

**ELECTRONIC CARGO TRACKING SYSTEM AND
OPERATIONAL PERFORMANCE AT KENYA REVENUE
AUTHORITY AND ON TRANSPORTERS**

VIRGINIA N. KABIRU

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DECLARATION

I declare that this research project is my original work and that it has not been previously presented for a degree at the University of Nairobi or any other university.

Signed:

Date:

Virginia N. Kabiru

D61/63199/2011

Supervisor's Declaration

This research project has been submitted for examination with my approval as the University Supervisor.

Signed:

Date:

Mr. Ernest Akelo

Senior Lecturer,

Department of Management Science School of Business,

University of Nairobi

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DEDICATION

I dedicate this Research Project Report to my parents Mr. and Mrs. Kabiru and to my siblings Julie Kabiru, Joyce Kabiru and Jacob Kabiru, for their invaluable love and great desire to see me excel in higher academic heights. My sincere gratitude goes to you for your prayers, support and encouragement

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LIST OF ABBREVIATIONS AND ACRONYMS

EPZ	Export Processing Zone
KRA	Kenya Revenue Authority ECTS – Electronic Cargo Tracking
OPM	Operational performance management KPA - Kenya Ports Authority
SGR	Standard Gauge Railway CFS - Container Freight Stations,

ABSTRACT

Technology is at the centre stage in Kenya's long-term development goals this is evident especially in the national policy strategic goals known as vision 2030. Vision 2030 aims at transforming Kenya into an industrialized middle income that will enable the country to be able to develop and compete global with the other developing nations. The vision 2030 policy comprises of three key pillars: Economic; Social; and Political. The Economic Pillar aims to achieve an average economic growth rate of 10 per cent per annum and sustaining the same until 2030. To be able to achieve these goals national organizations are implementing systems that enable them to be able to participate in the achievement of these goals. One such system is the Electronic Cargo Tracking System-ECTs. This system was first introduced in the aviation industry and it was used for the tracking cargo that was moved by air, over time it has evolved and is now being used to track cargo that is being moved by road. The objective of the study was to determine the extent of implementation of the electronic cargo tracking system by both the transporters and by Kenya Revenue Authority, to determine factors that influence the implementation of electronic cargo tracking and operational performance at Kenya Revenue Authority and by the transporters and lastly to establish the challenges faced in the implementation of the system. This study adopted exploratory research design. A research questionnaire was used as a data collection tool with different officials at different stations country wide. Data analysis was done using descriptive statistics and the finding of this study reveals that the system has been implemented and it has a positive impact on operational performance both at KRA and also at transport organizations that have implemented the system. The research findings revealed that the major challenge in implementing the system is a slight disconnect between what the revenue collect expects and what the vendors have set-up, similarly the research reveals that IT infrastructure is key for the successful implementation of the system.. The study recommends both the transporter and Kenya Revenue Authority should be in constant communication for the system to work.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The world is opening up and with this has brought an increase in international trade. The rules of engagement trade-wise is therefore changing dynamically and with this increase the world is continues to take steps trade is supported and there is continuous growth world over. Electronic Cargo Tracking Systems (ECTs) have therefore been introduced to be able to facilitate fair trade and also enhance cargo security. This particular system is a Kenya Revenue Authority (KRA) initiative. The primary role of ECTs is not only to enhance national security but to also curb evasion of payment of duties and taxes and eventually maintaining the integrity of the supply chain. Dumping of goods in the market is also drastically reduced as the goods are tracked from one border point to another. The interests of the public sector are therefore catered to.

The interest of the private sector which are primarily to maintain their Standard Operating Procedures (SOPs) that include just-in-time deliveries, cost-effective logistics, and maintaining the integrity of goods are addressed by this system. The private is able to get a better Return on Investment (ROI). Research will be able to study the operational performance before and after implementation of the system. Based on the findings we will be able to establish if this particular infrastructure is indeed assisting the “Tax Collector” deliver on its mandate (Kihara, 2010). The process of information processing by the border officials and other intelligence agencies is currently quite taxing and the vulnerabilities associated with container stacking are also quite high. The introduction of real-time information processing

will enable information to be received and dealt with much faster and also decongest the clearing process. The long-term vision for the electronic cargo system as set by KRA is to develop a system that harmonizes and simplifies all the processes, so as to aid in the facilitation of the movement of cargo internationally, whilst assisting in the enforcement of Tax laws and maximizing on revenue collection (Musyoki, 2010).

1.1.1 Electronic Cargo Tracking

An Electronic Cargo Tracking System (ECTs) is a multi-tiered system developed to remotely monitor goods electronically while on transit, and controls as the goods move along the supply chain from source to destination. Monitoring of the movement of the cargo is done on a real time basis. Implementation is done using Radio Frequency Identification (RFID) and GPS/GPRS technology. It is a legal requirement to have all outbound trucks/vehicles, tankers and containers loaded with transit goods fitted with a tracking device for basic tracking and vehicle monitor. In addition to this the vehicle should be fitted with an electronic seal which reports the truck location and reports on all violations on a real time basis (Musyoki, 2010). In addition to this the system uses a series of features such as a virtual fence known as the geofence that is set-up along gazetted routes used by transporters carrying export cargo. The process starts with the collection of co-ordinates of the routes that the trucks will be using, this information is then stored. If the truck is driven off route, the system sends out geofence violations that are system generated.

The Electronic Seal operates on dual mode frequency, UHF 433.92 MHz for long range communication and LF 125 KHz for short range communication. Communication is channeled with the use of a reader in the truck's cabin is through the UHF communication channel (Huanye, 2010). It should be noted that the electronic cargo tracking system (ECTS) is an initiative whose primary objective is to

assist Private and Public Sector organizations in the Corridor States to manage and monitor the process of movement of their general, dry and wet bulk cargos and bulk liquids cargos in effective and efficient manner and in real-time with an aim of reducing the cost of doing business in the region.

Electronic cargo tracking services provide among other services, the ability to view your vehicles on a realtime basis and remote and control in the movement of local and international cargo (Kihara, 2010). The installation of the electronic cargo tracking system has been made mandatory in Kenya and its neighbours both Tanzania and Uganda. The main focus for this has been to help in various activities such as revenue collection, improve how cargo is handled and overall assisted to enhance the business environment of the respective countries' and their trade routes. This is being spearheaded by the state-owned tax collection agencies and the improved custom duty collection has not only enabled a reduction of import tax in some instances, but has also made it possible for governments to reduce tax on cargo (Oirere, 2015).

To be able to offer these services organizations must obtain a license from Kenya Revenue Authority. The revenue authority is charged with the responsibility of vetting organizations that are interested in offering the service. The Freight Watch International reported that countries in East Africa are on the list of spots about the raise in cargo theft and this is quite a challenges facing their operations. Cargo theft is ranked together with corruption incidences, increase in crime and violence, poor infrastructure, weak governance, political instability and social unrest, (Griffin, 2015). The use of this technology will therefore assist Kenya's customs processes so that trucks entering Kenyan territory are equipped with GSM/GPRS communication and this is an advantage to both governments and institutions (Tibbs, 2015). For the

system to be fully functional there are three important components that have to be set-up in place by transporter that is moving the cargo from the entry point to the exit point at our borders.

In summary the design of the system is a three part component which includes movement visibility system whose components include the global positioning system receiver for relaying vehicle and cargo co-ordinates that give the location of the truck and availing it to the system user via the GSM/GPRS modem in real time down to five seconds. Secondly an active radio frequency identification reader, for interrogating the electronic seals to establish truck status every short interval and relay this information, status alerts and events to the user in real time via the GSM/GPRS modem. At the beginning of every journey the seal is armed and at the end of the journey when the cargo arrives to its destination the seal is disarmed (Sorir, 2010).

1.1.2 Operational Performance

Operational performance is defined as the administration of business practices with an to create a highly efficient organization. Operations management is majorly focused on the processes involved in the conversion of materials and labor into goods and services as efficiently as possible (Mazumdar, 2014). Operations Management is defined as the art or the management science of designing, controlling and executing the most efficient process to achieve a desired output. It entails the formulation and coordination of activities that ensure that specific processes are carried out in order so as to achieve results (Dudyala, 2015). It is important that the systems put in place are popularized by their productivity as illustrated in the Japanese industry that aim at reduction costs and improve workflows by scheduling materials (Schermerhorn, 1996).

The element of cost needs to be looked into and all activities geared towards cost cutting. The initial set-up of the system is quite expensive as it will require purchasing of hardware, software and a control room set to be able to monitor the vehicles on a real time basis. Ferdows and de Meyer (1990) state that there are operational capabilities that can enhance one another, and hence improve operational excellence to be built in a cumulative fashion. The starting point is excellence in quality, excellence that is dependable and takes into consideration the element of cost.

Emphasis is placed on efforts that enhance quality whilst commencing efforts to build dependability. Similarly emphasis should be placed on flexibility as actions of quality and dependability continue to be built upon. Finally efforts that are channeled towards cost reduction take place concurrently with the continuing efforts to improve quality, dependability and flexibility. Operations management scholars have rejected the trade-off concept. The scholars have noted that organizations' ability to perform better than its competitors has multiple dimensions. These organizations are seen to have better quality products and services, they are viewed to be more dependable and have a faster response to the dynamic changes in the markets of operations and lastly lower costs. The scholars claim that operational capabilities developed in this manner are more likely to endure than the organizations' whose individual capabilities developed at the expense of other organizations.

Operations (Skinner, 1985) could become a 'Formidable Competitive Weapon' this is only applicable if the function of operational performance was allowed to play a full strategic role in the organization. There are however limitations to this due to inappropriate expectations from the rest of the organization and also the organization's attitudes towards operations. Similarly in view of the four-stage model

(Hayes & Wheelwright, 1984) it can be seen that there are different categories formulated based on attitude towards operations. The research will focus on the measures set in place for the Electronic Cargo Tracking system so as to ensure that we efficiently meet the mandate with the view to improvement on revenue collection.

The findings in this research will showcase how the system is able to “seal” the existing loopholes that lead to the authority losing to the tune of millions of shillings in revenue. From a service perspective, in this case the tracking of the cargo from exit point to the destination it is possible to identify two critical dimensions of service performance. The first one is performance in relation to operational elements and in the same measure performance in relational operational elements Stank et al. (1999). Both these elements consist of activities carried by providers of the service which contribute to productivity, efficiency, and consistent quality. In this particular case efficiency signifies a level of performance that describes a process that uses the lowest amount of inputs to create and in turn it has the greatest amount of outputs.

Efficiency is a measurable concept that can be determined by the ratio of useful output to total input. All cargo in the country will be easily accounted for whether it is at the port ready for departure to its destination or it is at a bonded warehouse. With this in place duties and taxes chargeable will be levied and easily collected. Book keeping will be made easier as the system is used to log information and this information is made available on this platform across the country. All updates and amendments on the system will also be updated on a real time basis making it easier to share information in a much faster way. The system is able to keep tabs on transit cargo along the Northern Corridor countries of Kenya, Uganda and Rwanda.

