

**FACTORS INFLUENCING ELECTRONIC CARGO TRACKING SYSTEM
EFFICIENCY IN KENYA CUSTOMS**

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DECLARATION

Student Declaration

This project is my original work and has not been presented for a post graduate diploma in any other academic or non-institution.

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DEDICATION

I dedicate this research to my wife Mrs Rael for her full support and constant source of inspiration. She has given me the drive and discipline to tackle any task with enthusiasm and determination. To my extended family and friends for moral support through the course.

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ABBREVIATIONS AND ACRONYMS

KRA	Kenya Revenue Authority
ECTS	Electronic Cargo Tracking System
RFID	Radio-Frequency Identification
RECTS	Regional Electronic Cargo Tracking System

DEFINITION OF TERMS

Transit goods Goods imported through the region to a country within or outside the region

Electronic Cargo Tracking System

This is a device or a GPS unit that tracks information that is normally carried by an individual or a vehicle that is moving. The device uses a global positioning system for tracking and determining the exact location which is thus its carrier and different intervals.

Customs This is the department that is charged with the responsibility of collecting and administering levies.

ABSTRACT

The officers at the customs are mandated to collect revenue, protect the domestic market, collect trade statistics and facilitate trade. This study determined the factors influencing the efficiency of electronic cargo tracking system in Kenya customs. The study specifically examined the influence of transportation cost, security and clearance time of transit goods on efficiency of electronic cargo tracking system in Kenya customs. The study was founded on resource-based view theory, instrumental theory and the theory of constraints. Descriptive cross-sectional survey research design was used. The study targeted Mombasa transporters, ECTS officials, ECTS officials, rapid response unit officials and ECTS authorized vendors who were 479 in total. A sample of 218 respondents, selected through stratified random sampling, was involved in the actual study. The researcher tested the research questionnaire's reliability and also ensured its validity before undertaking the main study. The supervisor was consulted in order to ensure content validity of the research questionnaire. Cronbach's alpha coefficient was used to test the reliability of the research questionnaire. Data was collected using self-administered semi-structured questionnaires. Descriptive statistical tools included frequencies, percentages, means and standard deviations. Inferential statistical tools were correlation and multiple regression analysis. Tables were used in presentation of study findings. The study established that improving transportation cost of transit goods by 1 unit enhances efficiency of electronic cargo tracking system in Kenya customs by 0.362 unit ($\beta_1 = 0.362$; $p > 0.05$). It was found out that enhancing security of transit goods by 1 unit enhances efficiency of electronic cargo tracking system in Kenya customs by 0.516 unit ($\beta_2 = 0.516$; $p < 0.05$). The study established that improving clearance time of transit goods by 1 unit increases efficiency of electronic cargo tracking system in Kenya customs by 0.265 unit ($\beta_3 = 0.265$; $p > 0.05$). It was concluded that transportation cost of transit goods, security of transit goods and clearance time of transit goods have a positive and significant influence on efficiency of electronic cargo tracking system in Kenya customs. It was recommended that appropriate policies should be implemented to ensure reduced transportation costs and clearance times as well as improved security of transit goods.

CHAPTER ONE

INTRODUCTION

1.1 Background

Across the globe, it is said that about 16 million containers at the maritime are involved in the line of transit in the course of the process of logistic in a given day without considering weather or time through the road, rail or sea or the waiting that awaits stuffing, stripping, delivery and pick up (Miler and Bujak, 2014). The tracking solution and cargo monitoring is charged with the role of facilitating smooth flow of timely and accurate information to all the parties that are involved such as government agencies and supply chain partners (Mahknecht and Madani, 2007). The Electronic Cargo Tracking System (ECTS) on the other hand is referred to a system that has multiple tiers that are developed to the monitor that the goods electronically in their course of transit and that is in charge of controlling the goods in their movement along the supply chain coming from their source of destination. The goods on transit are monitored through a real-time system through the Radio frequency identification (RFID) and the technology of GPRS and GPS (Chong & Hoek, 2011).

Owing to the ideas of Madani and Mahlknechet (2007) the role of the ECTS is purposely to foster end-to-end safety and the security of the chain. It is on this reason therefore that integrated management and monitoring appears to begin at the at the packaging and consolidation centers is appeared to have been followed the transportation by the road and later delivered to the port which includes the storage at the port and the yards at the terminal points of the port thus offering the deck monitoring of the ship deck which is taken through the finishes and drayage and the de-consolidation and the monitoring and the unpacking at the shippers or the users at the end point which is normally the warehouse.

The gadget which is normally magnetic is usually attached to the rear of the container which is usually armed the period before the moving of the Lorries. The magnet has the information about the lorry that carries the container and the container with an inclusion of the contacts of the driver. At any point when there is a diversion from the route of transit which is normally observed at the command center

which takes place at three capitals accompanied by a team of officers at the customs and the police that are on patrol at different points of check so as to respond to the issues that may point out to violations that might be triggered by the use of system (Njanja, 2017). There is a very broad spectrum of single events that can formulate alerts like a case of an opening a door, the breaking of the door by-passing, an aspect of breaking in the container or the door that could suffering the impact. The work that might be triggering to the extent of setting a combination of events for instance a case of a door container that might be opened in a certain outside area (Giannopoulos, 2004).

