handling

Table 4.18on findings illustrates R Square (R^2) was 0.252 which shows that there is 25.2% change in operational costs of companies. These findings therefore show that IT based materials handling significantly affects company's operational costs.

Researcher conducted Analysis of variance (ANOVA) and the findings are indicated in Table 4.19

Table 4.19: ANOVA for Information Technology based Material Handling and Operational Costs of Logistics Companies

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.528	1	.528	39.487	.000[b]
	Residual	1.564	117	.013		
	Total	2.092	118			

a. Dependent Variable: Operational Costs of Logistics Companies

b. Predictors: (Constant), Material Handling

Findings from ANOVA for regression coefficients are indicated in table 4.19. The analysis of the findings revealed that the significance of F statistics was 39.487. In addition, results showed that p-value was 0.000, which was <0.05 and therefore the null hypotheses was rejected confirming that IT based materials handling significantly influences companies' operations costs since F values were >4.0.

The research also aimed to establish the coefficients of the independent variable and the findings are indicated in Table 4.20 were generated.

Table 4.20: Coefficients for Information Technology based Material Handling and Operational Costs of Logistics Companies

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.456	.051		8.941	.000
	Material Handling	.512	.081	.502	6.284	.000

a. Dependent Variable: Operational Costs of Logistics Companies

Table 4.20 indicates that IT based materials handling had Beta value of 0.512 which indicates that a unit change in IT based materials handling results into 0.512 change in operations costs of logistics firms in Kenya. This showed that logistic companies should be concerned with materials handling as it positively operations costs.

4.8.4 Effects of Information Technology Enabled Logistics Base Stations Network on Operational Costs of Logistics Companies

The general objective of the research was to investigate the influence of IT enabled logistics base stations network on operational costs of logistic companies and to establish this multiple regression was conducted and results presented under this section.

Table 4.21: Model Summary for Effects of Information Technology Enabled Logistics Base Stations Network on Operational Costs of Logistics Companies

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.510[a]	.260	.241	.116008	.260	13.492	3	115	.000

a. Predictors: (Constant), Material Handling, Transportation, Inventory Control

From Table 4.21, the value of R-Square is 0.260. This implies that, 26% of variation of operational costs was explained by the three independent variables. 74% implies that there are factors not included in this study that influences operational costs of logistic firms in Kenya.

Table 4.22: ANOVA for Effects of Information Technology Enabled Logistics Base Stations Network on Operational Costs of Logistics Companies

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.545	3	.182	13.492	.000[b]
	Residual	1.548	115	.013		
	Total	2.092	118			

a. Dependent Variable: Operational Costs of Logistics Companies

b. Predictors: (Constant), Material Handling , Transportation, Inventory Control

Findings of ANOVA for regression coefficients are indicated in table 4.22. The analysis of findings revealed that the significance of F statistics was 13.492.The ANOVA test is key in determining whether the model adequately predicts the operational costs among logistic companies in Kenya. At 0.05 level of significance, the ANOVA test indicated that in this model the independent variables namely; material handling, transportation, inventory control is important in predicting operational costs among logistic companies in Kenya the p-value was 0.000 which is below 0.05 level of significance ($p=0.000<0.05$), therefore, the combined influence of the independent variables in the dependent variable was statistically significant at 95% confidence level.

Table 4.23: Coefficients for Effects of Information Technology Enabled Logistics Base Stations Network on Operational Costs of Logistics Companies

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.427	.060		7.088	.000
	Transportation	.037	.096	.053	.387	.699
	Inventory Control	.044	.131	.052	.339	.735
	Material Handling	.468	.100	.459	4.656	.000

a. Dependent Variable: Operational Costs of Logistics Companies

From the findings in Table 4.23 above, at 95% confidence level, the beta value for IT based transportation was 0.037 which indicate a positive relationship between the variable and operational costs among logistic companies in Kenya. This means that a unit change in in IT based transportation leads to 0.037-unit change operational costs among logistic companies in Kenya.

The beta value for IT based inventory control was 0.044 which indicate a positive relationship between the variable and operational costs among logistic companies in Kenya. This means that a unit change in in IT based inventory control leads to 0.044-unit change operations costs in logistics companies in Kenya. While IT based materials handling had Beta value of 0.468 which indicate a positive relationship between the variable and operations costs in logistics companies in Kenya. This means that a unit

change in IT based materials handling leads to 0.468-unit change in operational costs among logistic companies in Kenya.

Given that:
Y = Operational Cost of Logistic Company
$\beta 1X1$ = Transportation Cost
$\beta 2X2$ = Inventory Control Cost
$\beta 3X3$ = Material Handling Cost
The regression equation will be; $\mathbf{Y = 0.427 + 0.037X_1 + 0.04X_2 + 0.468X_3}$

4.9 Discussion of Findings

4.9.1 Information Technology enabled Transportation and Operational Costs of Logistics Companies

The study showed that 63.9% support that IT adoption had increased the cargo security, 50.4% support that the time taken to trace cargo had been improved while 56.3% also supported that the customer based profitability has been increased. Congruent to above, according to research done by Adisa (2017) on transport management technologies and performance of third party logistics providers in Kenya revealed that the organization uses GPS, bar-coding technology and warehouse management systems to track goods and vehicles. Research further revealed that there existed positive and significant relationship between intelligent transport systems, telecommunication and information technology and performance. Zhong and Zhou (2011) and Bhandari (2012) asserts that logistic companies should use transport management technologies such as global positioning system (GPS).

According to the results, 56.3% of the respondents agreed that IT had reduced the costs of tracking cargo and thus lowering operational costs, 55.5% of the respondents supported that the tracking systems adopted increased the confidence of the customers resulting into sales increase,72.3% supported that online tracking and management of cargo is more secure than the manual management system. Also 46.3% support that online tracking system can be easily be tampered with compared to manual system while 73.9% support that the computerized clearing and forward is quicker and faster compared to the manual system.

The results revealed that to a very large extent transport management operation has enabled the organization reduce cost. Congruent to the above findings, Bowersox et al, (2010) state that good transport management in logistics activities is able to provide better logistics efficiency, reduce operation cost, and promote service quality on firms. Gitahi and Ogollah (2014**)** revealed that there was poor fleet management in UNHCR Kenya. Cost for transport and logistics were also higher. According to a report done by World Bank (2013), it was revealed that in the year 2011-2012, UNHCR incurred a loss of Ksh 20,000,000 due to poor fleet management increase cost of repairs. The organization spent a lot of money due to increase cost of repairs. It was also revealed that UNHCR is losing over Ksh 50,000,000 each year since 2010 because fuel management system is not functioning as it should which indicates a failure in fleet management.

Also most of the respondents(52.1%)supported that IT has improved the route planning and scheduling in fleet management system, 73.9% supported that it has improved tracking systems through radio frequency identification, 74.8% supported that fuel management system has improved while 58.8% supported that IT has increased container leasing, cargo security, loading and offloading process. In support of this Kimulu (2014) state that route optimization had been achieved and fleet tracking tools increased vehicle visibility to large extent while vehicle scheduling improved to a moderate extent. Musau, Namusonge, Makokha and Ngeno (2017) conducted a research on the effect of transport management on organizational performance among textile manufacturing firms in Kenya. The study recommended that the organization must come up with new strategies such as; scheduling, route planning, fleet management, and vehicle tracking. Through this, the organization will be able to become more competitive.

Also in support of relationship between transport and operational costs, Nuahn (2017) investigated the impact of logistics and transportation practices on performance of Kenya Cooperative Creameries. The findings revealed that there exists a strong positive relationship between transportation and performance at KCC.

4.9.2 Information Technology enabled Inventory Control and Operational Costs of Logistics Companies

The study results showed that 64% of the respondents were in support that the information integration helps in easy evaluation of major customers, 53.8% supported that it helps easy payment and attendance of major customers, 71.4% supported that it improves inventory internal control system. Also 48.7% were in supported that it makes inventory management easier and more simple to serve integrate customers, 64.7% supported that it increases customer service delivery efficiency, while 63.9% supported that it improves on inventory control system of an organization. This is in line with a study done by Mwangangi (2016) on influence of logistics management on performance of manufacturing firms in Kenya. Findings revealed that transport management; inventory management; order process management, and information flow influences firm performance. Ndunge (2013) in his study's findings revealed that edible oil firms used different inventory applications to manage their inventories. Through this the company is able to minimize wastage. It was also established that a positive correlation existed between firm's performance and inventory management.

Further, 78.2% of respondents supported that logistic firm's use RFID for efficient management of records. These results concur with the conclusion made by Lucas and Introna (2014) who contended that use of IT systems impacted positively on efficiency, cost reduction and accessibility to information. Also Mukangu and Ndungu (2016) assert that usage of information and communication technology (ICT) has enabled organizations increase productivity, operational efficiency, reduce cost, improve in design process and inventory management. Based on his study on effect of computer based information system on performance of firms. The findings showed that a positive correlation existed between computers based information system and performance of organizations.

The results show that 75.6% agreed that the usage of RFID had improved significantly improved stock management, a study conducted by Kithinji (2015) looking at the impact of IT on inventory management in supermarkets in Nairobi City County was in agreement with the findings. Results further established that use of technology has a

positive influence on management of inventory. It was revealed 53.8% use of RFID have minimized theft, Ndunge (2013) investigated the existing association between management of inventory and firm performance. Research results revealed that edible oil enterprises used different inventory applications in the management of their inventories. Through this a firm is able to reduce wastages. Results further established a positive correlation existed between organizational performance and inventory management.

Further, 57.1% of respondents agreed that the usage of barcodes to track stock items had improved availability of items while 41.2% supported that the use of RFID has improved efficiency in records management. In support to this statement Kithinji (2015) state that use of information technology to manage inventory enables an organization to become more efficient and cut cost (Kithinji, 2015). The researcher recommended that supermarkets need to capitalize on information communication technologies if they are to lower costs of communication and enhance sharing of information. Wanjiku (2016) state that a unit rise in ABC inventory model leads to 0.642 rise in productivity of organizations. Unit rise in Just-In Time (JIT) Inventory results into 0.784 rise in productivity of organizations. A unit rise in Economic Order Quantity (EOQ) results into 0.811 rise in productivity of organizations and a unit rise in vendor managed inventory results into rise in productivity of organizations.

Also in support, Adisa (2017) investigated technologies used in transport management and performance of third party logistics providers in Kenya. Target population was 1,121 logistics companies operating in Kenya. Researcher used stratified random sampling to come up with a sample size of 191 firms. It was revealed that the organization uses GPS, bar-coding technology and warehouse management systems to track goods and vehicles. Research also determined that there existed a positive and considerable relationship between intelligent transport systems, telecommunication and information technology and performance.