Regionally the initiative will present a single platform for transacting and taking part in international trade activities within the regional block at large. It is a requirement for all cargo importers, cargo exporters, authorized and appointed clearing agents and cargo transporters conveying goods under customs control to install their trucks with ECTs eventually leading to the phasing out of tamper-prone seals and cumbersome practices such as customs physical escorting cargo from one border to the other (Amengol, 2004).

Transporters get to share in some of the rewards that come with this system being installed such as the transit goods license fees being waived. Similarly the transporters can be able to monitor their cargo on a real time basis and therefore improve on service delivery to their own clientele. Statistics collected by the Kenya Ports Authority (KPA) showed that traffic for goods on transit to the port of Mombasa which is the main hinterland of the East African region significantly been on the raise from 7.19 million tonnes in year 2014 to 7.66 million tonnes in the year 2015 this illustrates an 8.2 per cent growth (Odhiambo, 2016).

ECTs play such a critical role in curbing dumping and theft of goods in the regional block thereby sealing revenue loopholes. Safety of goods coming into the Kenyan market will be enhanced as the “black market” slowly closes down. Substandard goods will not be poured easily into the market and the consumer will be safe. Use of the system does not only benefit the tax collector and the consumer but it also ensures that a commercial transport rips benefits from its use. The transport is able to monitor the goods they ferry on a real-time basis. This will lead to less penalties on late deliveries or no deliveries and necessary measures can be taken to ensure that the cargo they are transporting gets to their clients intact and in time.

1.1.3 Kenya Revenue Authority

The Kenya Revenue Authority (KRA) was established by an Act of Parliament, Chapter 469 of the laws of Kenya, which became effective on 1st July 1995. The Kenya Revenue Authority was formed to help the government of Kenya in tax collection such as customs tax, income tax as well as value added tax on selected goods. The Authority is charge with the primary responsibility of collecting revenue on behalf of the Government of Kenya. Kenya Revenue Authority's mission is to build trust through facilitating compliance policies with tax and customs legislation. The authority's vision is to facilitate Kenya's transformation through innovative, professional and customer-focused tax administration. Their mission and vision is supported by a set of core values that include, trustworthiness, ethics, competence and helpfulness.

Key roles played by Kenya Revenue Authority include assessment, collection, administration and enforcement of regulation relating to revenue. In summary some of the roles that Kenya Revenue Authority plays in the economy of Kenya that are relevant to this research include the elimination of tax evasion by simplifying the procedures and streamlining the same procedures with an aim of improving tax payer service and education. Promotion of professionalism and eradication of corruption amongst its team members by compensating them adequately so that the institution can be able to attract and retain professionals who are upright and uphold ethical standards whilst carrying out their duties, is another mission of the authority (Act of Parliament, Chapter 469 of the laws of Kenya, 1995).

KRA in Kenya uses an integrated tax management system to provide effective and efficient services to Kenya taxpayers. The integrated tax management system used by Kenya Revenue Authority usually gives a single view of all tax payers' details as

well as the tax payment they are obligated to. The integrated tax management system was introduced in Kenya after the introduction of the domestic tax department by Kenya Revenue Authority. The Kenyan taxing system has led to improved services within the revenue collection unit. Since the inception of the Kenya Revenue Authority, the government of Kenya has been able to provide much needed services to citizens of Kenya such as provision of free primary education in Kenya. The Kenya local taxes collected provide for over 90% funding of proposed budgets annually (Wamugunda, 2014).

Restoration of economic independence and sovereignty of Kenya through the elimination and eventual eradication of perennial deficits from the national budget deficit through the creation of structures that maximize revenue collection is also one of the authority's roles. Protection of industries locally so as to nurture and create an environment for economic growth through the effective administration of laws that are tax related and enhance trade.

The authority is a 'watchdog' for the Government agencies through the control of exit and entry points with the aim of ensuring that prohibited and illegal goods do not pass through the Kenyan borders (Act of Parliament, Chapter 469 of the laws of Kenya, 1995). Operations of the authority are run in a similar manner as those of private enterprises. In order to centralize services, KRA is divided into the Rift Valley Region, Western Region, Southern Region, Northern Region and the Central Region. The procurement, accounting and asset management processes must follow central government policies and they are audited by the external auditor general Kidd and Crandall (2006).

1.2 Research Problem

The impact of the electronic cargo tracking system on service delivery and business value is an important issue for researchers and other stakeholders. The implementation of the system guarantees profitability improvement, competitive advantage and efficient use of resources. While other revenue collectors in the region such as Uganda Revenue Authority and Rwanda Revenue Authority have invested heavily in the launch of the electronic cargo tracking system we also have other countries in the world that have also implemented the system. Operational performance is derived from how an organization acquires its resources, uses these resources to develop and deploy organizational capabilities thus, the process of strategy development should have its foundation on the comprehension of day's operational capabilities and predictive analysis. This can be the foundation and roadmap about what is likely to be the best way to deploy current and future capabilities Hayes et al. (2005).

Electronic cargo tracking system implementation needs to take into consideration the resources that they are currently at their disposal and how they can integrate these so as to make the system meaningful in a cost effective way. Mills et al. (2002) elaborates on the developed of various methods in which organizations can apply their ideas in the day to day practices. The process involved in carrying out an analysis of the internal organizational resources that are critical to the activities of a business unit over an extended period approximately three to five years.

Some of the resources are in categories, which are not mutually exclusive, and these include: tangible organizational resources, knowledge resources skills and employee experience, internal systems and procedural resources, internal cultural resources and values, the network resources and resources that are critical for change. Studies

show that the criteria that should be used is the consideration of resources that score highly either by themselves individually or together as a group. They are sources of existing or potential competitive advantage to the organization.

There are a number of classifications in use that scholars in the field of operations have generally agreed with Leong et al. (1990) literature notes that the important strategic decision areas in operations can be split into two broad headings. The first is the structure that includes the physical attributes of operations; the hardware. Secondly is the infrastructure that is made up of the people, the systems of operations and lastly the software.

Borrowing from an e-performance line launched by McKinsey and & Company, an online platform can help measure the detailed effectiveness of a system and the data collected encompasses more than just profitability, revenue and cost figures of particular organizations, but also indicators that keeps records on how to build, maintain and effectively grow their customer database and revenue stream (Bughin & Hagel, 2010).

The involvements of the different players' calls for the need to continuously improve processes so as to enhance the achievement of continuous basic strategic objective. Implementation will need to focus, and encourage the involvement of all staff, as well as commercial transporters, this changes need to be introducing through guidelines, channels communication, performance recognition; management behavior, and attitudes, users of the system, feedback and lastly teamwork program set to meet KRA expectations thus creating an environment that is enabling for improved quality, developing quality strategy by defining the mission and quality policy formulation to achieve the strategic objectives and development staff members.

In the East African region with the example of Tanzania it can be noted that Cargo travels from the seaport in Dar es Salaam to neighboring countries, such as Zambia, Malawi, Uganda, Rwanda, Burundi and the Democratic Republic of the Congo (DRC), at a rate of approximately 15,000 loads per month (Swedberg, 2013). Unfortunately however there is an increase of theft while moving the load and most cargo that consists of food and medical supplies and this happens when the vehicles are either parked or the drivers divert the trucks. The Tanzania government has therefore called for the introduction of the electronic cargo tracking system. This goes to illustrate that we have a number of countries in Africa that have are in the process of implementation of the system.

Related studies locally have shown that truck and cargo owners have increased efficiency by averagely 45% increase in savings on turn-around times and this has led to the realization of increased revenue with the introduction of the system. The system is well equipped to protect and keep tabs on the movement of goods for customs purposes. It is evident that the resulting efficiency and security improvements are beneficial for both security related and government agencies, cargo owners and truck owners. Studies on export goods in Kenya, have established that the solution is quite generic in nature and can be implemented by customs administrators in the neighboring countries in this region as well as any entity interested in secure tracking of cargo (Sorir, 2010).

Globally Asia is a force to reckon with when it comes to electronic cargo tracking, with rapid industrialization comes increased traffic by land, sea and also air transport therefore this has led to sophistication and diversity in transportation and logistics services (Bowen and Lein- bach, 1995) with this there is increased misappropriation in the share of cargo transportation. Asian countries have therefore taken measures to

introduce IT system that accelerate information sharing amongst shippers freight forwarders, customs authorities regarding the movement of goods Button and Owen (1991). This information particularly when delivered through the electronic cargo tracking system has been critical especially in the maintenance of their just-in-time production systems.

Related studies have looked at the impact of electronically tracking air cargo. The rapid expansion of air cargo reflects on the greater emphasis placed on time as an element of competitive edge (Schoenberger, 1994). This research will however look at the impact of the implementation of tracking cargo that is moved by land. Embracing the system, it does in itself present other loopholes and challenges for example the lack of proper infrastructure especially at the border points, manpower, and the type of electronic seals that are being deployed and so on.

Based on the studies it is evident a sizeable amount of cargo that moves within and without the country without being charged with levies accordingly and also without the interested parties having any visibility on it. It is also evident that the introduction and use of the electronic system will assist stakeholders both in the public and private sectors to be able to have viability of the movement of their cargo on a real time basis. Similarly the system will assist the revenue authority achieve its main aim purpose of setting up the system which is to better control goods coming in and out of the country and similarly being able to efficiently charge taxes and levies on the goods successfully, the research will therefore examine the impact of this implementation at the Kenya Revenue Authority using three key factors efficiency, safety and cost.

1.3 Research Objective

To establish the impact of electronic cargo tracking system on operational performance at Kenya Revenue Authority.

1.3.1 Specific Objectives

The specific objectives of the study were to:

- i. Determine the extent of implementation of the electronic cargo tracking system by both the transporters and Kenya Revenue Authority.
- ii. Determine factors that influence the implementation of electronic cargo tracking and operational performance at KRA and by the transporters.
- iii. Establish the challenges faced by the implementation of electronic cargo tracking system.

1.4 Value of the Study

Upon completion, the findings of this study will be beneficial to the following categories of people: Those in the academic world will be able to get reference material on the relationship between operational performance and the introduction of a new IT system. The research will form part of the known literature on Operational performance that can be used for academic research. Kenya Revenue Authority will also benefit from the findings. The authority will be able to understand the concept of Operational Performance. By gaining this understanding, the company will be able to take measures that will assist in the implementation of system accordingly, especially having learnt from the findings on the areas that need improving and fine tuning so as to make the introduction of the system a complete success. The transporters will be able to use this study as a way to be able to improve and streamline their operations internally. They will be able to understand the constraints to implementation of the system and use this knowledge to ensure that their internal procedures and processes set in place are able to overcome these challenges and improve on profitability.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter we discuss the relevant literature that has been reviewed in the area of Operational Performance. The chapter highlights various researchers and authors that have emphasized and contributed to the topic. The chapter also presents theories underpinning the study, summary of the literature review and the conceptual framework.