In the region of East Africa, KRA has been said to implement the ECTS to the extent of making a mandatory requirement in terms of technology so as to secure the goods that are in transit to and eventually reducing the cost of transportation and at the end of the day increase the transactions at the cross-border regions (Njanja, 2016). The pilot study by Kenya on the tracking gadgets was started with the acquisition of 1500 gadgets. Following the launch by Kenya, Rwanda and Uganda have seemingly followed suit by also acquiring gadgets to the tune of 7000 so as to ensure the fool proof monitoring of the border transactions (Njanja, 2016).

1.1.1 Electronic Cargo Tracking System in Kenya Customs

The section herein reviews the studies that were undertaken with a review of assessing the effects of electronic cargo tracking system on transit goods control and develops deeper look at the key areas of cost reduction, cargo security and reduced transit time. The assessment is involved in assuming a perspective that has a global angle which is then narrowed down to the regional perspectives and later on zeroed in to the perspectives at the local levels. There has been a heated argument on the productivity of the IT which poses a paradox thus suggesting that there is unclear reports that have confirmed the impacts of IT. It appears that the claim could hold water in consideration of the third party companies. However, reports indicates that IT has had significant impacts in terms of the conventional core competencies like transportation, distribution and inventory management (Evangelista, McKinnon & Sweeney, 2007).

There have been continued debates between the management consultants and professors, business persons on the question of efficiency and its impacts on the

business operations. Related articles such as (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 dependency of date, the nature that is dynamic in terms of its capabilities, in that the success of the organization is largely pegged on their learning (Cohen and Levintal, 1990). 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.

1.2 Statement of the Problem

Across the globe, it is said that about 16 million containers at the maritime are involved in the line of transit in the course of the process of logistic in a given day without considering weather or time through the road, rail or sea or the waiting that awaits stuffing, stripping, delivery and pick up. In the event that a container is misplaced it causes operational and financial risks. Further, in the event of a delay, extra costs such as the transactional costs, sales opportunity that are missed, production disruptions and the cost of selling goods which also goes high goods (Lechner & Baumann, 2000). The report by the World Bank indicates that use of ECTS is used across the globe by the authorities that are charged with the role of collecting taxes, cargo theft, and loss of tax and the improved regulations of compliance. Interestingly, there is no data in Kenya that supports the efficiency of ECTS goods in transit in Kenya. The study herein thus seeks to understand the efficiency of electronic cargo tracking system.

1.3 Objectives

1.3.1 General Objective

The general objective of the study was to determine the factors influencing the efficiency of electronic cargo tracking system in Kenya customs

1.3.2 Specific Objectives

- i. To determine the influence of transportation cost of transit goods on efficiency of electronic cargo tracking system in Kenya customs.
- ii. To determine the influence of security of transit goods on efficiency of electronic cargo tracking system in Kenya customs.
- iii. To determine the influence of clearance time of transit goods on efficiency of electronic cargo tracking system in Kenya customs.

1.4 Research Questions

- i. What is the influence of transportation cost of transit goods on efficiency of electronic cargo tracking system in Kenya customs?
- ii. What is the influence of security of transit goods on efficiency of electronic cargo tracking system in Kenya customs?
- iii. What is the influence of clearance time of transit goods on efficiency of electronic cargo tracking system in Kenya customs?

1.5 Justification

This study provides essential information on the influence of transportation cost, security and clearance time of transit goods on efficiency of electronic cargo tracking system in Kenya customs. The findings are useful to KRA management for continual improvement and project evaluation, as well as stakeholders dealing with transit of goods in the East Africa region.

1.6 Scope

The study sought to find out the influence of transportation cost, security and clearance time of transit goods on the efficiency of electronic cargo tracking system in Kenya customs. The target population of the study was Kenya Customs officers, ECTS vendors and transit truckers.

1.7 Limitations

The study was limited by fear of victimization by employees and this negatively affected their willingness to freely and honestly respond to questions asked. Secondly, in dealing with the fear of victimization, the researcher assured the respondents that the research information was to be used solely for this study and

that any information received from respondents was to be treated with utmost confidentiality.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter we will discuss the relevant literature that has been reviewed in the area of efficiency of transit goods control. In this chapter we shall consider different reviews and opinions of different scholars in relation to the question of tax and efficiency of the electronic systems in the course of tax collection.

2.2 Theoretical Review

2.2.1 Resource Based Theory of Competitive Advantage

The theory of the Resource based (RBV) is described as the competitive advantage of a firm which is primarily in the course of applying the bundle intangible and tangible resources that are valuable at the disposal of the youth (Mwailu & Mercer, 1983). The short term transformation is competitive advantage that should be sustained which needs the resources that has a heterogeneous nature and thus not perfectly mobile. In the event that the conditions hold, these bundle of resources should be in a position to make the firm be sustained beyond the reasonable average (Peteraf, 1993). In this course, the story makes a proposal that the firms should have an objective that is primary with financial performance that are specific. We should note that measure of the business is the amount of profits that are made at any given time.