4.9.3 Information Technology enabled Material Handling and Operational Costs of Logistic Companies

In each it was shown that 73.5% of respondents supported the position that customers are able to launch complains and access services online with adoption of IT system, 63.0% supported that customers had preference on being served manually in comparison to online services, 63% supported the position that duration taken to offer service one customer significantly reduced with adoption of IT on customer service delivery, congruent to above Haag & Cummings (2010) maintain that organizations that use internet sources ship their merchandise in a more accurate and fast manner than competitors do. Logistics management will be measured using the following indicators for instance reduced holding costs and on-time delivery of goods and services. Also in support, Macharia, Iravo, Ondabu and Ombui (2015) studied the effect of IT on performance of logistics companies in Nairobi County. Researcher collected data from 10 companies with findings establishing that (50%) of logistic companies have not adopted the usage ICT in their departments thereby contributing to low service delivery. Additionally, the research revealed that usage of ICT infrastructure lowers cost of transaction through replacement of paper work with electronic processes, enhance the coordination levels between network of supply chain members and reduction of avoidable errors.

According to the study, 42% of the respondents supported that the cost of adopting customer service attendance has declined while offering services to them online and 41.2% supported when asked if they derive more fulfilment from the usage of manual customer attendance compared to online attendance. An ERP system assists firms to combine business operations thereby enhancing efficiency and maintaining competitive edge over peers. Additionally, the usage of ERP is key in increasing organizational productivity, seamless workflows, improved tracking and forecasting and enhanced customer service and satisfaction (Addo & Helo, 2011)

Results from the study established that 49.6% of those interviewed agreed that IT had enhanced cost reduction in operations of materials handling, 63.9% supported that IT had increased company profits, 69.9% improved security of materials and tracking of cars

handling the materials, 42.9% supported that it has reduced the transit time of materials. The research results are in agreement with past researches such as Larson et al. (2007) and Green et al. (2008) that the perceived influence of mobile phone and internet technology on logistics performance consisted of enhanced performance in customer service level, better levels of inventory and costs minimization. Additionally, research determined that IT positively influences business performance when it comes to speed of service delivery, prompt response to queries raised by customers, flexibility and better sales performance.

4.9.4 Effects of Information Technology Enabled Logistics Base Stations Network on Operational Costs of Logistics Companies

On inventory control relationship, $R^2$was 0.116 which meant that 11.6% of the change in Operations costs could be explained by a unit change in IT based inventory control while 88.4% was explained by other factors in Logistics Companies in Kenya. In support of this, Wanjiku (2016) studied practices of inventory management and productivity of organizations among parastatals in Kenya. Researcher used descriptive research and targeted all Kenyan parastatals. The study used stratified sampling in sampling parastatals within Nairobi County. Census was used to select 53 interviewees. Findings revealed that a unit rise in automatic replenishment results into 0.578 rise in the productivity of organizations. A unit rise in ABC Inventory Model results into 0.642 rise in productivity of organizations. Unit rise in Just-In Time (JIT) Inventory results into 0.784 rise in organizational productivity. A unit rise in Economic Order Quantity (EOQ) results into 0.811 rise in organizational productivity and a unit rise in vendor managed inventory results into rise in productivity of organizations. Also, Ontita (2016) studied inventory management approaches and performance of Kenyan textile manufacturing firms with findings revealing existence of considerable positive relationship between practices of inventory management and operational performance of the textile manufacturing companies in Kenya.

This study showed that R-Square value was 0.260 implying that 26% of variation of operations costs is explained by the three independent variables. 74% implies that there are factors not included in this study that influences operations costs in Kenya. Which

shows that IT enabled network influences the operations costs of the companies. Congruent to this, Atieno (2014) assert that logistics firms incorporate the usage of ICT in supply chain to enhance their performance and efficiency. According to East African Logistics Performance Survey (2012), report findings indicated that 54.4% of logistic companies' experience delays due to insufficient ICT infrastructure. Study also established that logistic firms are encountering challenges as a result of security of cargo. In addition, it was also established that 31.25% of logistic firms make use of electronic means in tracking their shipment while the rest use telephone in tracking their shipment.

CHAPTER FIVE:SUMMARY OF FINDINGS, CONCLUSION AND RECOMMEDATIONS

5.1 Introduction

In this chapter, researcher has focused on summary of main findings of research, conclusion, contributions of research to body of knowledge and lastly recommendations. Summarized outcomes for each study objectives have also been presented. Based on study results, conclusions have been made and presented under each study objective. The study then presents new information which is not in line with previous findings and is therefore presented as the contribution of the current study to the body of knowledge. Finally, recommendations arrived at from findings of the study are presented and knowledge gaps have also been identified for further research in the future.

5.2 Summary of Findings

This subsection has summarized research results based on the three objectives that the research aimed to achieve.

5.2.1 Implication of Information Technology Enabled Transportation on Operational Costs of Logistics Companies

The study revealed R Square (R^2) as 0.050 to mean that the model was able to predict 5%, this means that IT based transportation explains 5% of the changes in operational costsamong logistic companies in Kenya. This showed that IT enabled transport significantly influences the operational costs of companies. Adoption of IT enhances security of goods and transportation has been improved through improved cargo security, reduced duration needed to trace the cargo and enhanced customer based profitability. Also in relation to goods tracking, IT lowers the costs related to tracking, improves the confidence of the customers. IT related tracking is more secure than the manual systems and using computerized clearing and forwarding makes work easier and faster unlike the manual systems. On fleet management, IT has changed fleet management system through route planning and scheduling, the tracking systems, fuel management systems. It has also improved container, leasing, cargoes security, loading and offloading of goods.

5.2.2 Implication of Information Technology Enabled Inventory Control on Operational Costs of Logistic Companies

Results from test shows that $R^2 = 0.116$ which means that 11.6% of the variation in operations costs can be justified by a unit change in IT based inventory control while 88.4% is explained by other factors among logistics companies in Kenya. Therefore, IT based inventory management significantly influences operational costs of companies. The IT based inventory has influenced inventory information integration system and improved ease of evaluation of major customers, eased payments and attendance to major customers, made it easier and simpler to serve and integrate customers, improved customer's services delivery efficiency and improved the companies' system of organization unlike manual systems. Radio frequency identification systems has improved the inventory management because its use is efficient, improves effectiveness in stock management, minimizes theft of goods, enhances availability of items and also improves the efficiency in records management in the logistic companies.

5.2.3 Implication of Information Technology Enabled Material Handling on Operational Costs of Logistics Companies

In general, the research revealed that R Square (R^2) was 0.252 which shows that there is 25.2% change in operational costs of companies. These findings therefore show that IT based materials handling significantly affects company's operational costs. This shows that material handling significantly influences the operational cost of companies. In relation to customer service delivery, IT has enhanced the customer services delivery of logistic companies and reduced operational costs because if customers can launch complaints online and get feedback, the time taken to offer service to one customer decreases considerably with adoption of IT. On customer service delivery, it has reduced the costs related to employments of customer service attendants and the online customer attendance is fulfilling and engaging. On the efficiency in logistics performance, IT adoption by the logistics companies has enhanced the materials handling and reduced costs because it has reduced transit time taken, enhanced the cost reduction in costs of materials handling, increased the profits from materials handling, enhanced the security and tracking of cars transporting materials and also it has reduced time taken in transit which translates to reduced cost.

5.3 Conclusion

In general, the research established that there exists considerable correlation between information technologies enabled logistics base stations network and operational costs of logistic companies in Kenya. Since R-Square was 0.260 meaning that 26% of the changes in operational costs could be justified by the three independent variables. 74% means there exists other factors not included in the study which have influence on operational costs of logistic companies in Kenya. Thus the general objective of the study established that a correlation exists between independent and dependent variables.

In relation to IT based transportation, the companies had increased security because they had reduced time taken to trace the cargo and increased customers based profitability. Through online tracking time has been lowered, increased the customers' confidence and profits from them. The fleet management of the companies have improved the route, fuel, time taken and therefore they have achieved their targets and hence cutting costs that were incurred before through manual systems.

The IT integrated systems have improved inventory control by easing the evaluation process, the payments process and keeping of customers' attendance. It has also improved efficiency process of the logistic companies. Through the radio frequency identification systems logistic companies have also been able to secure their inventory since it has made stock management efficient, reduced loses of goods through theft and ensures that goods are there when needed.

Information technology enabled materials handling has enhanced the operations of the logistics companies because it has improved customers services delivery through reduction of operational costs because if customers can launch complaints online and get feedback, the duration taken to offer service to customers reduces considerably with adoption of IT. On customer service delivery, it has reduced the costs related to employments of customer service attendants and the online customer attendance is fulfilling and engaging. It has also improved the companies' efficiency by reducing the transit time taken, improved profits by reducing materials handling time unlike when manual systems are used.

5.4 Recommendations

Based on research results, researcher has made below recommendations;

Logistic firms need to carry out continuous enhancement on their securities to meet the global standards and always adapt to the ever changing security measures like the real time and tamper proof systems that alerts them in cases of attacks, change of routes or any suspicious activity during transportation of goods.

There is need for logistics companies to invest more on the inventory management softwares that lowers cost of managing inventory. The IT based inventory management can be used in both entry and at the terminus when goods are offloaded to ensure that clients get what was intended and not swapped on the way.

There is need for the logistics companies to introduce customers' notification systems that can track every stage of the transit goods this will ensure that customers can monitor the movement of goods and therefore reduce time taken to deliver the cargo.

5.5 Recommendations for Further Research

Researcher identified and suggested below two areas for future research;

i. To investigate impact of IT on efficiency of logistic companies and customers' satisfaction.
ii. Impact of mobile technology on performance of logistic companies in Kenya

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APPENDICES

APPENDIX I: RESEARCH QUESTIONNAIRE

This questionnaire has been designed to solicit information for purely academic purposes. This is to enable the researcher complete project on the topic; **Effect of technology adoption enabled logistics base stations network in logistics companies in Kenya**
Taking part in this research will be key in improvement of the quality of service offered to your organization. This research should take averagely 5-10 minutes to complete. You are guaranteed that all the information you provide will be handled with strict confidentiality.

Instructions

- ✓ Please respond to all items in questionnaire
- ✓ Put a (٧) alongside the option that is most applicable to you or fill in the spaces provided
- ✓ Do not write your name in this questionnaire

SECTION A: ORGANIZATION PROFILE INFORMATION

1.1 Position/Occupation: select all that apply

[ ] CEO/Director [ ] Transport Manager

[ ] Marketing Manager [ ] Warehouse Manager

[ ] Procurement Manager [ ] Administration Manager

[ ] Driver

1.2 How many years have you been working at this company?

[ ] Less than 1 [ ] 1-3 [ ] 3-6 [ ] 6-10 [ ] More than 10

1.3 Company employee numbers:

[ ] 0-10 [ ] 11-50 [ ] 51- 100 [ ] 101-200

[ ] More than 200

1.4 Warehouse area (square meter)

[ ] None [ ] 1-500 [ ] 501-2000 [ ] 2001- 5000

[ ] More than 5000

1.5 Compound area (square meter)

[ ] 0-5000 [ ] 5001-10000 [ ] 10001- 30000

[ ] More than 30000

1.6 Does company hire or own this compound?

[ ] Hire [ ] Own

SECTION B: Implication of Information Technology enabled logistics base stations on the **transportation** and Operational Costs of Logistics Companies

1. To what extent do you agree with the following statements regarding the effect of Information Technology on **transportation** and Operational Costs of Logistics Companies?