2.2 Theories Underpinning the Study

There are various theories that address the challenges that face Operational Performance. These theories include:

2.2.1 Institutional Theory

The theory recognizes the embedment of institutional actors. Institutional theorists suggest that organizational actions and processes are driven by their actors in order to justify and plausibly explain their actions. According to this perspective, strategy implementation are rationally accounted for by organizational actors and rooted in the normative context Oliver et al. (2007). Organizations adopt a standardized set of practices (Scott, 2001). The Kenya Revenue Authority would need to align internally to be able to ensure that the new introduced system becomes part of their day to day activities. The implementers of the system would therefore need to educate the staff members internally on the benefits of the system both internally and externally in order to achieve the desired results. By educating the members internally the users of the systems will be able to “own” the system.

The institutional theory believes that organizational fields become structured by powerful influences among organizations. The adoption of a system such as strategy implementation is highly dependent on the extent to which it is institutionalized by legitimacy. Legitimacy concerns lead organizations to adopt practices that conform to the mandate of the institutional environment (Kraatz & Zajac, 2006). Central authority systems, and culture conveyed mainly by formal organizations are the ones that give meaning to the customary and the conventional in daily life. These institutions are also supported by the employees, and they provide both the social and the legal constructions of individual identity Friedland and Alford (1991).

2.2.2 Theory of Constraints and Operational Measures

This theory assumes that performance of an organization can't improve due to a specific problem or inefficiencies. The constraint can however be established by looking at the effect it causes the organization. Once the main constraint is established and removed the operation performance will improve. The process of establishing the cause of the undesirable effect should be repeated until the overall performance completely improves Eliyahu and Goldratt, (1980). The Theory of Constraints states that constraints determine the performance of a system.

A constraint is defined as anything that prevents a system from achieving a higher performance relative to its goal. A system is noted to be a collection of interconnected parts sharing a common goal. This theory was first applicable to business systems, Blackstone (2010). Based on the theory of constraints and operational measures, Kenya Revenue Authority ensures that it establishes internal process that will support the introduction of the electronic cargo tracking system. The processes have to be repeated until the system is fully owned by the employees and is yielding results.

Challenges that may stem from using the system initial also need to be dealt with as they emerge, and the learning curve lessons recorded for future reference. The goal of this theory in business as we eliminate the constraints so as to maximize the owners' or stockholders' wealth. Constraints such as people or departments that cannot keep up with the changes. If this department cannot be more productive they will not be able to maximize on the returns. We can also have policy constraints is a management decision or business culture that limits the system. The management therefore needs to meet regularly with their team members so as to be able to receive feedback and use the feedback to make amendments to the policy and over internal processes. A dedicated setup team is essential in driving the overall organization towards the geared results.

2.3 Electronic Cargo Tracking System

Electronic cargo tracking systems have made it possible to inspect and clear containers within the pre-set organizational benchmarks. Before the introduction of the system it was virtually impossible to inspect all of the containers. It was not even possible to check even 10% of the containers. This challenge is addressed as the system is automatic and shares data on a real-time basis showing the location of every truck and its cargo whether it is rerouted, enroute to its destination or stationary. Detection of tampering while on transit is done immediately and hence preventing loss before arrival at the unloading port. Monitoring of any change is registered by RFID signals from the truck associated with the opening of the container. Real-time reporting of any exception and incident of container security violation to destination custom and port authorities for remedial action before arrival, (Chung, 2004).

Globally, transit trade is an important element in the economic movement. The transit trucks are considered as one of the most dangerous means of smuggling inside any country. So, truck transport monitoring has become inevitable for government organizations in any country. The new sophisticated real-time Electronic Cargo Tracking System (ECTS) helps government agencies in enhancing enforcement of cargo handling regulations, maintaining the region as the preferred trade route for cargo and thereby improving tax collection by curbing incidents of dumping (Patel, 2004).

Direct benefits to electronic cargo tracking to the transporters include increased efficiency and productivity, often thought of as cost reduction benefits. The system also aides in improved reliability and service quality, usually thought of as tools to retain good customers and grow market share and revenue and lastly there is improved shipment and container integrity, built around a core of security issues. The system similarly present benefits to the public sector in this case the Kenya Revenue Authority. With the implementation of the system, there is improvement in efficiency and effectiveness of operational performance.

Given that one of the core reasons of implementation of the system is security, safety and security are enhanced by setting up the system by both the transporter and the revenue authority. Statistics indicate that there is reduced congestion and expansion of the transportation infrastructure in general as strategic plans is laid down to facilitate the implementation of the system. Indirect freight network benefits will include tapping into economies of scale and decreasing unit cost of network expansion. There is visible exponential increase in total benefits as costs drop and

usage grows and it is clear that productive derivation of benefits in industries that depend on freight transportation also improves (Chung, 2004).

2.4 Operational Performance

Operational performance can be defined as the alignment of all business units within an organization to ensure that they are working together to achieve core business goals (Fraser, 2009). As we look into Operational Performance we need to appreciate the fact that we also need to include practices and strategies applied to ensure the smooth running of organizational activities. Operational practices are internal organizational factors that contribute to the competence development of the employees; therefore, resulting to a competitive advantages for firms (Hayes and Pisano, 1996). In this sense, both the operations strategy and the resource-based view (Wernerfelt,1984) and (Barney, 1991) support the notion that offer and secure a competitive edge through the creation of operating practices.

Kenya's major urban centers and agricultural activities are largely concentrated in the south. This gives Kenya an edge over the other countries in Africa as its location makes the transport backbone and acts and plays a great role in the regional connectivity (Kenya's Infrastructure, 2011). Excelling at more than one or more operational activities Slack et al (2004) can enable an organization to pursue a business strategy based on a corresponding competitive factor. However, it is important to note customers play a crucial role in giving an organization its competitive edge. Therefore the success of any particular business strategy needs to take this into consideration as it is key for it to be able to achieve excellence.

Matching operations excellence to customer requirements lies at the heart of any operations based strategy. Lastly, management just be involved in the implementation process, especially since it is a common believe that strategy is a completely separate issue from daily organizational activities. To an extreme extent strategy can be viewed as a cerebral activity performed by superior beings who ought to be removed or even separated from daily operational pressures. Mintzberg brings to light the misunderstanding of managers becoming isolated from the fundamentals of the enterprise Mintzberg and Quinn, (1991). The research paper will look at impact of operational performance at the Kenya Revenue Authority with the implementation of the electronic cargo tracking system based on the critical three factors i.e. Safety, Cost and Efficiency.

2.4.1 Efficiency

Efficiency refers to doing things right, i.e. whatever is performed, it is performed in the most suitable way, given the available (Kwak & Ibbs, 2002). A well-known and accepted definition of efficiency is embedded in more technical terms and it states that this is a measure of the ratio of output to input Rutgers and van der Meer (2010). This definition is especially acceptable when we are dealing within a system of well-quantifiable measures of inputs and outputs. However, it can be noted that efficiency takes on a whole new perspective and meaning when we try to study it in an environment of traditionally measured quantities in a system that is heavily based on values, inspirations, and human perceptions, this gives a unique perspective to efficiency.

An organization needs to run efficient operations to be able to be successful and profitable. To begin with the organization must first and foremost learn how to use the implemented system. Teece and Pisano (1994) state that organizations need to learn how to make use of most of its existing resources and competences to learn how to develop new capabilities. Organizational performance is dependent on the emphasizes on the importance of path The current business world thrives to ensure that we work more hours and feel more stress trying to get more done. The introduction of Technology, is aimed at simplifying our lives, sapping our attention and stealing our time. In highly simplified terms, efficiency concerns the cost of input for the output produced--in other words, the best use of resources and the least waste of time and effort.

There has been a long debate between the management consultants and business professors on the relative merits of efficiency as it pertains to the business world. Areas where efficiency can be optimized is the work force and this is through increasing individual productivity (Entrepreneur, July 2013). Related articles such as (J.S McCormick, 1981) have described efficiency as cost effectiveness, this is the efficient solution that has the least cost. The Electronic Cargo Tracking System (ECTs) works in a similar way, it enables the revenue authority to get more and more cargo cleared every day at a much faster rate. This move is aimed at all decongesting the border points and ensuring that cargo that is moving across the border arrives to its destination at the expected time and date dependency (i.e. how organizations got to their present position), the dynamic nature of the capabilities on which organizational success ultimately depends and the role of organizational learning Cohen and Levinthal (1990).

Data captured on the system is shared on a real time basis resulting to reduced dumping, reduced tax evasion and cargo theft in the country. All cargo transported by road is closely monitor on the electronic system as it is received into the country and transported to its destination. The users of the system capture the details of the driver, the cargo, the vehicles, the routes; the origin and destination of the cargo are recorded on the system. Successful implementation of the system requires that data is standardized. Consistent data definitions are fundamental to IT process integration and supporting technologies. To realize greater efficiency, there is need to consider data reconciliation and integration into a single data dictionary that will serve as the standard for the organization (Funkhouser & Vanderslice, 2013).

The ECT system offers a platform where data can analyzed accurately. Kenya Revenue Authority is able to generate useful insights into its operational performance and this is done on a real time basis and therefore the information collected and circulated is timely and relevant. Having an electronic system means the elimination of the old methods of doing business that involves a lot of paperwork. IT is an integral part of the business fabric and is fast reaching a utility status in the enterprise that is increasingly assisting to improve service quality and enhancing personnel resource optimization.

The key IT management drivers now revolve around quality of service and cost control (Belissent, 2009). Better reactive and predictive approaches to service performance issues will now be viewed as the best methods of maintain quality service at border points. This is especially since goods arrive at the border points and are quickly cleared to leave for the next station. Technology allows for faster processing of data, easier retrieval of information, and in some cases automation leads

to the reduction of human errors. When technology is used in repetitive operational tasks, there is a reduction in mistakes or complete elimination, and the time it taken to complete a task is greatly reduced.

In addition to this processes are made quicker and information is keep to date. Elimination of paper cuts down on the time taken to search through a room of file cabinets and it deals with the challenges of guessing how to store the information, with a few clicks of the mouse a customer file is opened, information is updated and eventually stored on a database that is easily accessible to all stakeholders. What used to take several minutes to an hour can now be done instantly (Debbie, 2011). Expansion of infrastructure and transportation networks is a key pillar of the government's vision 2030 economic development plan. Kenya represents a critical lifeline for landlocked neighboring countries. While increased competition, ongoing delays among roads and ports projects, and a host of non-tariff barriers pose serious challenges to future expansion.

The government has steadily been seen increasing expenditure on the transport sector is comes as a result of the enactment of Public-Private Partnership (PPP) Act, 2013 have seen transportation reforms improve dramatically in the medium to long term (The Report Kenya, 2016). Year growth in port traffic in the last four years has been noted to be at 8% annually according to the trade promotion agency. In the year 2012 Mombasa handled a total of 21.92M tonnes while container traffic rose to 903,443 twenty-foot equivalent units, this lead to an increase of transit traffic by 18.4% this therefore means the introduction of the Electronic Cargo Tracking System was well required. The Shippers Council of Eastern Africa remarked that there was a significant improvement to efficiency given that the range of move at the berth was 9

to 11 per hour and it is now noted to be closer to 25 per hour. Kenya Ports Authority projected a 50% improvement by 2016 (Kisembe, 2014).

Future developments that will bring out changes in the use of this system include the rehabilitation of the railway line and the construction of the Standard Gauge Railway. The Kenya Revenue Authority is currently in the process of looking at ways to be able to monitor cargo that will be moving by rail. They have invited vendors of the ECTs to participate in this particular venture and see how best they can be able to implement this system on the railway sector as has been done in developed markets such as Singapore.

2.4.2 Cost

At the early stages of development cost-effectiveness remains thus a challenge for all and efforts need to be channeled towards both now and in the near future this would be geared so as to boost effectiveness in generating value in the long-term and to prove that money is well spent if organizations want continued funding for systems propel growth upwards Litan and Niskannen (1997). The set-up of ECTs comes at a significant cost, especially given that the system is still at the introductory stage of being rolled out. Both the transporters and the authority are required to use resources to be able to implement the system across the country.

A proper Information Technology system must be set up to facilitate the smooth running of the system. The system must have a proper back-up mechanism given that the information captured on a daily basis is quite a lot (Belissent, 2009). It is paramount that personnel in-charge are trained on how to use the system which means there is a cost factor to this. Majority stakeholders affiliated in this sector i.e. the transporter and the government will be able to see the consolidation of

infrastructures using virtualization which would be a cost at first however eventually this shall transition to be a reduction in cost. KRA formulated a list of IT specifications that vendors had to adhere to so as to be selected as a vendor on their panel for the provision of cargo monitoring services (Musyoki, 2010). This includes both the hardware and the software expectations.

IT support was noted to be critical as the revenue collector required that it gets viewership 24hours, seven days a week for all the days of the year. The initial cost of setting up the IT platform for a majority of vendors is 2M – 3.5M. The system is required to be web- based, ensuring that it is accessible from anywhere in the world. KRA have dedicated resources to this particular project by setting up a department specially for handling cargo monitoring both at the headquarters – Times Towers- and also at the various stations. The KRA customs, Border stations, Container Freight Stations (CFS), Bonded warehouses, Export Processing Zones (EPZ), Port and KRA approved yards are in a total of 14 regions countrywide.

A World Bank report (Manji, 2015) stated that infrastructure contributed to just 0.5% to the annual per capita GDP growth between 2001 and 2011. The report found that if Kenya were to improve the infrastructure this would increase 3% however due to problems of congestion, delays at Customs and upgrades required for networks the report found that Kenya would need to allocate \$4bn to infrastructure development annually until 2011. The Kenyan government has to increase its expenditure on improving the road network so as to facilitate the smooth transition the roads need to be in good condition so as to make the movement of trucks from the port to the borders easy. About 93% of all freight and passenger traffic travels by road (Road Policy, 2012). As highlighted under the Vision 2030's second national medium-term

plan (MTP) which covers the 2013-17 period, the government aims to construct and rehabilitate approximately 5500 kilometer of road. This initiative will see an increase in road cargo transportation, especially since Kenya acts as a link for its landlocked neighbors.

2.4.3 Safety

There are two angles to which we will address safety, one is the safety of infant industries that are upcoming and second is safety of consumers on the type of goods brought in for their consumption. In the international trading arenas, there are quite a number of occurrences that place countries disadvantaged or injured positions in the course of conducting trade with other countries. Such injuries often result in the closure of small and infant industries due to inability to compete with the imports and another resulting effect is the loss of employment due to closure of these same companies Omolo et al. (2013).

Kenya has challenges with dumping. Dumping is an informal definition of for the practice of selling products in a foreign countries often for lower than the price identified and set-up in its domestic country, or the cost of producing the commodity. It is important to note that, the top leading sectors in the anti-dumping initiations include base metals and articles; chemical and allied industries; resins, plastic and articles; machinery and electrical equipment; and textile and articles and all these are key sectors in any economy in the world.

The fight against dumping of transit cargo in the Kenyan market has gone a notch higher with the tax collector initiative of introducing an electronic cargo tracking solution to monitor movement of goods between the port of Mombasa and Busia and Malaba border points through which goods have an entry point to the landlocked

Great Lakes Region, (Business Daily- KRA steps up the war on dumping of transit goods, 2014).

KRA issued a public notice introducing the new electronic system of monitoring transit cargo. The system uses a radio frequency identification solution. The new regulations would require every transporter to pay an estimate of around Sh100,500 for a Transit License. The system will replace the conventional mechanical seal that is quite cumbersome where the cargo is accompanied by escorts to the borders, which has previously not been effective. The taxman has not been able to seal loopholes as importers ride on the inefficiency to dump goods destined for neighboring countries in Kenya. This in itself not only ensures that the revenue collector efficiently collects taxes but it also promotes consumer protection.

World Health Organization (WHO), has released reports and articles that indicate that 30% of medicines sold in developing countries is counterfeit which similarly shows that a larger problem due to this is that high numbers of drugs that are bought by the state for use in public hospitals are being illegally obtained and then sold on for profit in the private sector. This is a concern and needs to be curbed with immediate effect so as to ensure that there is no infringement on human rights.

2.5 Challenges

As is with every system the first time challenges that will be encountered first as the system is being set-up and also as the users are familiarizing themselves with the system. The two worlds must collide – The virtual world and the world of doing things mechanically and/or (Forrester Consulting Journal, January 2009) virtually often affects the performance of the services rendered in a way that is difficult to resolve, as many tools used to monitor shade visibility into the application container.

Majority of decision-makers in IT take into consideration that predictive analysis of the application workloads that are candidates for virtualization, as well as the predictive sizing of the structural infrastructure that is supportive of the virtual elements, are the most effective methods used to avoid problems in production. In fact, studies have shown that, the best resolution to production issues and the impact of this on the business workforce, capacity building management processes and tools is to control both service levels and costs at the IT level resulting to the reduction of the productivity and negative financial impact at the business level.

Kenya's road network needs extensive rehabilitation especially now that regional trade is intensifying in the region. Expansion of infrastructure and transportation network is a key pillar of the government's Vision 2030 economic development (Kenya's Infrastructure, 2011), without this being hastened, we will keep having trucks arriving late and therefore the delay of clearing trucks as soon as they arrive is not totally handled and dealt with. Port congestion has improved but increased competition from Tanzania has affected operations at the port of Mombasa and oil discoveries in the country pressure is mounting.

2.6 Operational Performance and Electronic Cargo Tracking

Implementation and delivery of the electronic cargo tracking system covers a wider aspect of quality. Previous empirical studies regarding the linkage between setting up of systems and the advantage to the institutions affiliated has shown significant and positive results. The main focus of the system is to improve overall operational performance and improve on service delivery Geralis and Terziovski (2003) and. Successful implementation of the system will give benefits in improving how the regulator clear cargo and cargo trucks that enter and exit the Kenyan borders and

charge taxes and levies accordingly. The system will also assist Kenya Revenue Authority in monitoring the all inbound and outbound goods.

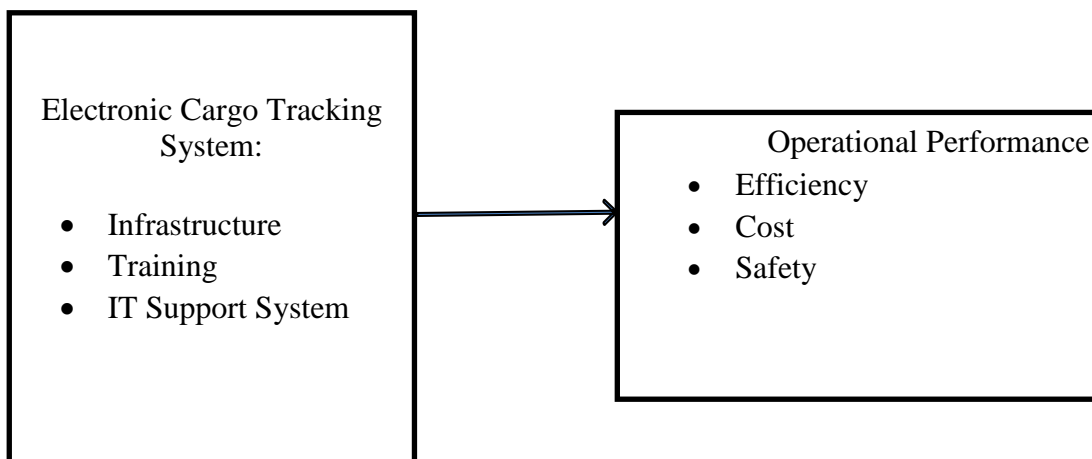
Effective implementation that needs to improved operation performances can generate marked improvements in service quality which then results in increased profitability (Litton, 2001). It has been established that employees have useful organizational knowledge and skills are critical in delivery of quality service and the same inherent assets can be used to raise employee morale and satisfaction and eventually empower them accordingly (Prajogo & Sohal, 2006).

2.7 Conceptual Framework

A conceptual framework can be defined as asset of broad ideas and principals taken from relevant fields of enquiry and used to structure a subsequent presentation Reichel and Ramey (1987). The figure below will guide the study and illustrate the interrelationship among the variables in this study.

Independent variable

Dependent



Source Researcher (2016)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives the methodology that will be used to accomplish the already set up research objectives and questions. It gives direction to follow so as to get answers to area of concern. The research design, target population, sampling design, sample size, data collection and analysis, reliability and validity and ethical consideration is discussed here quite briefly.

3.2 Research Design

The study will adopt an exploratory research design. (Rajendra, 2008) argued that research design focus on the structure of an enquiry, which lead to the minimization of the chance of drawing the wrong casual inferences from the data. Exploratory research is defined by Burns and Groove (2001) as research conducted to gain new insights, discover new ideas, and for increasing knowledge of the phenomenon.

3.3 Population of the Study

The population of this study involved Kenya Revenue Authority officials and transporters. It has an estimated 10,610 employees both at the Head office, regional stations and border points. These employees were the target population for the study.

3.4 Sample Design

Stratified random sampling was used since it works more effectively where the sampling frame is heterogeneous. The population was divided into small groups called strata then a systematic technique was used to select members who will participate in the study from each stratum. The rate used for sampling is 30% based

on studies Mugenda and Mugenda, (2003) given that this is the accessible population that would be enough for descriptive studies.