Kindly use the key provided to TICK as appropriate:

Key: 1-Strongly Disagree; 2 - Disagree; 3 - Undecided; 4- Agree; 5- Strongly Agree

Statement	**1**	**2**	**3**	**4**	**5**
Security					
Increased cargo security					
Time taken to trace cargo					
Increased customer based profitability					
Tracking					
The cost of tracking cargo reduces cost resulting into high profitability					
The tracking system enhances confidence of customers contributing to increase in sales					
More security is guaranteed with online tracking and management of cargo compared to 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					
Fleet management system					
Route planning and scheduling					

Tracking systems (Radio Frequency identification)					
Fuel management system					
Container leasing, cargo security, loading and offloading					

Others (specify) ……
……...…….
……...…….

SECTION C: Implication of Information Technology enabled logistics base stations on **inventory control** and Operational Costs of Logistics Companies

1. To what extent do you agree with the following statements regarding the effect of Information Technology on **inventory control** and Operational Costs of Logistics Companies?

Kindly make use of keys provided to TICK appropriately:

Key: 1-Strongly Disagree; 2 - Disagree; 3 - Undecided; 4- Agree; 5- Strongly Agree

Statement	**1**	**2**	**3**	**4**	**5**
Information Integration system					
Integration helps in easy evaluation of major customers					
Integration helps easy payment and attendance of major customers					
Integration improves internal control system					
It is easier and more simple to serve integrate customers					
Integration increases customer service delivery efficiency					
Integration improves control system of an organization					
Radio Frequency Identification Systems					
The firm uses RFID for efficient management of records					
Use of RFID had improved effectiveness in stock management					
Use of RFID have minimized theft					
Use of barcodes in tracking stock items has enhanced availability of items					
The use of RFID has improved efficiency in records management					
Warehouse and management of inventory					
Receive and identify goods					

Dispatch of goods to storage					
Pick goods and dispatch for shipment					
Documentation, duty payment and inspection					

Others (specify) ……
……
……

SECTION D: Implication of Information Technology enabled logistics base stations on **material handling** and Operational Costs of Logistics Companies

1. To what extent are you in agreement with below statements that relates to the effect of Information Technology on **material handling** and Operational Costs of Logistics Companies?

Kindly make use of below key to TICK as suitable:

Key: 1-Strongly Disagree; 2 - Disagree; 3 - Undecided; 4- Agree; 5- Strongly Agree

Statement	**1**	**2**	**3**	**4**	**5**
Customer Service Delivery					
Customers are able to launch complains and access services online with adoption of IT systems					
Customers have preference on manual service in comparison to online services					
Time taken to offer service to one customer has considerably reduced with adoption of IT on customer service delivery					
The cost of employing customer service attendance has reduced while offering services online					
More fulfilment is derived from manual customer attendance compared to online attendance					
Efficiency Logistics performance					
Reduced transit time, and					
Cost reduction in operations					
Increased profits					
Improved security and tracking of cars					
Reduced transit time					

Others (specify) ……

……...…….
……...…….

SECTION E: Operational Costs of Logistics Companies

E1. For selected benefits in above, what is the success rate on a scale of 1 – 5 (Key: 1- Strongly Disagree; 2 - Disagree; 3 - Undecided; 4- Agree; 5- Strongly Agree)?*Kindly tick only one box in each row*

The benefits of technology enabled base stations network operations costs			1	2	3	4	5
1	**Reduction of Transport Cost**	Gain more return cargo easily					
2		Complete your delivery route capacity					
3		Better allocation of vehicle space and/or tonnage					
4		Gain sufficient individual trucks/trailers with better price in safe way					
5		Hire other company vehicles easily and safely					
6	**Reduction of Inventory Management Cost**	Hire warehouse which is low cost					
7		Let warehouse to customer to increase utilization					
8		Gain outsources of whole warehouse service easily					
9		Gain whole warehouse businesses					
10	**Material Handling**	Gain outsources of low cost packing service easily and efficiently					
11		Gain packing businesses efficiently					
12		Gain more purchasing resources easily and efficiently					
13		Selling your idle service capacity fastly					
14		Exchange business opportunities in win-win situation effectively and efficiently					
15		Increase customer service satisfaction					

Others (specify)…….
……...…….

E2. For the measure(s) you have chosen above, what is the rate of success on a scale of 1 – 5 (with 5 being the most and 1 being the least)? *Rate measure(s) chosen only*

Measures Used		**1**	**2**	**3**	**4**	**5**
1	The transport unit cost of tonnage or cube come down					
2	High utilization rate and low turnover days of warehouse					
3	Logistics packing service cost is low and efficient					
4	Logistics procurement is convenient from more competitive customers					
5	Gain quality logistics business and customer service much easily and convenient					
6	More affordable alternative options of fix-assets allocations					
7	Improve organizational management in a effective and affordable way with sufficient outsources					

8	Other specific-					

Other (specific) ……
……...…….
……...…….

E3 What methods do you apply in the identification of key factors that influence operational cost of a logistics company?*Select one option only*

[ ] Industrial benchmarks and historical data
[ ] Logistics Company's profitability and comparative advantages
[ ] Customer feedback
[ ] Social commodity price index (CPI)
[ ] No methods used

Other (specific) ……
……...…….
……...…….

E.4 What benefits will accrue from KIFWA and EAOTA for development of logistics base stations network within technology?

……...…….
……...…….
……...…….
……...…….

Your time and Participation in the research has been highly appreciated.

END

APPENDIX II: INTRODUCTION LETTER FROM UNIVERSITY

Ole Sangale Rd, Madaraka Estate,
P.O Box 59857 00200, Nairobi, Kenya.
Cell: +254 703 414/6/7, Twitter: @SBSKenya
Email: info@sbs.ac.ke or vist **www.sbs.strathmore.edu**

Strathmore UNIVERSITY
BUSINESS SCHOOL

11th March 2020

To Whom It May Concern.

Dear Sir/ Madam.

RE: FACILITATION OF RESEARCH – PAUL BAOJUN WEN

This is to introduce Paul Wen who is a Master of Business Administration student at Strathmore University Business School, admission number MBA/97773/17. As part of our MBA Program, Paul is expected to do applied research and undertake a project. This is in partial fulfilment of the requirements of the MBA course. To this effect, he would like to request for appropriate data from your organisation.

Paul is undertaking a research paper on **"Effects of Information Technology Enabled Logistics Base Stations Network on Operation Costs of Logistics Companies – Case of Kenya"**. The information obtained from your organization shall be treated confidentially and shall be used for academic purposes only.

Our MBA seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and of practical value to your organization.

We appreciate your support and shall be willing to provide any further information if required.

Yours sincerely,

Caroline Tiara.
Manager – Graduate Programs.

Strathmore Business School is a Proud member of:
Association of African Business Schools AABS EFMD AACSB

APPENDIX III: CERTIFICATE OF ETHICS REVIEW FROM UNIVERSITY

Strathmore UNIVERSITY

21st April 2020

Mr Wen, Baojun
paul.wen@strathmore.edu

Dear Mr Wen,

RE: Effects of Information Technology Enabled Logistics Base Stations Network on Operational Costs of Logistics Companies: Case of Kenya

This is to inform you that SU-IERC has reviewed and **approved** your above research proposal. Your application approval number is **SU-IERC0716/20.** The approval period is **21st April 2020 to 20th April 2021.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-IERC.
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-IERC within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-IERC within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to SU-IERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://oris.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

f/: Dr Virginia Gichuru,
Secretary; SU-IERC

STRATHMORE UNIVERSITY INSTITUTIONAL ETHICS REVIEW COMMITTEE (SU-IERC)
21 APR 2020
TEL: +254 (0)703 034 000
P. O. Box 59857 - 00200
NAIROBI - KENYA

Cc: Prof Fred Were,
Chairperson; SU-IERC

Ole Sangale Rd, Madaraka Estate. PO Box 59857-00200, Nairobi, Kenya. Tel +254 (0)703 034000
Email info@strathmore.edu www.strathmore.edu

APPENDIX IV: RESEARCH LICENSE FROM NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **732130**

Date of Issue: **27/March/2020**

RESEARCH LICENSE

This is to Certify that Mr.. Baojun Paul Wen of Strathmore University, has been licensed to conduct research in Mombasa, Nairobi on the topic: Effects of Information Technology Enabled Logistics Base Stations Network on Operational Costs of Logistics Companies: Case of Kenya for the period ending : 27/March/2021.

License No: **NACOSTI/P/20/4504**

732130

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

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1. The License is valid for the proposed research, location and specified period
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7. The Licensee shall submit one hard copy and upload a soft copy of their final report (thesis) within one of completion of the research
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice

National Commission for Science, Technology and Innovation
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Mobile: 0713 788 787 / 0735 404 245
E-mail: dg@nacosti.go.ke / registry@nacosti.go.ke
Website: www.nacosti.go.ke