Table 3.1: Sample Size

Organization Officials	Total Number	Rate	Sample size
Transporters	50	0.3	15
Headquarter Officials	100	0.3	30
Border Point Officials	100	0.3	30
Loading Point Officials	100	0.3	30
Port Officials	100	0.3	30
Patrol Officials	50	0.3	15
TOTAL	450		150

Source: (Author 2016)

3.5 Data Collection

The researcher will collect qualitative data as the study aimed to achieve an in-depth understanding of the situation. Qualitative techniques of data collection employed will be use of questionnaires using the Likert scale. The questionnaire is structured with closed ended questions that have an array of choices or answers from which the respondents choose from the options presented. These questions are easier and quicker to answer and the responses are more comparable among respondents. The questionnaire will be administered using the drop and pick method.

3.6 Data Analysis

Data analysis is the process of packaging the collected information; have this information structured in an orderly manner that makes it much easier and effective to communicate (Kothari, 2004). The data collected shall be analyzed using descriptive statistics including percentages, standard deviation with the help of Statistical Package of Social Science Software (SPSS). The data collected shall further be analyzed using descriptive analysis and the findings will be in form of tables, bar graphs and pie- charts. The research objectives that will be addressed include, analyzing the extent to which the electronic cargo tracking system has been

implemented since the inception of the system as well as identify system implementation challenges and give suggestions on how the challenges can be addressed so as to ensure the successful implementation of the system.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter provides an analysis, presentation, and interpretation of the data collected from the study respondents on electronic cargo tracking and operational performance at Kenya Revenue Authority and by the transporters. A total of 150 questionnaires were distributed, 125 questionnaires were successfully filled and collected, and this gives a response rate of 83%. This chapter gives insight into the questionnaire response and background of the respondents.

Table 4.1 Characteristics of the Respondents

	Frequency
Transporters	30
Headquarter Officials	10
Border Point Officials	13
Loading Point Officials	27
Port Officials	40
Patrol Officials	5
TOTAL	125

It is clear from the findings as tabulated in Table 4.1 that all the required respondents participated in the study.

Table 4.2 Position held in the Organization

	Frequency	Percentage
Top Management	20	16%
Middle Management	65	52%
Support Staff	40	32%
TOTAL	125	100%

Based on the study findings, a majority 52% of respondents were under middle management, 16% are top management and 32% are support staff.

4.2 System Expectation – Kenya Revenue Authority

Table 4.3 System User

Nos.	System User	1	2	3	4	5
1	The web-based systems is able	70 56%	30 24%	10 8%	10 8%	5 4%
2	The electronic cargo tracking	80 64%	25 20%	10 8%	5 4%	5 4%
3	Electronic Cargo Tracking	35 28%	45 36%	20 16%	15 12%	10 8%
4	The system captures all the	20 16%	50 40%	30 24%	15 12%	10 8%
5	Information is made available	45 36%	35 28%	25 20%	10 8%	10 8%

The findings shows that 70 (56%) of the respondents agreed strongly and were able to open the web-based software using multiple browsers, whilst 30 (24%) of respondents agreed that the system could be opened using multiple browsers. Findings indicate that some of the users of the system were indifferent 10(8%) on whether or not the system could be accessed using multiple browsers a similar percentage 10 (8%) disagreed that the system was accessible using multiple browsers.

A majority 70/125 of the respondents have strongly agreed that the system can be used using multiple browsers. It was established that the software is friendly to use 80 (64%) of the respondents strongly agreeing that the system software is user friendly. The respondents that agree are 25 (20%) that the software is indeed friendly to use, of the respondents that filled the questionnaire, only 10(8%) were indifferent on whether or not the software was friendly to use. A very small percentage of 5 respondents each which is 4% disagree and strongly disagree respectively that the software is indeed user friendly.

There is still quite a lot that needs to be done to be able to effectively meet all the requirements that have been set up by Kenya Revenue Authority. Based on the findings only 35 (28%) of the respondents strongly agree that the providers have been able to meet the requirements as set-up by the revenue authority. 45(36%) of the users agreed that the organizations contracted to carry out the role of providing the electronic cargo tracking services were able to indeed meet the requirements. There are respondents who are however of the view that the set up requirements have not been fully complied to and they therefore have to be monitored to do so as to retain their licenses.

Once the requirements have been complied with capturing of data will also improve as there is still room to do so based on the findings with 20 (16%) of the respondents strongly agreeing that the system is able to capture all the required data, 50 (40%) agreeing that data has been captured and 30(24%) remaining indifferent as to whether or not the system has such a capability. The number of respondents who felt that indeed the system is able to capture all the data is quite low with 15(12%) indicating that they that they disagree and 10(8%) strongly disagreeing therefore indicating that the system just needs a bit of improvement in this area. The system has enabled information to be made available across the different departments with 45(36%) strongly agreeing, 35(28%) agreeing, 25(20%) remaining indifferent, 10(8%) disagreeing and 10(8%) strongly disagreeing. Based on this findings there is room for improvement when it comes to information availability.

Table 4.4 System Infrastructure

Nos.	System Infrastructure	1	2	3	4	5
1	The software has a decentralized database that is efficient in information storage and sharing	50 40%	30 24%	28 22.40%	10 8%	7 5.60%
2	The software server is able to store information for over 12 months	55 44%	40 32%	15 12%	5 4%	10 8%
3	The software has relevant and reliable reports	50 40%	35 28%	20 16%	15 12%	5 4%
4	The reports generated can be saved and used in any Microsoft format making it easier to work on the data	40 32%	30 24%	25 20%	25 20%	5 4%
5	The software is able to store information and make it available even when offline	125 100%	0 0%	0 0%	0 0%	0 0%

The findings show that the system has been set up in such a way that its infrastructure allows it to be able to have a decentralized database with 50(40%) of the respondents strongly agreeing to this, 30(24%) agreeing, 28(22.4%) remaining neutral to this, 10(8%) strongly disagreeing and 7(5.6%) strongly disagreeing. This would indicate that general IT system set up of the different stations is more advance in some areas than others. The software has a server that is able to store information for a period of 12months, 55(44%) of the respondents strongly agree, 40(32%) of the respondents agree, 15(12%) of the respondents were indifferent, 5(4%) and 10(8%) of the respondents disagreeing and strong disagreeing respectively.

Software generated reports would appear to have system reports that 50(40%) of the respondents strongly agree are reliable and relevant, 35(28%) agree are reliable and relevant, 20(16%) are indifferent on the subject matter and 15(12%) disagreeing to whether or not the reports are reliable and relevant and a very small fraction of 5(4%) strongly disagreeing on the reliability and relevance of the report. This indicates that there needs to be training for the users so as to make sure that they are conversant on

what is being offered and make room for suggestions on how to add more reports. These reports are can be saved in formats that users are able to use to make their work easier. 40(32%) strongly agree on this, 30(24%) agree, 25(20%) are indifferent, a similar number of 25(20%) disagree and 5(4%) strongly disagree. The system is usable while the respondent is without internet. The findings had a 100% response rate with all 125 respondents agreeing to this.

Table 4.5 System Compatibility

Nos.	System Compatibility	1	2	3	4	5
1	The system is compatible with the other set-up organizational systems	62 49.60%	20 16%	25 20%	15 12%	3 2.40%
2	The system is able to easily merge with the systems for the neighboring countries	48 38.40%	45 36%	10 8%	15 12%	7 5.60%
3	The ECT system is able to pair and works well with android systems	53 42.40%	40 32%	19 15.20%	7 5.60%	6 4.80%
4	The system allows multiple users to be online and work at the same time	125 100%	0	0	0	0
5	The systems allows for tasks to be handled faster at the different stations	50 40%	40 32%	15 12%	10 8%	10 8%

The extent of system compatibility was found to be at 62(49.2%) agreed that it was to an extreme extent compatible to other systems, 20(16%) agreeing it is to a great extent, 25(20%) remaining indifferent and indicating it is to an extent, 15(12%) indicating not at all and 3 (2.4%) indicating that they were not at all sure. It was established that the system was easily compatible with the systems of other neighboring countries with 48(38.4%) of the respondents suggested that it was to an extreme extent, 45(36%) indicating it was to a great extent, 10(8%) of the respondents indicated it was to an extent, on the other hand 15(12%) of the respondents said not at all and 7(5.6%) were not sure.

Given that global most mobile-phones are on the android system the findings established that 53(42.4%) agreed that this was to an extreme extent, 40(32%) responded that this was to great extent, 19(15.2%) responded that this was to an extent, 7 (5.6%) were of the view that this was not at all and lastly 6(4.8%) were not sure to what extent the system was compatible with android.

4.2.1 System Modification

The findings on whether the system could be modified to be able to meet the emerging expectations and requirements is as follows: Indicate your level of expectation on the system by ticking in the appropriate box where 1= Strongly Agree 2= Agree, 3= Indifferent, 4= Disagree, 5= Strongly Disagree

Table 4.6 System Modification

Nos.	Emerging Expectations/Requirements	1	2	3	4	5
1	The system easy to customize	43 34.40%	31 24.80%	30 24%	18 14.40%	3 2.40%
2	The system has a knowledge database that can be used for data mining.	47 37.60%	23 18.40%	20 16%	17 13.60%	18 14.40%
3	The system allows the users to be able to make parameter changes when required	48 38.40%	37 29.60%	15 12%	13 10.40%	12 9.60%
4	The system has progressive periodic upgrades	42 33.60%	33 26.40%	27 21.60%	16 12.80%	7 5.60%
5	Does the system has a working feedback mechanism	43 34.40%	37 29.60%	21 16.80%	15 12%	9 7.20%

The system software is easy to customize based on the findings of 43(34.4%) strongly agreeing, 31(24.8%) agreeing, 30(24%) being indifferent on this matter, 18(14.4%) disagreeing and 3(2.4%) strongly disagreeing. On whether the system's knowledge database that can be used for data mining 47(37.6%) strongly agreed, 23(18.4%) agreed, 20(16%) were indifferent, 17(13.6%) disagreed and 18(14.4%) strongly

disagreed. This reflects on the issue of the vendors being able to meet all the set requirements. Once this is successfully done the knowledge database can be used for data mining.

Findings on whether the system can allow the users to be able to make changes to the parameters given on a need be basis, 48(38.4%) indicated by strongly agreeing that this was doable, 37(29.6%) agreed that this could be done, 15(12%) were indifferent on whether this was indeed possible, 13(10.4%) disagreed and 12(9.6%) strongly disagreed.

Vendors are required to provide progressive periodic system upgrades based on the emerging requirements, 42(33.6%) strongly agreed that this was indeed taking place, 33(26.4%) agreed, 27(21.6%) were indifferent if at all this was taking place 16(12.8%) disagreed that the periodic upgrades were being released and 7(5.6%) strongly disagreed. System users indicated in the findings as follows that the feedback mechanism was working; 43(34.4%) strongly agreed that it was working, 37(29.6%) agreed, 21(16.8%) were indifferent and therefore remained neutral, 15(12%) disagreed and 9(7.2%) strongly disagreed.

To what extent, do you think electronic cargo tracking system is implemented?