APPENDIX V: LIST OF LOGISTIC FIRMS IN KENYA

No	Company Name	No	Company Name
1	A - LINE TRANSPORTERS	48	AIR MENZIES INTERNATIONAL
2	A Nelson ltd	49	AIR SEA LOGISTICS LIMITED
3	A. O. BAYUSUF & SONS LTD.	50	AIRBAND CARGO FORW. LTD
4	A.M.A AL AMMARY LTD	51	AIRCOM CARGO LOGISTICS
5	ABBA MOTORS LIMITED	52	AIRFREIGHT & LOGISTICS WORLD WIDE LTD
6	ABBAS TRADERS LTD	53	Airland Global Co. ltd
7	Abdalla Adam	54	AIRMARINE AND LAND TRADING LTD
8	ABDALLA OMAR	55	AIRWAGON CARGO MOVERS LIMITED
9	Abdulmuhaymin Enterprises	56	AIRWAGON CARGO MOVERS LTD
10	ABER PAUL LIMITED	57	AJMEET SINGH OSHAN
11	ABRAX TRANSPORT & LOGISTICS LIMITED	58	AKAMAI FREIGHT FORWARDERS LTD
12	ABSOLUTE FREIGHT & LOGISTIC LTD	59	AKL LOGISTICS LTD
13	ACCELER GLOBAL LOGS. LTD	60	Al Kamar
14	ACCESS AFRICA LOGISTICS LIMITED	61	AL SHOG SYSTEMS LIMITED
15	ACCESS SHIPPING & LOGISTICS LTD	62	ALCORDIA LOGISTICS LIMITED
16	ACCESS SHIPPING AGENCY LIMITED	63	ALDETOS ENTERPRISES
17	ACCESS SHIPPING AND LOGISTICS LTD	64	AL-EMIR LIMITED
18	ACE FREIGHT LIMITED	65	Alex David
19	ACE FREIGHT LTD	66	Alex Rhondo
20	ACTIVE FORWARDERS LTD	67	ALEXANDRIA FREIGHT FORWARDERS LTD
21	ACTS BUSINESS SYSTEMS	68	ALFOST ENTERPRISE LIMITED
22	ADAIR FREIGHT SERVICES	69	ALFRED KABURU
23	ADELCUS AGENCIES (K) LIMITED	70	Ali Samatar Hirsi
24	ADMIRAL CARGO CONCEPT LIMITED	71	ALIBHAI RAMJI (MSA) LIMITED
25	ADONAI TRADING & LOGISTICS LTD	72	Aligoa chandia Anthony
26	Adreemco enterprise	73	ALIMANN LOGISTICS LIMITED
27	ADROIT LOGISTICS LIMITED	74	ALKAMAR TRADING LTD
28	ADROIT LOGISTICS LTD	75	ALL FREIGHT LOGISTICS LIMITED
29	AERO MARINE CARGO SERVICES LIMITED	76	ALL SCOPE LOGISTICS LTD
30	AEROPATH KENYA LTD	77	Allan Madonye
31	AFFAIRS AFRIQUE LTD	78	ALLARAKHIAA HAULIERS LTD
32	AFRICA DIRECT LTD	79	ALLFREIGHT FORWARDERS
33	AFRICAIR MANAGEMENT & LOGISTICS	80	ALLIANCE LOGISTICS
34	AFRICALINK FORWARDERS LIMITED	81	Alliance Logistics Ltd
35	AFRICAR LOGISTICS LIMITED	82	Allied Services and logistics Limited
36	Afrik Cargo Network	83	ALLPORTS KENYA LIMITED
37	AFRIQFREIGHT SERVICES LTD	84	Alma trading company Ltd
38	AFRIQUE SHIPPING SERVICES	85	ALMEO LOGISTICS LTD
39	AFROFREIGHT	86	ALPHA IMPEX LOGISTICS INT LTD
40	AGILITY LOGISTICS	87	Alpha Prime Logistics ltd
41	AGILITY LOGISTICS LTD	88	ALPHA WORLDWIDE FREIGHT LTD
42	AGRICOM HOLDINGS LTD	89	ALPINE TRADING LIMITED
43	AGS WORLDWIDE MOVERS LTD	90	ALUJO CO LTD
44	Ainu Shamsi Hauiliers Ltd	91	ALUJO ENTERPRISES
45	Ainushamsi Multiple Agencies Ltd	92	AL-YUM HAULIERS LIMITED
46	AIR CONNECTION LTD	93	AMARANTHA AGENCY LTD
47	AIR MARINE AND LAND TRADING LIMITED	94	AMAYA LIMITED

No	Company Name	No	Company Name
95	Amazing events	142	BATTAMA INVESTMENTS
96	AMAZON FREIGHT LTD	143	BAYLAND FREIGHT AGENCIES LIMITED
97	AMBERTO AGENCIES LIMITED	144	BAYUSUF FREIGHTERS LTD
98	Amerti Enterprise Limited	145	BE ENERGY (K) LTD
99	AMEY TRADING COM. LTD	146	Beatrice Tunu Buki
100	AMEY TRADING COMPANY LTD	147	BECOZI INVESTMENTS
101	anfarid enterprises	148	BEDI INVESTMENTS LTD
102	ANISA AGENCIES (K) LTD	149	BEDMAK HOLDINGS LIMITED
103	ANKEY FREIGHT F. LTD	150	BEE GEE KEY INV. LTD
104	APEX STEEL LIMITED	151	BEEKAY LOGISTICS LIMITED
105	apiwild ltd	152	Beeline Traders limited
106	APPLE LOGISTICS LIMITED	153	Begam General Agency ltd
107	APPLE LOGISTICS LTD	154	BellSouth Transport Limited
108	AQUILA GROUP LTD	155	BELYNE FREIGHTERS & LOGISTICS
109	ARAMEX KENYA LTD	156	BEMMS LIMITED
110	ARBITERS ENTERPRISES LIMITED	157	BENAIRS LOGISTICS LTD
111	ARBITERS ENTERPRISES LTD	158	BENELI FREIGHTERS LIMITED
112	ARGIL LIMITED	159	BENJOE LOGISTICS
113	ARMCO KENYA	160	Beracah Co Ltd
114	ARNET CONSULT E.A. LIMITED	161	BERAKAH ENTERPRISES LTD
115	ARNOP LOGISTICS COMPANY LIMITED	162	BESTFAST CARGO
116	Arysterico Muhinda	163	BESTFREIGHT CONVEYORS LTD
117	Aseo Ltd	164	BEVERLY TECHNOLOGIES LIMITED
118	ASHTON APPAREL EPZ LIMITED	165	BEYOND AFRICA FREIGHTERS LTD
119	ASIEL LOGISTICS LTD	166	BEYOND CHANCE FREIGHTERS
120	ASK CARGO LTD	167	BIG RIG TRANSPORTERS LTD
121	ASTOUNDING CLEARERS & FORWARDERS	168	BIG VENTURES ENTERPRISES LTD
122	ATACO FREIGHT SERVICES LIMITED	169	BIGWAYS LTD
123	Atlantic cargo services	170	BILDAD ENTERPRISES LIMITED
124	ATLANTIC LOGISTICS INTERNATIONAL LTD	171	Bilhan company limited
125	ATTIS LOGSOL LTD	172	BIMA CLEARING & FORWARDING LTD
126	AUGUSTUS KIBE	173	Birage transporters ltd
127	AZUSA LIMITED	174	BIRDWELL VENTURES LTD
128	B CLIMAX AFRICA LTD	175	BLACK STALLION SHIPPING SERVICES LTD
129	b&s group of companies	176	BLACKSTONE LOGISTICS LIMITED
130	BAABZ FREIGHT FORWRDERS LTD	177	BLACKSTONE LOGISTICS LTD
131	BABITO GENERAL CONTRACTORS AND SUPPLIERS	178	blessedkono ltd
132	BAHARI (T) COMPANY LIMITED	179	BLINK LOGISTICS LTD
133	BAHARI FORWARDERS LTD	180	BLITZ LOGISTICS LTD
134	Bahati Logistics	181	blue kiki african contractors
135	Bahati Logistics Limited	182	BLUE LIME LIMITED
136	BAKOL FREIGHTERS	183	BLUE OCEAN (EA) CO. LTD
137	BAKRIZ HOLDINGS LTD	184	Blue Ocean Cargo
138	BALR	185	BLUE PEARL LOGISTICS LTD
139	BAMBURI SHIPCHANDLERS (KENYA) LIMITED	186	BLUE SEAL FREIGHTERS LTD
140	BARGAABA BUSINES AGENCY LTD	187	BLUE STEEL TRANSPORTERS LTD
141	BATA SHOE COMPANY LIMITED	188	BLUEHILL INVESTMENTS LTD

No	Company Name	No	Company Name
189	BLUEPLUS FREIGHTERS LTD	236	CARGO (EA) LIMITED
190	BLUERANGE LOGISTICS LTD	237	CARGO CARE INT. LTD
191	BLUESTAR INTERNATIONAL LIMITED	238	CARGO CONVEYORS LTD
192	BLUETIDE FREIGHT LOGISTICS	239	CARGO MOVERS LIMITED
193	BLUEWAVE LOGISTICS LTD	240	CARGO NEST (K) LTD
194	BLUEWAVE LOGISTICS SERVICES LTD	241	CARGO NEWS EXPRESS LTD
195	BM LOGISTICS LIMITED	242	CARGO PLAN MOVERS & FORWARDERS LTD
196	BOLD STEPS SOLUTION LIMITED	243	CARGO QUEST INTERNATIONAL LIMITED
197	BOLLORE TRANSPORT & LOGISTICS LTD	244	CARGO WORLD CONVEYORS
198	BOLT SPEED CARGO FORWARDERS LTD	245	CARGO WORLD LOGISTICS.
199	BONFIDE C & F CO LTD	246	CARGODECK EA LIMITED
200	BOON TRADE AGENCIES LTD	247	CARGOMANIA LTD
201	BORABU FREIGHT & TRANSPORT SERVICES	248	CARGOMASTERS E.A. LTD
202	Bornvine Sikhonga Ochieng	249	CARGOMAX K LTD
203	BRACKET AGENCIES	250	CARGOMAX LOGISTICS LTD
204	Brainchild Technogroup	251	CARIBBEAN FREIGHT LIMITED
205	BRAN SAN C & F LTD	252	CARITAS MOMBASA CAM
206	BRANDED FINE FOODS LTD	253	CARMEL MOUNT FREIGHT (K) LIMITED
207	Brian Charlie	254	CARRAMURE INTERNATIONAL
208	Brian Mutuku	255	Carriers and Traders for East Africa
209	BRIDGE LAND INTERNATIONAL	256	CATESAM ENTERPRISES LTD
210	BRIONY LIMITED	257	CEBIT CARGO LTD
211	Bristol Cargo Management Limited	258	CEDA U LTD
212	BRITEX ENTERPRISES CO. LTD	259	CENTRAL CARGO SERVICES LTD
213	BROADVISION LOGISTICS LTD	260	Central Furniture Shop ltd
214	BROSWEST LOGISTICS LIMITED	261	Centre Four Logistics
215	BRYSON EXPRESS LIMITED	262	CHABS TRADE CONNECTIONS LTD
216	BUCHERO ENTERPRISES	263	CHAI TRADING COMPANY LIMITED
217	BULK TRADING (K) LTD	264	CHAIRMAN HOLDINGS
218	BURHANI EXPRESS LOGISTICS LTD	265	CHAIRMANS HOLDINGS
219	Buri Transporters Ltd	266	CHANDARIA INDUSTRIES LTD
220	Bushram Transporters LTD	267	CHANEL ATLANTIC LTD
221	Butogwa Co Ltd	268	CHAP CHAP CLEARING & FORWARDING LTD
222	BUYERS LOGISTICS LTD	269	CHARITIES LOGISTICS LTD
223	Byansheko Freight (Tanzania) Limited	270	CHARLETON AGENCIES LIMITED
224	Caliskan Company Limited	271	CHASEFAST LOGISTICS LTD
225	CALLFAST SERVICES LTD	272	CHEM LABS LTD
226	Calvin Keelan	273	CHERSHIRE FREIGHT LTD
227	CALWOOD LDT	274	CHETE AFRICA LTD
228	CANDID FREIGHTERS LTD	275	CHIBE FREIGHTERS LIMITED
229	Capgemini	276	christopher
230	CAPRICORN FREIGHT FORWARDERS LIMITED	277	CHRYSO Eastern Africa
231	CAPRICORN LOGISTICS KENYA LTD	278	CHWILE INVESTMENT LIMITED
232	CAR AND GENERAL LTD	279	Cipro Logistics
233	CARE LOGISTICS KENYA	280	CIS HAULIERS LIMITED
234	CARES CLEARING & FORWARDING CO. LTD	281	CISS SOLUTIONS-KIGALI RWANDA
235	CARGILL KENYA LIMITED	282	CLARENCE ENTERPRISES LTD