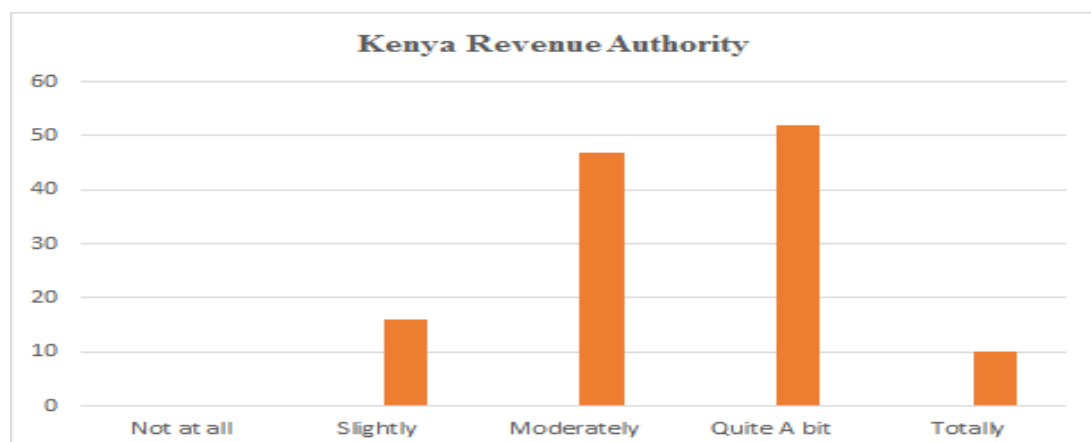


Figure 4.1 Extent to which the electronic cargo tracking has been implemented by Kenya Revenue Authority

4.3 System Expectation – Transporters

Table 4.7 System User

Nos.	System User	1	2	3	4	5
1	The web-based system is able to open using multiple browsers.	74 59.20%	28 22.40%	11 8.80%	6 4.80%	6 4.80%
2	The electronic cargo tracking software is user friendly	33 26.40%	50 40%	28 22.40%	8 6.40%	6 4.80%
3	Electronic Cargo Tracking System software has been able to meet all the set up requirements	17 13.60%	45 36%	33 26.40%	20 16%	10 8%
4	The system captures all the required data from the port to its destination	14 112.00%	44 35.20%	36 28.80%	18 14.40%	7 5.60%
5	Information is made available across the organization on a real time basis	18 14.40%	36 28.80%	55 44%	10 8%	6 4.80%

The findings of the study indicates that 74/125 (59.2%), and 28/125 (22.4%) of transporters agree that the system can be used on a variety of browsers. This is indicative of a high level of awareness regarding the capabilities of the system due to exposure. However, 18.4% of the transporters disagree, indicating that they are unaware, or unable to use the system on multiple browsers.

In terms of user-friendliness, a majority of transporters (66.4%) concur that the system is friendly and can be easily navigated. This points to the intuitive nature of the graphic user interface in allowing users to achieve their objectives with relative ease. The system software was designed to meet a lot of user objectives. However, 20/125(16%) and 10/125(8%) of the transporters are unsatisfied with the build. Other factors such as ability to capture all required data, and real-time availability of information score averagely.

Table 4.8 System Infrastructure

Nos.	System Infrastructure	1	2	3	4	5
1	The software has a decentralized database that is efficient in information storage and sharing	7 13.60%	25 20%	43 34.40%	36 28.80%	14 11.20%
2	The software server is able to store information for over 12 months and make it downloadable when required	62 49.60%	31 24.80%	19 15.20%	10 8%	3 2.40%
3	The software has relevant and reliable reports	10 8%	35 28%	52 41.60%	19 15.20%	9 7.20%
4	The reports generated can be saved and used in any Microsoft format making it easier to work on the data	13 10.40%	35 28%	62 49.60%	9 7.20%	6 4.80%
5	The software is able to store information and make it available even when offline	95 76%	25 20%	5 4%	0	0

The design of the system and its infrastructure plays an important role in delivering the objective of different users. At its conception, the electronic cargo tracking system was intended to provide a robust information system that would provide benefits to users in terms of cost, efficiency, and safety. However, Table 4.2 indicates that quite a number of users are unaware of the system's capabilities. 34.4% and 28.8% of the quizzed transporters were indifferent, and disagreeing respectively, as to whether the system was decentralized thus providing efficiency.

On a positive note, a majority (74.4%) of transporters were aware that the system could store information for long periods (up to 12 months). This feature is crucial for transporters who regularly require historical reports of their assets locations. It is important to note that only 10/125(8%) and 35/125(28%) of the same transporters agreed that the reports provided were relevant and reliable. Vast majorities (64%) of the transporters were indifferent or in disagreement about the reports generated by the system.

This view extends to the ability of the system to generate reports in different formats that are useful for the users. In this case, an overwhelming 49.6% of transporters were indifferent about the reports being in Microsoft formats. The ability of the software to store information while offline is a great advantage to users. An overwhelming majority 120/125 (96%) were pleased that information could be generated and retrieved from the system even while offline.

Table 4.9 System Compatibility

Nos.	System Compatibility	1	2	3	4	5
1	The system is compatible with the other set-up organizational systems	17 13.60%	48 38.40%	18 14.40%	6 4.80%	36 28.80%
2	The system is able to easily merge with the systems for the neighboring countries	8 6.40%	30 24%	31 24.80%	13 10.40%	43 34.40%
3	The ECT system is able to pair and works well with android systems	18 14.40%	25 20%	28 22.40%	21 16.80%	33 26.40%
4	The system allows multiple users to be online and work at the same time	54 43.20%	58 46.40%	9 7.20%	2 1.60%	2 1.60%
5	The systems allows for tasks to be handled faster at the different stations	72 57.60%	48 38.40%	4 3.20%	0 0%	1 0.80%

The compatibility of electronic cargo system with other computer systems is necessary for both users and administrators. 48/125 (38.4%) of users view the compatibility as a positive attribute that eases their work and provides cost savings. Unfortunately, a majority of the transporters are unaware of the ability of the system to merge with other systems. The same view is replicated by the response regarding compatibility of the system with android systems. Table 4.3 indicates that 89.6% of transporters are impressed with the ability of the system to handle multiple users at the same time. This level of multiplicity allows for multitasking, thus ensuring that work is done faster, and with greater efficiency.

To what extent, do you think electronic cargo tracking system is implemented?

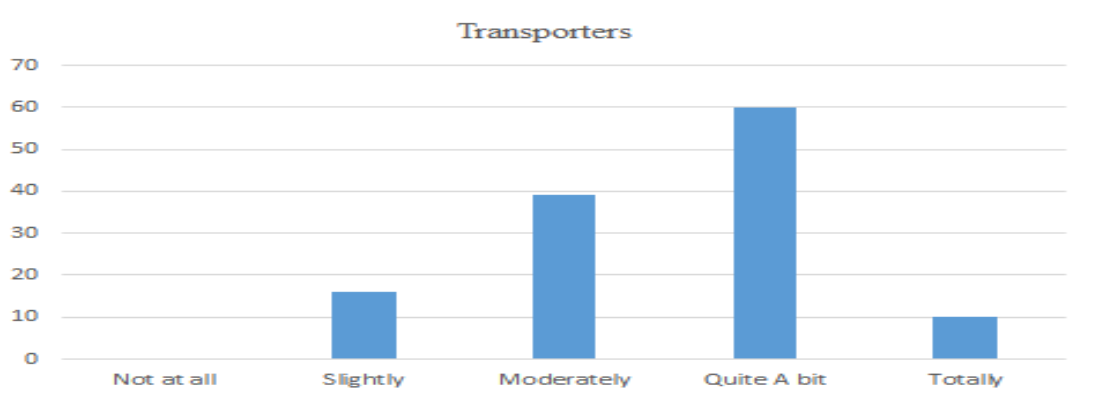


Figure: 4.2 Extent to which the electronic cargo tracking has been implemented by transporters

Factors Influencing implementation by the Kenya Revenue Authority

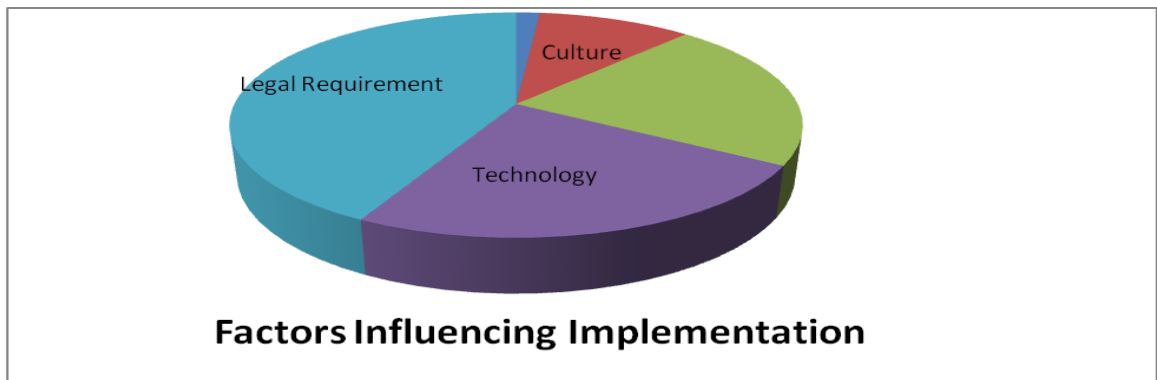


Figure: 4.3 Factors influencing implementation of Electronic Cargo Tracking by Kenya Revenue Authority

Factors Influencing implementation by Transporters

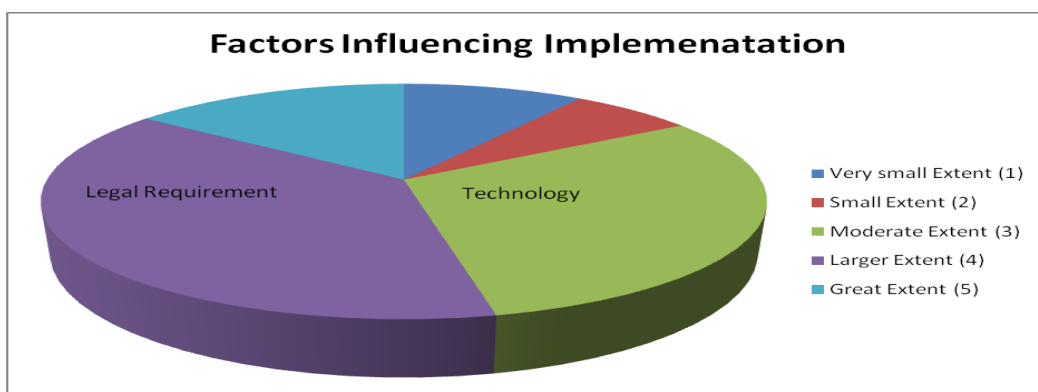


Figure: 4.4 Factors influencing implementation of Electronic Cargo Tracking by Transporters