No	Company Name	No	Company Name
283	Client Buzness (T) Ltd	330	DAP LOGISTICS LIMITED
284	COAST PROFESSIONAL	331	DAP LOGISTICS LTD
285	Coast Professional Freighters Limited	332	DAR EXPRESS ZAMBIA LTD
286	COLLINS & TIFFANY LIMITED	333	DAVELINE NETWORK CO.,LTD
287	COMEXAS AFIQUE	334	DAVELINE NETWORK COMPANY LIMITED
288	COMEXAS AFRIQUE	335	DAVIS & SHIRTLIFF
289	COMFY LOGISTICS LTD	336	DAVKIT ENTERPRISES LIMITED
290	Company1	337	DAVMAT COMPANY LTD
291	COMPLAST INDUSTRIES LTD	338	Day To Day Ventures
292	CONKEN CARGO FORWARDERS LIMITED	339	DB SCHENKER LIMITED
293	CONNEXIONS LOGISTICS KENYA LTD	340	DECCAN FREIGHT LOGISTICS
294	Consumasters East Africa Limited	341	DECCAN FREIGHT LOGISTICS LIMITED
295	CONTINENTAL FREIGHTERS LTD	342	DEEPMARK CARGO LTD
296	CONTINENTAL LOGISTICS NETWORK LTD	343	DEKAM FREIGHTERS LIMITED
297	CONVENTIONAL CARGO CONVEYORS LTD	344	DELFAST LOGISTICS
298	CONVERGE MOVERS	345	Deligent Supply Chain Ltd
299	COPANA LIMITED	346	DELITE LOGISTICS LTD
300	CORNERSTONE LTD	347	DELLAW KENYA LIMITED
301	Coronary Supliers Ltd	348	DELMONTE KENYA LIMITED
302	CORONET CARGO LTD	349	DEL-RAY CARGO SERVICES LTD
303	CORPORATE AVIATION LTD	350	DELTA CARGO CONNECTIONS
304	CORPORATE LEGENDS LTD	351	DELTA EXPRESS LIMITED
305	CORRUGATED SHEETS LIMITED	352	DELTA HANDLING SERVICES LTD
306	COSMOS INT. LOGISTICS LTD	353	DEMOLINES FREIGHT LOGISTIC INT'L LTD
307	CRISPOL E.A LTD	354	Demousrshiplines
308	CRISPOLL EAST AFRICA LTD	355	DENALI LOGISTICS LIMITED
309	CROSS BORDER CARGO LTD	356	DERRICKSON SYSTEMS LIMITED
310	CROSS BORDER NETWORKS LTD	357	derwel enterprises
311	CROSS OCEAN LIMITED	358	DESTINY CONVERYORS
312	Crosscountry Hauliers Ltd	359	DESTINY FREIGHT SERVICES LTD
313	CROWN INDUSTIRES LTD	360	DHANUSH FORWARDERS (K) LTD
314	CRUCIAL CARGO MOVERS	361	DHANUSH FORWARDERS K LIMITED
315	CULZENBERG FORWARDERS LTD	362	DHILLON HAULIERS LIMITED
316	CYKA SHIPPING& LOGISTICS EAST AFRICA LTD	363	DHL GLOBAL FORWARDING
317	Dacoms Investments Limited	364	DHL WORLDWIDE EXPRESS (K) LTD
318	DAHIRAAN	365	DIAMOND EXPRESS LIMITED
319	DAHLA (K) LIMITED	366	Diasco Limited
320	DAKTUR FREIGHTERS LTD	367	Didycom Transporters
321	DALSAN FREIGHTERS LIMITED	368	DIGITAL CARGO FORWARDERS LTD
322	DAMASA FREIGHT FORWARDERS LTD	369	Digital Magix Company
323	DAMEY ENTERPRISES LIMITED	370	DIKENS LOGISTICS LTD
324	Damey Trading Co.LTD	371	DIRECT WHEELERS EXPRESS LTD
325	Damey Transportation Company	372	DIVERSE CARGO MARINE & AIR C&F SERVICES
326	DANJAM INVESTMENTS COMPANY LIMITED	373	DL Group
327	DANOSH CARGO CONVEYORS	374	DODHIA PACKAGING LTD
328	DANROS (K) LTD	375	Dodoma Transport Agency Ltd
329	DANSAF LOGISTICS	376	DODWELL & COMPANY (EA) LTD

No	Company Name	No	Company Name
377	DON SIMON LIMITED	424	EREMO STORES LTD
378	DONNELLY MOSE	425	Eretz Supplies
379	DORIC ENTERPRISES	426	ERIKAH MARITIME SERVICES LIMITED
380	DORTAL SERVICES LTD	427	ERI-KENYA LIMITED
381	DOSHI & COMPANY(HARDWARE) LIMITED	428	ERI-KENYA LTD
382	DOTCOM CONSULTANTS LIMITED	429	ESRI STAR LIMITED
383	Doves	430	ESTHAL LOGISTICS LIMITED
384	DRENAL ENTERPRISES LIMITED	431	ESTON DIAMOND LOGISTICS
385	DSV AIR AND SEA LIMITED	432	EUGFAVOUR LOGISTICS SOLUTION LIMITED
386	DUKE EXPRESS E.A LTD	433	Eunique Timberland Enterprises ltd
387	DUNIYA FORWARDERS LTD	434	EUNITE PRIDE K LTD
388	DUPLEX FORWARDER LIMITED	435	EURO MARINE LOGISTICS
389	DUTY LOGISTICS LIMITED	436	EURO ONE KENYA
390	Dylan Niyonzima	437	Eusham Enterprises Ltd
391	DYNASTY FREIGHT AND LOGISTICS LTD	438	EVANS OTIENO
392	EAGLE MIGHT LOGISTICS	439	EVERLAST ENT. LTD
393	EAST AFRICA CARGO LOGISTICS LTD	440	EVERSTAN FREIGHT AND LOGISTICS CO LTD
394	EAST AFRICAN CHAINS LTD	441	EXCELLENT LOGISTICS
395	East African Online Transport Agency	442	EXCELLENT SERVICES FREIGHTERS LIMITED
396	EAST GLOBAL LOGISTICS (K) LIMITED	443	EXCESS AUTO LIMITED
397	East Juja Enterprises	444	Excess auto ltd
398	EATON ENTERPRISES	445	excess luggage limited
399	EBMAR INVESTMENTS COMPANY LTD	446	EXPIDITE LOGISTICS LTD
400	ECHKEN AGENCIES	447	EXPOLANKA FREIGHT LTD
401	Eco transport limited	448	EXPORT CONSOLIDATION SERVICES
402	ECS LOGISTICS K LIMITED	449	EXPORT TRADING LTD
403	ECU WORLDWIDE (K) LTD	450	Exportex Company Ltd
404	Edam Enterprises Ltd	451	EXPRESS KENYA LTD
405	EDISA HOLDINGS (K) LIMITED	452	Express Shipping and Logistics E.A. Ltd
406	Edkan Enterprises	453	Expressman logistics ltd
407	Edson Conveyors Limited	454	Extramile transporters ltd
408	ELDOCOM AUTO SPAES LIMITED	455	EYEBLINK FREIGHT MANAGEMENT
409	Elie Petroleum Limited	456	FAIDA CARGO SERVICES LTD
410	Eline Cargo	457	FAIR LOGISTICS AGENCY LIMITED
411	Elisther Company Limited	458	FAIRWAYS CONSOLIDATORS
412	Elivir Transporters	459	FAMO FORWARDERS LIMITED
413	Elliston K. Ltd	460	FANTASH FREIGHTERS & LOGISTICS
414	ELMON AGENCIES LTD	461	FARIHMA TRADING COMPANY LIMITED
415	Elsharkawy Maritime & Logistics Co	462	Fasam Limited
416	EMASA KENYA CLEARING & FORWARDING LTD	463	FASMU FREIGHT FORWARDERS LIMITED
417	EMERALDS AGENCIES LTD	464	FAST FLEET LTD
418	EMOTEL KENYA LIMITED	465	FAST TRANSIT LINE KENYA LIMITED
419	EMPIRE LOGISTICS SERVICES LTD	466	Fast truck globe logistics limited
420	ENCARTAR AND RAPID GROUP LTD	467	FEDERAL TRANSPORT & LOGISTICS LTD
421	ENERLOG LIMITED	468	FELIBEN IINTERNATIONAL LTD
422	Entebbe Poultry Farm	469	Feliben International Ltd
423	EQUIRAK LOGISTICS LTD	470	Felix Mwanza

No	Company Name	No	Company Name
471	FEMCO INVESTMENTS	518	GALAXY LOGISTICS LIMITED
472	FERIDA ENTERPRISES	519	Galco Logistics & Transport Limited
473	FIBER FREIGHT FORWARDERS	520	GALLION LOGISTICS
474	FILIKEN TRANSIT FORWARDERS LIMITED	521	Ganatra Parcel Services Limited
475	FILMLINE LTD	522	GARDEN FREIGHT LOGISTICS LTD
476	FINANMARK AFRICA LTD	523	GASPY ODUKE
477	FIRSTHAND CARGO HANDLERS LTD	524	Gateway Marine Services Limited
478	Fixnet Consulting	525	GATEWAY MARINE SERVICES LTD
479	Flash relocation and storage.	526	GATWAN ENTERPRISES LTD
480	Fleet Commercial Limited	527	gavas company limited
481	FLEET FREIGHTERS LTD	528	GAYLIE LINKS SUPPLIES LTD
482	FLEXUS LOGISTICS (T) LTD	529	GEFSONS CLEARING & FORWARDING
483	FLOWEPORT LOGISTICS (K) LTD	530	GEMINI GLOBAL EXPRESS
484	FLOWERWINGS EXPRESS (K) LTD	531	GENERAL CARGO SERVICES LIMITED
485	FLYING EAGLE LIMITED	532	GENERAL FREIGHTERS LTD
486	FOAM MATTRESS	533	GENUINE FREIGHT SERVICES LIMITED
487	FOBROS INVESTMENT CO. LTD	534	Geoff Bright
488	FOCUS INITITIVES IMPORT	535	GEOMAX TRANSPORTERS
489	FOOD CHAIN (E.A) LTD	536	GEOMWA EXPRESS CARGO LTD
490	Fopapho construction aand logistics limited	537	GEORINE AGENCIES LTD
491	Forwardair Ltd	538	Gerson Logistics
492	FOX INTERNATIONAL LOGISTICS LTD	539	GEX LOGISTICS SOLUTIONS KENYA LIMITED
493	FRAMIC CARGO AGENCIES LTD	540	GIANT QUICKTEAM SERVICES CO LTD
494	FRANCIS MWAKINA	541	GIBRON LIMITED
495	FRANK & GEOFFREY CARGO LTD	542	GIFCO KENYA LIMITED
496	Fredrick korir	543	Gigantic Entrerprices
497	Fredrick Nzau Sammy	544	Gilo O K
498	FREIGHT COMMANDOS LTD	545	GIRAFFE FORWARDERS LTD
499	FREIGHT CONSULTANTS LTD	546	Givan logistics
500	FREIGHT FORWARDERS (K) LIMITED	547	GLADIN LOGISTICS (K) LIMITED
501	Freight Forwarders Solutions Ltd	548	GLINTER LOGISTICS LTD
502	FREIGHT IN TIME LTD	549	GLOBAL BUSINESS COMMANDERS LTD
503	FREIGHT POWER LOGS. LTD	550	GLOBAL CARGO MOVERS LIMITED
504	FREIGHT REACH SERVICES	551	GLOBAL FREIGHT LOGISTICS LTD
505	FREIGHT REACH SERVICES LTD	552	GLOBAL REACH LOGISTICS LTD
506	FREIGHT SOLUTIONS	553	GlobalFreight Logistics Ltd
507	FREIGHT WINGS LTD	554	GLOBISTICS FREIGHT FORWARDERS LIMITED
508	FREIGHTCARE LOGISTICS LIMITED	555	GLOGISTIK VENTURES
509	FREIGHTSORE AGENCIES LTD	556	Glowball logistics Limited
510	FREIGHTWELL EXPRESS LIMITED	557	GMK EAST AFRICA LIMITED
511	FRESH GLOBAL LOGISTICS LTD	558	GODMAG TYRES & TRANSPORTERS
512	FREVA LOGISTICS SERVICES	559	GOLDEN FREIGHT SERVICES LIMITED
513	FRONTIER LINKS CO.LTD	560	GOLDMAN LIGISTICS LTD
514	FY SIMBA SHIPPING AGENTS LIMITED	561	GOLDWELL FORWARDERS LIMITED
515	G.N CARGO KENYA	562	GOOD FREIGHT INTERNATIONAL CO. LTD
516	Gaal merchants ltd	563	GOODMAN INTERNATIONAL LTD
517	GACHANJA MUHORO & SONS LTD	564	Goods on land transporters. C/o Goodland farm and housing development ltd

No	Company Name	No	Company Name
565	Graben 4PL	612	ilink trucking company limited
566	Grandbloom company limited	613	Imasa enterprises
567	GRANTOH LOGISTICS LTD	614	IMPERIAL AFRICAN AGENCIES LTD
568	GREATSPAN MARITIME SERVICES LIMITED	615	IMPERIAL CARGO INTERNATIONAL
569	GREEEN WORLD LOGISTICS INTERNATIONAL LTD	616	IMPERIAL CARGO INTERNATIONAL LIMITED
570	Green Systems Africa Ltd	617	IMPEX FREIGHT LTD
571	GREENBELT LOGISTICS LIMITED	618	IMPEX LOGISTICS
572	GREENLEAF TRADING COMPANY LTD	619	IN TIME FORWARDERS LTD
573	GUDADE LOGISTICS LIMITED	620	INCOTERMS LOGISTICS SOLUTIONS LIMITED
574	GUETH ENTERPRICES LIMITED	621	INCREDIBLE SOLUTIONS LTD
575	GULF CROSS LTD	622	INDEX CARGO LOGISTICS
576	GURO COMMUNICATION LIMITED	623	INDEX CARGO LOGISTICS LTD
577	H. A. Basmer Transporters Limited	624	INDIAN OCEAN FREIGHTERS (EA) LTD
578	HABO AGENCIES LIMITED	625	INDUS LOGISTICS LD
579	HAMBUFREIGHT SERVICES LTD	626	INFAMA LIMITED
580	HAMDI INTERNATIONAL LTD	627	INLAND AFRICA LOGISTICS LIMITED
581	HANDY AIRCARGO LIMITED	628	Insight analytic ltd
582	HANGOOL INVESTMENT GROUP LTD	629	INSPIRE AFRICA LOGISTICS LTD
583	HANIF MOHAMED LTD	630	INSPIRE CARGO LOGISTICS LTD
584	HANSOL LOGISTICS (K) LTD	631	INSTA PRODUCTS EPZ LTD
585	HAPPYWORLD FREIGHTERS	632	INSTANT FREIGHT FORWARDERS LTD
586	HARLS CARGO LOGISTICS LIMITED	633	INSTANT SOLUTIONS
587	Harman	634	integra supply chain solution
588	HARRYCARGO FREIGHTERS LTD	635	INTEGRA SUPPLY CHAIN SOLUTION LIMITED
589	HASINA ALI MOHAMED	636	INTER AFRICA HAULAGE SERVICES LTD
590	HASMAD CARGO LIMITED	637	INTER LOGISTICS LTD
591	HASS PETROLEUM (K) LTD	638	INTERCAPE FREIGHT CO LTD
592	HEME FREIGHTERS	639	INTERCITIES FREIGHT & SHIPPING LTD
593	HENATULLAH BROTHERS	640	INTERFACE AGENCIES LIMITED
594	HEROS COMPANY LIMITED	641	INTERFACE LOGISTICS PROVIDERS
595	HG INTERNATIONAL FREIGHT CARRIERS LTD	642	INTERGRATED LOGISTICS CO. LTD
596	HI- TECH IMPEX LTD	643	INTERKEN ENTERPRISES
597	HIGHLANDS FORWARDERS	644	INTERNATIONA COMMERCIAL CO. LTD
598	Higsade Transporters Company Limited	645	INTERNATIONAL FOREIGN TRADE CO. LTD
599	HIMA FREIGHT FORWARDERS LTD	646	Interplanet Logistics Ltd
600	hiram	647	INTERSCOPE AIRMARITIME LOGISTICS LTD
601	HOMELAND FREIGHT LTD	648	INTERSPEED EXPRESS LTD
602	HOMELINE CONSOLIDATION SERVICES LTD	649	INTERSPEED LOGISTICS LTD
603	Homeview Adventures Limited	650	INTIME FREIGHT CARGO LTD
604	Honesty Air Cargo LLC	651	intra global freightltd
605	HORIZON CARGO	652	Intraspax Freighters Ltd
606	HORIZON EXPRESS CO. LTD	653	INTRASPEED ARCPRO KENYA LIMITED
607	HORIZON FREIGHT FORWARDERS LTD	654	IQVIA
608	Hummels Express	655	ISKASHI COMMERCIAL AND TRADING COMPANY
609	HYGIENE AFRICA LIMITED	656	ISLAND GLOBAL COMPANY LTD
610	IBRAHIM ABDI	657	ISMAIL ABDULKADER SAID
611	ICEBERG MOVERS ENTERPRISES LTD	658	ISSA CLEARING & FORWARDING LIMITED

No	Company Name	No	Company Name
659	ISUZU EAST AFRICA LIMITED	706	joseph kahura kaniaru
660	JAAV GLOBAL CARGO LTD	707	JOSEPHINE NDUTA NGUNDI
661	Jack Ratego Ouma	708	JOSHUA MAKABILA
662	jacob njogu githua	709	JOWAK AGENCIES LIMITED
663	JAGAN INVESTIMENT	710	JOWAKA SUPER LINKS LTD
664	JAGOMA LOGISTICS	711	JOWAM CARGO CO. LTD
665	JAHA KENYA LTD	712	Joyce B. Mirza
666	jakisa logistics	713	JOYLIZ GENERAL SUPPLIES
667	JAMBO LOGISTICS E.A.	714	JUATECH AGENCIES
668	JAMBO TRADERS LIMITED	715	JUBILEE C&F (E.A) LTD
669	JAMES FINLAY MOMBASA LIMITED	716	Juma Sharamo Budha
670	James Opere	717	Jumaan Transporters
671	James Waweru	718	Justus Karithi
672	JAMREKS ENTERPRISES	719	Justus Mecha
673	JAMUSA ENTERPRISES LTD	720	JUWELLS TRADING COMPANY LIMITED
674	JANE WANJIRU	721	K.B FREIGHTERS LIMITED
675	JASPA LOGISTICS	722	KAABA INVESTMENTS LIMITED
676	Jaspa Logistics Ltd	723	KADMUSS FREIGHT LOGISTICS LIMITED
677	JASPER FREIGHT LTD	724	KAISER AGENCIES LIMITED
678	JAY AND JAY LOGISTICS LTD	725	KALEMU FREIGHTERS LIMITED
679	JAYV COMPANY LIMITED	726	Kalpataru Power Transmission Ltd.
680	JEDIMA TRADE AGENCIES LTD	727	KAMANGA FREIGHT SERVICES LTD
681	JEMI FREIGHT LTD	728	KAMPAJA JUBA FREIGHTERS LTD
682	JEMI FREIGHTS LIMITED	729	KAMWAN ELEGANT SOLUTIONS
683	JIHAN FREIGHTERAS LIMITED	730	KANKAM EXPORTERS LTD
684	JIJI EAST AFRICA LIMITED	731	KANNON C&F LTD
685	JIPE HOLDINGS LTD	732	KANNON CLEARING AND FORWARDING LTD
686	JIRES LTD	733	KANSEI CLEARING & FORWARDING CO. LTD
687	JIWANI IMPEX LTD	734	Karama Haidar Ahmed
688	JK CONTINENTAL LIMITED	735	KARICKO INVSTMENTS LIMITED
689	JKADS CO. LTD	736	KARSIS GLOBAL LOGISTICS LTD
690	JMK ENTERPRISES LIMITED	737	KASANG TRANSPORTERS
691	JOHAM MOVING ENTERPRISES	738	KASSAM HAULIERS LTD
692	John kinyanjui transporters ltd	739	KATE FREIGHT & TRAVEL LTD
693	JOHN MUCHWAT	740	KAWAISON INTERNATIONAL LTD
694	John Mungai Kiama	741	KAYS LOGISTICS
695	JOHN OMOLO MUCHWAT	742	KAZUNGU PETROLEUM ENTERPRISESS
696	John waweru mururia	743	KEARSLEY FREIGHT SERVICES LTD
697	JOKIVIEW GENERAL (K) LIMITED	744	KEIHIN MARITIME SERVICES LIMITED
698	jonah mumbya	745	KELRON FREIGHT LTD
699	JONERICS CARGO FORWARDERS	746	KELVIN AND HANNINGTON
700	JONPHIX FREIGHT SERVICES LIMITED	747	Kelvin thuo irungu
701	JOPALM CLEARING & FORWARDING LIMITED	748	KENAFRIC INDUSTRIES LTD
702	JOPUKA LOGISTICS	749	KENFREIGHT EA LIMITED
703	JORA LOGISTICS LTD	750	KENGAS LINK LTD
704	JORDAN FREIGHTERS LTD	751	KENIX LOGISTICS & TRANSPORTERS
705	Joscom Company ltd	752	KENKAL SHIPS & GENERAL CONTRACTORS LTD