Table 4.10 Operational Performance Indicator – Kenya Revenue Authority

Operational Performance Indicator	Question	1	2	3	4	5
Efficiency	The system is able to capture data of all outbound trucks	40 32%	53 42.40%	13 10.40%	12 9.60%	7 5.60%
	The system is able to report a violation on a real time basis	39 31.20%	45 36%	22 17.60%	11 8.80%	8 6.40%
	Vehicle and cargo documentation is captured and stored on the system	41 32.80%	39 31.20%	25 20%	12 9.60%	8 6.40%
	Collection of duties and taxes is made easier	46 36.80%	44 35.20%	27 21.60%	5 4%	3 2.40%
	Clearance of cargo trucks at the border is made faster with the system	53 42.4%	47 37.60%	14 11.20%	10 8%	1 0.80%
Cost	The infrastructure set-up of the system is not expensive	30 24%	25 20%	17 13.60%	26 20.80%	27 21.60%
	There is a reduction of operating costs with the introduction of ECTs	34 27.20%	36 28.8%	17 13.60%	20 16%	18 14.40%
	Penalties and fines due to late delivery have reduced	37 29.60%	52 41.60%	12 9.60%	15 12%	9 7.20%
	There is realization of more revenue with introduction of ECTs	44 35.20%	45 36%	24 19.20%	8 6.40%	4 3.20%
	Cost reduction with the reduction of organization processes	47 37.60%	33 26.40%	29 23.20%	8 6.40%	8 6.40%
Safety	Cargo theft has reduced drastically	50 40%	43 34.40%	10 8%	13 10.40%	9 7.20%
	Cargo dumping has been reduced drastically	57 45.60%	46 36.80%	12 9.60%	7 5.60%	3 2.40%
	With the reduction of cargo dumping, infant business are now safer	34 27.20%	32 25.60%	26 20.80%	16 12.80%	17 13.60%
	Reeducation of dangerous and harmful cargo entering and/or leaving the country	23 18.40%	29 23.20%	32 25.60%	20 16%	21 16.80%
	Reduced road accidents and incidence on the road with the introduction of ECTs	25 20%	21 16.80%	42 33.60%	13 10.40%	24 19.20%

Table 4.11 Efficiency

Operational Performance Indicator	Question	1	2	3	4	5
Efficiency	The system is able to capture data of all outbound trucks	40 32%	53 42.40%	13 10.40%	12 9.60%	7 5.60%
	The system is able to report a violation on a real time basis	39 31.20%	45 36%	22 17.60%	11 8.80%	8 6.40%
	Vehicle and cargo documentation is captured and stored on the system	41 32.80%	39 31.20%	25 20%	12 9.60%	8 6.40%
	Collection of duties and taxes is made easier	46 36.80%	44 35.20%	27 21.60%	5 4%	3 2.40%
	Clearance of cargo trucks at the border is made faster with the system	53 42.4%	47 37.60%	14 11.20%	10 8%	1 0.80%

The findings were able to establish that data of outbound trucks is easily captured on the system with respondents with 42.4% agreeing that the system is able to do so. Violations are also easily captured on a real-time basis with a larger percent – 36% agreeing that the system capability of this feature actually does work.

The research further identifies that vehicle documentation such as logbooks and driver licenses are easily captured and stored for referring later when need be. Kenya Revenue Authority officials similarly agreed that collection of duties and taxes has greatly improved with a total of 36.8% strongly agreeing to this and only a small fraction of 2.4% strongly disagreeing that this was indeed the case. Border and port officials strongly agree that clearance of trucks has been made easier with the implementation of the system with 42.4% strongly agreeing to this. This goes to establish that the system enhances efficiency of collection of taxes and duties and also clearance at the ports and border points.

Table 4.12 Cost

		1	2	3	4	5
Cost	The infrastructure set-up of the system is not expensive	30 24%	25 20%	17 13.60%	26 20.80%	27 21.60%
	There is a reduction of operating costs with the introduction of ECTs	34 27.20%	36 28.80%	17 13.60%	20 16%	18 14.40%
	Penalties and fines due to late delivery have reduced	37 29.60%	52 41.60%	12 9.60%	15 12%	9 7.20%
	There is realization of more revenue with introduction of ECTs	44 35.20%	45 36%	24 19.20%	8 6.40%	4 3.20%
	Cost reduction with the reduction of organization processes	47 37.60%	33 26.40%	29 23.20%	8 6.40%	8 6.40%

The research established that the cost of setting up the system is fair high however over a period of time the operating costs are seen to drop with 27.2% agreeing to this. Kenya Revenue Authority is able to also collect on any penalties and fines that need to be charged to the transporter as a result the revenue collector has realized an increase in revenues over time. 37.6% of respondents strongly agreed that there has been a cost reduction in the internal organization processes with the introduction of the system.

Table 4.13 Safety

Safety	Cargo theft has reduced drastically	50 40%	43 34.40%	10 8%	13 10.40%	9 7.20%
	Cargo dumping has been reduced drastically	57 45.60%	46 36.80%	12 9.60%	7 5.60%	3 2.40%
	With the reduction of cargo dumping, infant business are now safer	34 27.20%	32 25.60%	26 20.80%	16 12.80%	17 13.60%
	Reeducation of dangerous and harmful cargo entering and/or leaving the country	23 18.40%	29 23.20%	32 25.60%	20 16%	21 16.80%
	Reduced road accidents and incidence on the road with the introduction of ECTs	25 20%	21 16.80%	42 33.60%	13 10.40%	24 19.20%

The research established that cargo theft has reduced drastically and so as cargo dumping. Respondents to both these indicators strongly agreed with 40% and 45.6% respectively and only a small number strongly disagreeing to this. This has consecutively the amount of harmful and dangerous cargo has reduced in circulation. A major achievement in the installation is the reduction of road accidents and incidences due to the revenue collector being able to control road activities from being their desks.

Table 4.14 Operational Performance Indicator – Transporters

Operational Performance Indicator	Question	1	2	3	4	5
Efficiency	The system is able to capture data of all outbound trucks	37	39	9.6	8.8	5.1
	The system is able to report a violation on a real time basis	33	37	16	8.1	5.9
	Vehicle and cargo documentation is captured and stored on the system	30	36	19	8.8	5.9
	Collection of duties and taxes is made easier	38	36	20	3.7	2.2
	Clearance of cargo trucks at the border is made faster with the system	39	35	18	7.4	0.7
Cost	The infrastructure set-up of the system is not expensive	22	19	16	23	20
	There is a reduction of operating costs with the introduction of ECTs	25	30	13	19	13
	Penalties and fines due to late delivery have reduced	31	42	8.8	11	6.6
	There is realization of more revenue with introduction of ECTs	36	37	18	5.9	2.9
	Cost reduction with the reduction of organization processes	39	28	21	5.9	5.9
Safety	Cargo theft has reduced drastically	41	36	7.4	9.6	6.6
	Cargo dumping has been reduced drastically	46	38	8.8	5.1	2.2
	With the reduction of cargo dumping, infant business are now safer	25	27	23	12	13
	Reeducation of dangerous and harmful cargo entering and/or leaving the country	17	25	27	15	16
	Reduced road accidents and incidence on the road with the introduction of ECTs	19	16	35	13	18

Table 4.15 Efficiency

		1	2	3	4	5
Efficiency	The system is able to capture data of all outbound trucks	37%	39.20%	9.60%	8.80%	5.10%
	The system is able to report a violation on a real time basis	32.50%	37%	16.20%	8.10%	5.90%
	Vehicle and cargo documentation is captured and stored on the system	30%	36.20%	18.50%	8.80%	5.90%
	Payment of duties and taxes is made easier	37.70%	36.20%	20%	3.70%	2.20%
	Clearance of cargo trucks at the border is made faster with the system	39.20%	34.80%	17.70%	7.40%	0.70%

Findings from the transporters had similar feedback on improvement of efficiency as the transporters confirmed that the system was able to capture all the required data on the system with a majority of the transporters agreeing to this.39.2%. The research similarly brought to light that the transporters were able to monitor their fleets and ensure that their drivers adhered to the set-up vehicle rules. Research noted that transporters were able to easily make their payment of duties and taxes with the implementation of the system.

Table 4.16 Cost

		1	2	3	4	5
Cost	The infrastructure set-up of the system is not expensive	22	19	16	23	20
	There is a reduction of operating costs with the introduction of ECTs	25	30	13	19	13
	Penalties and fines due to late delivery have reduced	31	42	8.8	11	6.6
	There is realization of more revenue with introduction of ECTs	36	37	18	5.9	2.9
	Cost reduction with the reduction of organization processes	39	28	21	5.9	5.9

The initial cost as confirmed by transporters is quite high however the cost is recovered over time. Data implied that revenues are realized and penalties are paid in time. The research similarly brought to light that the transporters were able to reduce the cost of internal processes.

Table 4.17 Safety

		1	2	3	4	5
Safety	Cargo theft has reduced drastically	40.70%	35.50%	7.40%	9.60%	6.60%
	Cargo dumping has been reduced drastically	45.90%	37.70%	8.80%	5.10%	2.20%
	With the reduction of cargo dumping, infant business are now safer	25.10%	27.40%	22.90%	11.80%	12.50%
	Reeducation of dangerous and harmful cargo entering and/or leaving the country	17%	25.10%	27.40%	14.80%	15.50%
	Reduced road accidents and incidence on the road with the introduction of ECTs	18.50%	15.50%	34.80%	13.30%	17.70%

The research noted that theft of cargo and dumping of dangerous cargo has drastically reduced with a majority of the respondents agreeing to this as a result the infant business are now much safer and have the opportunity to grow.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the data findings relationship between Electronic Cargo Tracking and Operational Performance at Kenya Revenue Authority and by the transporter, the conclusions and recommendations drawn. The chapter is therefore structured into summary of findings, conclusions, recommendations and limitations of the study and suggestion for further research.

5.2 Summary of the Findings

The implementation of the electronic cargo tracking system and operational performance at Kenya Revenue Authority and by the road transporters has revealed a positive impact in the findings. The revenue collector has to a great extent been able to improve their internal operational performance as the system gives them control while seated at the office. The research findings of this study imply that some of the constraints is the successfully setting up the system using the requirements as the guideline and also rolling out the system to be able to successfully be used by the revenue collect and the transporters.

The system can be seen to be beneficial in improving the overall operational performance for both Kenya Revenue Authority and the transporters who have already implemented the system and are using it especially for the cargo that is outbound. Based on the findings most of the users appear to be neutral especially on critical matters such as the system infrastructure and its capabilities. This is a reflection that there is need for further sensitization of the system and what the authority aims to achieve with its implementation. The transporters appear to have

embraced the system and are actively using it in their day to day activities. This is reflected by their response about the system being able to be used using the multiple browsers and in their response on whether one can be able to work while offline.

There is still quite a number of things that need to make the transporters feel like this system has much more to offer other than just being a legal requirement. Together these two set of users (Kenya Revenue Authority and the transporters) can be able to streamline the system and collectively eliminate some of the current challenges the system is trying to adjust and resolve.