No	Company Name	No	Company Name
753	KENMONT LOGISTICS LIMITED	800	Kosirai express ltd
754	KENNA RANCHING	801	KRB FREIGHT CO LTD
755	Kennedy Ochola	802	KRITKEN ENTERPRISE
756	KENNETH MBAYI	803	KS ROYAL ENTERPRISE
757	KENREVY CARGO CONVEYORS	804	KUEHE + NAGEL LIMITED
758	KENREVY CARGO LOGISTICS LIMITED	805	KYEMUKA INVESTMENTS & LOGISTICS
759	kensan africa holdings ltd	806	L&T
760	KENTAN CONNECTIONS LTD	807	LABORATORY & ALLIED LTD
761	KENTON FREIGHTERS	808	laeler marketing agencies
762	KENVILLA LOGISTICS LIMITED	809	lakeside auto rescue services ltd
763	KENYA BONDED WAREHOUSE COMPANY LTD	810	LANDBRIDGE FREIGHTERS LIMITED
764	KENYA DUTY FREE COMPLEX	811	LANDMARK PORT CONVEYORS LTD
765	KENYA GENERAL INDUSTRIES LTD	812	LANDRY
766	Kenya Haulage Agency Limited	813	Landry Ntahonsigaye
767	Kenya Promotions & Marketing Company (H) ltd	814	Landweave Logistics Limited
768	Kenya Ridge Works Ltd	815	Lanem Jafftich
769	Kenya Road Hauliers Ltd	816	LAPE HILLS LOGISTICS LIMITED
770	KENYA STATIONERS LIMITED	817	LAWRENCE MURATHE
771	KENYA TRADEX COMPANY LIMITED	818	LAXAT TRADERS LIMITED
772	KENYA VEHICLES MANUFACTURERS LTD	819	LEADSPECS LTD
773	KENYA WINE AGENCIES	820	LEADTIME CARGO LOGISTICS
774	KESA LOGISTICS LIMITED.	821	Lean Energy Solutions Ltd
775	KEVIAN KENYA LTD	822	LEENA APPARELS LTD
776	KEYNAUGHT LOGISTICS LTD	823	LEMCO FREIGHT FORWARD
777	KEYNOTE LOGISTICS LTD	824	LEMCO FREIGHT FORWARDERS
778	KEYUN HAULIERS LIMITED	825	LENCIN DISTRIBUTION CO. LTD
779	KEYWAVE LOGISTICS	826	LG Soft
780	KEYWEST LOGISTICS AGENCY LIMITED	827	LIBAAN LIMITED
781	KHALID MOHD SALIM	828	LIBERTY FREIGHTERS LIMITED
782	KIAMBA C & F LTD	829	LIFT CARGO
783	Kiarie Francis	830	Lil Madiba Enterprises
784	KIGATO LOGISTICS LTD	831	LILY LOGISTICS LIMITED
785	KIKUMU INVESTMENT	832	LIMUTTI HOLDINGS LIMITED
786	kimani kariuki	833	Lindi Construction and Supplies Ltd
787	KIMM FREIGHTERS (K) LTD	834	LINEAR EAST AFRICA AGENCY LIMITED
788	KIMNET AGENCIES LTD	835	LINK AFRIQUE KENYA
789	KIMU FREIGHT AGENCIES LTD	836	link freight logistics ltd
790	KIND LOGISTICS LTD	837	LINKAGE CONVEYORS LIMITED
791	kingdom world group ltd	838	LINKFREIGHT (EA) LIMITED
792	KINGS CARGO AGENCIES LTD	839	LINKON INVESTEMETS LIMITED
793	KIPKEBE LIMITED	840	LINO STATIONERS K. LTD
794	KISELI & KALEKYE LOGISTICS LTD.	841	LIVERCOT IMPEX LIMITED
795	KISUMU BREAKDOWN AND STORAGE SERVISES	842	LIZGA ENTERPRISES
796	KITAKA ENTERPRISES LTD	843	LLOYDS LOGISTICS LIMITED
797	kiyai transporters	844	Load Trailers (E.A) Ltd
798	KODAVI INVESTMENTS LIMITED	845	LOGENIX INTERNATIONAL
799	Kodiak Logistics Ltd	846	LOGISTIC FREIGHT LIMITED

No	Company Name	No	Company Name
847	LOGISTIC LINK	894	MARA SHABBA K LTD
848	LOGISTICS SERVICES LIMITED	895	MARACA ENTERPRISES
849	LOGISTICS SOLUTIONS LTD	896	MARAKIB FREIGHTERS LTD
850	LOGISTICS THREE SIXTY FIVE LIMITED	897	MARDAV LOGISTICS
851	Logitac Global Logistics	898	MAR-FRONTIER KENYA LTD
852	LOGWIN AIR & OCEAN K. LTD	899	MARGIE AGENCIES
853	Lolerz Enterprises Ltd	900	MARICHOR MARKETING SERVICES LTD
854	LONGRANGE TRADING	901	MARITIME FREIGHT LTD
855	LONGROAD LOGISTICS LTD	902	MARKENS FREIGHT LOGISTICS
856	LONGROCK LIMITED	903	MARKEVY AGENIES LTD
857	LONGROCK LTD	904	MARKRIECH (AFRICA) LIMITED
858	LOW SEA INTERNATIONAL AGENCIES LTD	905	MARKS ENTERPRISES LTD
859	Loyds Assets Limited	906	Martin & Nelson Logistics Ltd
860	Lucie	907	MARTIN BOGONKO
861	LULU LIMITED	908	MARTIN NJOGU KIMONDO
862	LUMIPEX INVESTMENTS LTD	909	MARUNI PRODUCTS COMPANY LIMITED
863	Lusidle Petroleum & Logistics LTD	910	MARYDAVID INVESTMENTS LTD
864	LYCHEEWOOD LIMITED	911	MARYMAC FREIGHT CO LTD
865	LYNKED LOGISTICS LTD	912	MASAI CARRIERS LTD
866	LYNX LOGISTICS LIMITED	913	MASCOT HOLDINGS LTD
867	M.J CLARKE LIMITED	914	MASTERPIECE COURIER S. LTD
868	MACA TRADING COMPANY LIMITED	915	MATE LOGISTICS - SKYPEX SERVICES
869	MACFREIGHT FORWARDERS CO. LTD	916	Matel Transporters
870	MACKENZIE MARITIME (EA) LTD	917	MATISNGBERG C&F
871	MACKENZIE MARITIME FORWARDERS LTD	918	MATRIX FREIGHT LOGISTIC
872	MACSIM CARGO SERVICES LTD	919	MATTAN TRANSPORT
873	MAGEEZ TRANSERVICES LIMITED	920	Mattano
874	MAGNATE LOGISTICS LTD	921	mattrix suppliers ltd
875	MAGNETIC KENYA LTD	922	Mavel enterprises
876	MAGNEX LIMITED	923	MAYA DUTY FREE
877	MAGOT FREIGHT SERVICES LTD	924	MAYA ENTERPRISE LIMITED
878	Mahdi Logistics	925	MBARAKI PORT WAREHOUSES (K) LIMITED
879	Mahmoud Magdy	926	MBEKO TRADING LIMITED
880	Main Maritime shipping Ltd	927	Mbukoni Logistics
881	MAK CARGO HANDLING SERVICES LTD	928	MCF KENYA LTD
882	MAKIMORA GENERAL SUPPLIES LTD	929	ME AND YOU LOGISTICS
883	MAKIWANI LOGISTICS LTD	930	Media Pearl Limited
884	MAKURIA TRANSPORT COMPANY LIMITED	931	MENENGAI OIL REFINERY LTD
885	MALC SHIPPING SERVICES LTD	932	MENHIR LIMITED
886	Mali World Limited	933	MENTAP RESOURCES FREIGHT LTD
887	MALI WORLD LTD	934	Mercedario Contractors Limited
888	Malison Transporters Co. LTD	935	MERCHANT TECHNICAL SERVICES
889	manasedistributors and wholesale ltd	936	MERCICO LIMITED
890	mango vission freighters limited	937	METEOR FREIGHT FORWARDERS LTD
891	MANGO VISSION FREIGHTERS LIMTED	938	METRO LOGISTICS
892	MANIZLE AGENCIES LIMITED	939	MF PORTABLES (K) LIMITED
893	MANUFACTURERS & SUPPLIERS LTD	940	MGK Mining Services LTD

No	Company Name	No	Company Name
1035	NEW WIDE GARMENTS KENYA EPZ	1082	PACMA INVESTMENT LTD
1036	NEXT SELECTION HOLDING LIMITED	1083	PAK PACIFIC LIMITED
1037	NGARA AND NGARA AFRICA LTD	1084	PALLET LOGISTICS LIMITED
1038	Nguku Products (2010) Ltd	1085	PALLET LOGISTICS LTD
1039	NIBAL FREIGHTERS LIMITED	1086	PALM FREIGHTERS LIMITED
1040	NICHOLAS KURGAT	1087	PALM FREIGHTERS LTD
1041	Nicole Kabaki	1088	PAMARIDE COMPANY LIMITED
1042	NILE HOLDINGS	1089	PAMOL CONNECTIONS
1043	Nixon Musau	1090	PAMU SERVICES
1044	NOASHS ARK ENTERPRISES	1091	PAN AFRICAN SYNDICATE LIMITED
1045	Nobert Kithinji Kiruki	1092	PANAFRICA LOGISTICS LIMITED
1046	NODOR KENYA EPZ KENYA	1093	PANAL FREIGHTERS LIMITED
1047	Norland Services (K) Ltd	1094	PANALPINA AIRFLO LTD
1048	Norman Machio	1095	PANTEL CHEMICALS LTD
1049	Northern King Transporter Limited	1096	PANWORLD LOGISTICS
1050	NORTHWEST KENYA	1097	pascal logistics international
1051	Nsaale Ivan Kalule	1098	PATANA ENTERPRISES LTD
1052	Nunguni General Store	1099	PATCO INDUSTRIES LTD
1053	NYAGAKA FORWARDERS LTD	1100	PAUL
1054	Nyoro enterprises limited	1101	PAUL GICHUKI KAMAU
1055	NZOIA FREIGHTERS LTD	1102	PAUL KARARI KIRIBA
1056	OCEAN PACIFIC INTERNATIONAL LTD	1103	PAUL MUNDIA
1057	OCEAN STAR GENERAL AGENTS	1104	PEDWIN LTD
1058	OCEANIC CARGO AGENCIES LTD	1105	PEERLESS TEA SERVICES LIMITED
1059	OCEANLINE FREIGHTERS LTD	1106	PEJON FREIGHT MOVERS LTD
1060	OCEANLINES FREIGHT FORWARDERS	1107	PELICAN HAULAGE CONTRACTORS LTD
1061	OCEANROCK LOGISTICS LIMITED	1108	PENTAGON LOGISTICS LTD
1062	OCEANWORLD LOGISTICS LIMITED	1109	Perfect logistics
1063	OGAKA FREIGHT LOGISTICS LTD	1110	Perseus Forwarders Kenya
1064	OKAMOTO FREIGHT SERVICES LTD	1111	PESOSI FREIGHTERS LIMITED
1065	Omwoyo Obaigwa	1112	Peter karanja
1066	ONE AFRICA LOGISTICS LTD	1113	peter kimani waweru
1067	ONE LINK LTD	1114	Peter Ntimba Kagarura
1068	ONE ON ONE LOGISTICS LTD	1115	PETJAN INVESTMENT.
1069	ONE TOUCH CARGO SERVICES	1116	PETROSA GENERAL CONTRACTORS LTD
1070	ONE TOUCH LOGISTICS LTD	1117	PETRUT FREIGHT FORWARDERS LTD
1071	ONGOING CARGO SERV. LTD	1118	PETRUT FREIGHT FORWARDRS LTD
1072	Onkar Hauliers Limited	1119	PHIL LOGISTICS CO
1073	ONROAD ENTERPRISE LIMITED	1120	Phil Logistics Company Ltd
1074	Onward Cargo System Company Ltd	1121	Philip Kasujja
1075	ONWARD CARGO SYSTEMS C. LTD	1122	Philsam Agencies Limited
1076	ONYX TRANSPORTATION LTD	1123	PHILSAM AGENCIES LTD
1077	OPTIMAX KENYA LTD	1124	Phimzal Logistics Limited
1078	OSERIAN DEVELOPMENT CO. LTD	1125	PICKET LOGISTICS LIMITED
1079	OTS Enterprises	1126	PILLAR FREIGHT FORWARDERS
1080	OZONE FREIGHT FORWARDERS LTD	1127	PINNACLE GROUP (K) LTD
1081	P.N.MASHRU LTD	1128	PINNACO LOGISTICS LTD

No	Company Name	No	Company Name
1129	PIVOTAL VENTURES	1176	RED ANCHOR FREIGHT LTD
1130	PLAINLANDS INTER FREIGHT LOGISTICS LTD	1177	REFCO FORWARDERS LTD
1131	PLAINS LOGISTICS LTD	1178	REGAL FREIGHTERS
1132	PLANSFREIGHT LTD	1179	REGENT FREIGHT SYSTEMS LTD
1133	POLO AUTOFREIGHT FORWARDERS LIMITED	1180	REGIONAL ENTERPRENEURS (K) LTD
1134	POLYGON LOGISITCS LTD	1181	REJEIBY CLEARING & FORWARDING LTD
1135	PORT CONVEYORS LTD	1182	Reka Zikamwe Uganda Ltd
1136	PORTAL CORPORATION	1183	RELAY CARGO SERVICES LTD
1137	PORTLINK LOGISTICS LIMITED	1184	RELI LINE TRANSPORTERS COMPANY LIMITED
1138	PORTWAY E.A. LTD	1185	RELIABLE CONCRETE WORKS LTD
1139	PORTWOXS CARGO FORWARDERS LTD	1186	RELIABLE FREIGHT SERVICES LIMITED
1140	POWER SOURCE ENTERPRISES LTD	1187	REMARC LOGISTICS
1141	Powersense Technologies Ltd	1188	REMARC LOGISTICS COMPANY LTD
1142	Prabhucom Limited	1189	REMOVAL GOODS SERVICES (K) LTD
1143	PRECISE LOGISTICS LTD	1190	RENAISSANCE LIMITED
1144	Premier prime limited	1191	RENEX GLOBAL LOGISTICS LIMITED
1145	PRIM CARGO LTD	1192	REPLAN CARGO HANDLING SERVICES
1146	Prince transporters and car hire services	1193	RESCUE TECH ENTERPRISES LTD
1147	PRINCIPAL FORWARDERS LIMITED	1194	REZA LOGISTICS LTD
1148	PRIORITY AIR EXPRESS LTD	1195	RIANAB LOGISTICS LIMITED
1149	PRIORITY LOGISTICS LTD	1196	RICHENS LOGISTICS LTD
1150	Prodigy Healthcare Limited	1197	Ricky Martin Datche
1151	PROVINCIAL CLEARING & FORWARDING	1198	RIFT CARGO HANDLING LTD
1152	PURA LOGISTICS LIMITED	1199	RIGE LIMITED
1153	QUAMILIFU	1200	RIOMA FREIGHTER LTD
1154	QUEENS CARGO INTERNATION LTD	1201	RIPE FREIGHT SERVICES LIMITED
1155	QUICK CARGO SERV. LTD	1202	RISING FREIGHT LTD
1156	QUICK MOVERS (K) LTD	1203	RISS Egineering Systems Ltd.
1157	QUICK SILVERLOGISTCS ENTLIMITED limited	1204	RITCHIE MWARINGA
1158	QUICKLINE INTERNATIONAL LIMITED	1205	ROADMASTERS LTD
1159	Quicksave Agencies Ltd	1206	ROB FREIGHT
1160	QUISSAN ENTERPRISES LTD	1207	ROBIAM CARGO FREIGHTERS LTD
1161	RABI AGENCY LIMITED	1208	Rogony Nicholas
1162	RADIANT LOGISTICS LIMITED	1209	ROLLING CARGO LTD
1163	RAHMA LOGISTICS LTD	1210	ROMARK FREIGHTERS LTD
1164	RAI PLYWOODS K LTD	1211	ROMAX FORWARDERS LTD
1165	Raihan Transport Ltd	1212	RONALD KIMUTAI
1166	Ramesh Bhut	1213	Ronald Koech
1167	RAMSFORD FREIGHT FORWARDERS LTD	1214	RORENE LIMITED
1168	RANK NETWORK & LOGISTICS LTD	1215	ROSMIK TRADING COMPANY LIMITED
1169	RAPAT FREIGHT KENYA LTD	1216	ROTO MOULDERS LTD
1170	RAPID KATE SERVICES LIMITED	1217	ROY TRANSMOTORS LIMITED
1171	RAY CARGO SERVICES LTD	1218	Royal Oilifield Logistics Services & Supplies Ltd
1172	Raychelle Masakha	1219	RUBIX LOGISTICS LTD
1173	REAL DREAM INT. LTD	1220	RUKANOTI WOOD DEALER LTD
1174	REALTIME CARGO LTD	1221	RUMAN LIMITED
1175	REALTIME FREIGHT PERFORMANCE LTD	1222	Ruman Logistics Limited

No	Company Name	No	Company Name
1505	UNITED CLEARING COMPANY LIMITED	1552	WESTON LOGISTICS LIMITED
1506	UNITED FREIGHT LOGISTICS	1553	WESTON LOGISTICS LTD
1507	UNITYCARGO&SUPPLIESLTD	1554	Weston Premium Investments
1508	UNIVERSAL FREIGHTERS LIMITED	1555	WETAA INVESTMENTS LTD
1509	UPESI FREIGHT LOGISTICS LIMITED	1556	WHARTON CONSULTANTS
1510	URGENT CARGO HANDLING LTD	1557	wickham bros co limited
1511	ushindi cargo services limited	1558	WICKHAM BROS COMPANY LTD
1512	UTEX FREIGHT SERVICES LTD	1559	WIGGLESWORTH EXPORTERS LIMITED
1513	UTILITY FREIGHT LOGISTICS LIMITED	1560	Wijo Group Ltd
1514	UTMOST FREIGHT MASTERS LIMITED	1561	WILBERT MBAKA
1515	Valtech	1562	WILCKO FREIGHT SERVICES LTD
1516	VANTAGE POINT C&F COMPANY LTD	1563	WILFRED BENGNWI
1517	VAST NETWORK LOGISTICS LIMITED	1564	WILJONES LOGISTICS LTD
1518	VENUS (K) LIMITED	1565	Willfreight Express Cargo services
1519	VERODAH FREIGHTERS & LOGISTICS LTD	1566	William Docherty
1520	VEROM CLEARING & FORWARDING COMPANY LIMITED	1567	WILLIMA ENTERPRISES LTD
1521	VIBGYOR ENTERPRISES LIMITED	1568	WILLING FREIGHT SERVICES LTD
1522	VIBGYOR FREIGHT SERVICES LTD	1569	WILLMAN FREIGHT AGENCIES
1523	VIBRASI ENTERPRISES LIMITED	1570	Wipro
1524	Victor Opolo	1571	WOLFENBERG INTERNATIONAL LTD
1525	VICTORIA INTERNATIONAL LOGISTICS LTD	1572	WONDER ARCH WORKS ltd
1526	VICTORY FREIGHT SERVICES	1573	WORLD CLASS ENT. CO.LTD
1527	VICTORY FREIGHTERS	1574	WORLD CLASS FREIGHT LOGISTICS LTD
1528	VILLESSY AGENCY	1575	WORLD TRADE FREIGHT LOGISTICS LTD
1529	VINEP FORWARDERS LTD	1576	WORLDNET FREIGHT LTD
1530	VISAN FREIGHT AGENCIES	1577	WORLWIDE MARIIME LOGISTICS LTD
1531	VISHAMMAH ENTERPRISES LIMITED	1578	WOW BEVERAGES LTD
1532	VISION ENTERPRISES LTD	1579	WYATT INTERNATIONAL LOGISTICS
1533	VISION TRANSPORTERS	1580	Wycliffe kisiero
1534	VISMO HAULERS (K) Ltd	1581	Wycliffe Omolo Agencies
1535	VITAGE WAREHOUSE AGENCIES LTD	1582	Y.A.MAHAMUD TRANSPORTERS
1536	Vmas Logistics Limited	1583	YAIGI INVESTMENTS LTD
1537	Wafalme Logistics & Transport Solutions LLC.	1584	Yaska Transporters Limited
1538	wahasso enterprises	1585	Yassin Y.A.M
1539	WAKI CLEARING & FORW. A. LTD	1586	YEAR 2000 FREIGHTERS
1540	WAKULIMA AGRIBUSINESS	1587	YEAR 2000 FREIGHTERS LTD
1541	Waldrons Logistics & Transport Limited	1588	YOLLA FREIGHTERS LTD
1542	Wallace Kamau	1589	Yonder Africa Limited
1543	WAMBUKA FREIGHTERS LIMITED	1590	YOUNG TRADERS LIMITED
1544	WANANCHI HARDWARE	1591	Zama Group Transport and Logistics Limited
1545	wanja makokha michael	1592	Zambia Cargo and Logistics Ltd
1546	WANSAR ENTERPRISES LTD	1593	ZAMIN ENTERPRISES CO LTD
1547	WARTON AGENCIES	1594	ZANAA FREIGHT LIMITED
1548	WATER FRONT ENTERPRISES	1595	ZEFT FREIGHTERS
1549	Watervale Investments Ltd	1596	Zenith Agro Commodities Limited
1550	WAY TO ASSOCIATES LIMITED	1597	ZENITHCREST LIMITED
1551	WESPO HARDWARE	1598	Ziad Trading Company Limited
1599	ZIGOLINK LOGISTICS SYSTEMS	1601	ZULA GLOBAL DEVELOPMENT COMPANY LIMITED
1600	Zoom Transporters	1602	Zulfikar hauliers limited