The majority of the respondents also concurred that, the organizational has a culture that is flexible to internal changes, the organizational culture accommodates external changes, the organization has an organizational culture that focuses on control, the organization has an organizational culture that focuses on stability in the organization, the organization has an organizational culture that encourages internal efficiency and that the organization has an organizational culture that encourages adherence to company policy and the law. These results show that construction companies have appropriate organizational culture.

It is also evident from the study that the electronic cargo tracking system is timely and it will lead to an improvement in operational performance not only at Kenya Revenue Authority and at the transporter's premises but at the organizations that are served by these two entities. The cost of initially implement is quite high however the benefits that result based on implementation are felt all around within the organizations of the parties.

5.3 Conclusion

The study concluded that in order to implement the electronic cargo tracking system successfully it was important for the revenue collector to accurately define the system expectations and its benefits so that the vendors can be able to build a reliable system that will assist in achieving the set goals. Kenya Revenue Authority is expected to identify and make operational performance a priority while availing resources for the execution of tasks and while evaluating the performance of the officers.

Top management acts as the driver for the implementation of the system and are the key to the improvement of the organization's operational performance in its activities. The study established that for the system to effectively work it requires employee and transporters participation and contributions and ideas for recommendations where applicable. Participation by both parties will not only drive the system to work effectively but it will also lead to the evolution of the road transport industry. The study findings demonstrated that acceptance of the system and the sensitization and conscious training from both the vendor and the service providers will assist in operational performance. Proper training program are required and also systematic gathering data especially of emerging expectations and needs both locally and globally.

The study ascertained that feedback was a critical part in the successful implementation of the system. Feedback should be from both the revenue collector and the transporters that are using the system. Furthermore these programs empower the employees of the transport companies and also at Kenya Revenue Authority to resolve and carry out tasks effectively.

5.4 Recommendations

The study recommends that emphasis should be put on the incorporation of the principles of operational performance to aide in the successful implementation of the cargo tracking system by the concerned sectors.. The role of the vendors offering the service, the role of the leaders both at KRA and in the transportation organizations, the participation of the employees and the spirit of empowering them, feedback, training and communication are critical to be able to succeed. Overall business productivity, profitability for the transporters and increased revenue collection will be actualized over a period of time as its implementation will pay off.

The study recommends that the concerned parties should establish a channel of communication and a way to work together so as to be able to make progressive steps while using the system. Lack of proper infrastructure, cost of implementation, lack of training, lack of understanding the requirement are some of the challenges faced in implementation of the system. The implementation of cargo tracking system has potential even in some the manufacturing industries as it will aide in reaching set goals like have systems Just-In-Time Electronic Cargo Tracking- ECTs has positively impacted both users and improved operational performance and growth.

5.5 Limitations of the Study

Since the study was focused on one aspect in the implementation of the electronic cargo tracking system, the possibility exists that the study might not have been a true reflection of other areas that the system may have had an impact. The study faced the limitation of time during data collection and respondents took long to fill the questionnaires thus delayed the duration for data analysis and presentation of the collected information.

5.6 Suggestions for Further Research

The study only focused on operational performance of the implementation of the electronic cargo tracking system with a focus on Kenya Revenue Authority and the transporters who have implemented the system. The effectiveness of the implementation of the system in the study was studied from the point of the two parties which was again measured by efficiency, cost and safety. However, other major objectives like ensuring transparency especially with what is being ferried from one boarder to the other, reduction of corruption, if studied in future research, then it would add more value to our national revenue collector.

A comparative study can also be carried using with systems implemented by our neighboring countries. This will assist in establishing any similarities and differences that may exist as far as the electronic cargo monitoring system is concerned.

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APPENDIX 1: RESEARCH QUESTIONNAIRE

SECTION A: ELECTRONIC CARGO TRACKING SYSTEM DATA COLLECTION FORM

This questionnaire is designed to collect data on the Electronic Cargo Tracking System and operational performance at Kenya Revenue Authority Officials. Your responses shall be accorded total confidentiality and will only be used for academic purposes.

Please tick where applicable.

Section A: General Information

1. Name of Organization.....
2. Name of respondent.....(Optional)
3. Designation of the respondent.....

Section B: System Expectation.

Indicate your level of expectation on the system by ticking in the appropriate box where 1= Strongly Agree 2= Agree, 3= Indifferent, 4= Disagree, 5= Strongly Disagree

Nos.	System User	1	2	3	4	5
1	The web-based systems is able to open using multiple browsers.					
2	The electronic cargo tracking software is user friendly					
3	Electronic Cargo Tracking System software has been able to meet all the set up requirements					
4	The system captures all the required data					
5	Information is made available across the organization on a real time basis					
	System Infrastructure	1	2	3	4	5
6	The software has a decentralized database that is efficient in information storage and sharing					
7	The software server is able to store information for over 12 months					
8	The software has relevant and reliable reports					
9	The reports generated can be saved and used in any Microsoft format making it easier to work on the data					
10	The software is able to store information and make it available even when offline					

Indicate your level of expectation on the system by ticking in the appropriate box where 1= Extremely Great, Extent 2= Great Extent, 3= Small Extent, 4= Not at all, 5= Not sure

	System Compatibility	1	2	3	4	5
11	The system is compatible with the other set-up organizational systems					
12	The system is able to easily merge with the systems for the neighboring countries					
13	The ECT system is able to pair and works well with android systems					
14	The system allows multiple users to be online and work at the same time					
15	The systems allows for tasks to be handled faster at the different stations					

Part 3: System Modification.

Indicate your level of expectation on the system by ticking in the appropriate box where 1= Strongly Agree 2= Agree, 3= Indifferent, 4= Disagree, 5= Strongly Disagree

	Emerging Expectations/Requirements	1	2	3	4	5
16	The system easy to customize					
17	The system has a knowledge database that can be used for data mining.					
18	The system allows the users to be able to make changes when required					
19	The system has progressive periodic upgrades					
20	Does the system has a working feedback mechanism					

To what extent, do you think electronic cargo tracking system is implemented?

- Not at all
- Slightly
- Moderately
- Quite a bit
- Totally

To what extent, do you think the following factors influence implementation of electronic cargo tracking systems

	Very small Extent (1)	Small Extent (2)	Moderate Extent (3)	Larger Extent (4)	Great Extent (5)
Technology					
Training					
Types of Products					
Organization culture					
Organization Structure					

SECTION 2: OPERATIONAL PERFORMANCE DATA COLLECTION FORM

Indicate your level of expectation on the system by ticking in the appropriate box where 1= Strongly Agree 2= Agree, 3= Indifferent, 4= Disagree, 5= Strongly Disagree

Operational Performance Indicator	Question	1	2	3	4	5
Efficiency	The system is able to capture data of all outbound trucks					
	The system is able to report a violation on a real time basis					
	Vehicle and cargo documentation is captured and stored on the system					
	Collection of duties and taxes is made easier					
	Clearance of cargo trucks at the border is made faster with the system					
Cost	The infrastructure set-up of the system is not expensive					
	There is a reduction of operating costs with the introduction of ECTs					
	Penalties and fines due to late delivery have reduced					
	There is realization of more revenue with introduction of ECTs					
	Cost reduction with the reduction of organization processes					
Safety	Cargo theft has reduced drastically					
	Cargo dumping has been reduced drastically					
	With the reduction of cargo dumping, infant business are now safer					
	Reeducation of dangerous and harmful cargo entering and/or leaving the country					
	Reduced road accidents and incidence on the road with the introduction of ECTs					

APPENDIX 2: RESEARCH QUESTIONNAIRE

SECTION A: ELECTRONIC CARGO TRACKING SYSTEM DATA COLLECTION FORM

This questionnaire is designed to collect data on the Electronic Cargo Tracking System and operational performance from the transporters. Your responses shall be accorded total confidentiality and will only be used for academic purposes.

Please tick where applicable.

Section A: General Information

- i. Name of Organization.....
- ii. Name of respondent.....(Optional)
- iii. Designation of the respondent.....

Section B: System Expectation.

Indicate your level of expectation on the system by ticking in the appropriate box where 1= Strongly Agree 2= Agree, 3= Indifferent, 4= Disagree, 5= Strongly Disagree

Nos.	System User	1	2	3	4	5
1	The web-based systems is able to open using multiple browsers.					
2	The electronic cargo tracking software is user friendly					
3	Electronic Cargo Tracking System software has been able to meet all the set up requirements for data collection					
4	The system captures all the required data					
5	Information is made available across the organization on a real time basis					
	System Infrastructure	1	2	3	4	5
6	The software has a decentralized database that is efficient in					
7	The software is able to store information for over 12 months					
8	The software has relevant and reliable reports					
9	The reports generated can be saved and used in any Microsoft format making it easier to work on the data					
10	The software is able to store information and make it available even when offline					

Indicate your level of expectation on the system by ticking in the appropriate box where 1= Extremely Great, Extent 2= Great Extent, 3= Small Extent, 4= Not at all, 5= Not sure

	System Compatibility	1	2	3	4	5
11	The system is compatible with the other set-up organizational systems					
12	The system is able to easily merge with the systems for the neighboring countries					
13	The ECT system is able to pair and works well with android systems					
14	The system allows multiple users to be online and work at the same time					
15	The systems allows for tasks to be handled faster at the different stations					

To what extent, do you think electronic cargo tracking system is implemented?

Not at all []

Slightly []

Moderately []

Quite a bit []

Totally []

To what extent, do you think the following factors influence implementation of electronic cargo tracking systems

	Very small Extent (1)	Small Extent (2)	Moderate Extent (3)	Larger Extent (4)	Great Extent (5)
Technology					
Training					
Types of Products					
Organization culture					
Organization Structure					

SECTION 2: OPERATIONAL PERFORMANCE DATA COLLECTION FORM

Indicate your level of expectation on the system by ticking in the appropriate box where 1= Strongly Agree 2= Agree, 3= Indifferent, 4= Disagree, 5= Strongly Disagree

Operational Performance Indicator	Question	1	2	3	4	5
Efficiency	The system is able to capture data of all outbound trucks					
	The system is able to report a violation on a real time basis					
	Vehicle and cargo documentation is captured and stored on the system					
	Collection of duties and taxes is made easier					
	Clearance of cargo trucks at the border is made faster with the system					
Cost	The infrastructure set-up of the system is not expensive					
	There is a reduction of operating costs with the introduction of ECTs					
	Penalties and fines due to late delivery have reduced					
	There is realization of more revenue with introduction of ECTs					
	Cost reduction with the reduction of organization processes					
Safety	Cargo theft has reduced drastically					
	Cargo dumping has been reduced drastically					
	With the reduction of cargo dumping, infant business are now safer					
	Reeducation of dangerous and harmful cargo entering and/or leaving the country					
	Reduced road accidents and incidence on the road with the introduction of ECTs					