2.2.2 Instrumental Theory

The theory of instrumental gives a wide perception of technology which is accepted by many. The idea of the theory is that technology is used a tool to serve its users in that it is a neutral without assessing content of it's of its own (Kenneth & Laudon, 2007). According to this theory described technology which appears to be indifferent in relation to the politics in the contemporary world more so in the context of capitalist and socialist communities. In this case, technology is thus seen to be different compared religions or legal that may not be transferred to the social contexts that are new on the account that technology is intertwined with society from where they originate (Capgemini, 2008).

2.2.3 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 & Goldratt, 1980). The Theory of Constraints states that constraints determine the performance of a system.

According to Tullis (2001), the goal of this theory in business as we eliminate the constraints is to maximize the owners' or stockholders' wealth. Example of a constraint is people or departments that cannot keep up with organizational changes. If such people or department cannot be more productive, they will not be able to maximize their returns. Another example is policy constraints such as 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 internal processes. 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 Customs 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 initially also need to be dealt with as they emerge, and the learning curve lessons recorded for future reference (Simon & Schuster, 1996).

2.3 Conceptual Framework

According to Mugenda (2008) a conceptual framework is a brief description of the occurrence under the study accompanied by a graphical illustration of the independent and dependent variables. According to Camp (2001), a conceptual framework refers to a structure of what has been learnt to best explain the natural progression of a phenomenon that is being studied. The conceptual framework

illustrates the interaction of independent and dependent variables. The independent variables as shown in Figure 2.1 are transportation cost, security and clearance time. On the other hand, the dependent variable is represented by ECTS.

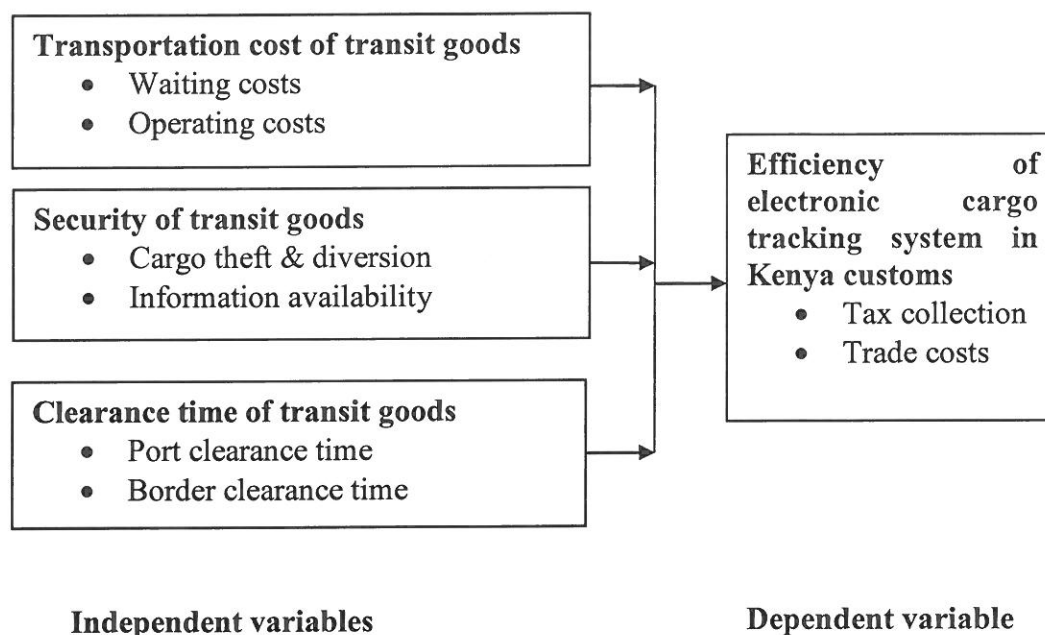


Figure 2.1: Conceptual Framework

2.3.1 Transportation Cost of ECTS

E-seal technology solutions and the respective conditions and barriers concerning their use, the systems have proven to have better use at low speeds. In addition, they may not be appropriate or necessary for application on low value (or bulk) cargo due to the involved purchasing and operational costs. In other words, in case the costs involved for the purchasing, operation and maintenance of e-seal equipment are equal or much higher than the value of transported cargo, the use of such technology may be meaningless (McCormack *et al.* 2011-2012).

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 (2007). 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. Kenya Customs 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. Kenya Customs 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 Kenya Customs, Border stations, Container Freight Stations (CFS), Bonded warehouses, Export Processing Zones (EPZ), Port and Kenya Customs approved yards are in a total of 14 regions countrywide.

2.3.2 Cargo Security

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 ,Busia and Malaba border points through which goods have an entry point to the landlocked Great Lakes Region, (Business Daily- Kenya customs steps up the war on dumping of transit goods, 2014).

Kenya customs 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.

2.4 Empirical Review

According to a study that was carried out by Mohan, it was noted that the cost of production should be pushed to consumers. In this regard, the study concluded that there are several processes that are involved in the logistics chains. Even as the cost of production is pushed to customers, it is essential to maintain the standard of products that are offered. The research concluded that there is a close link between dynamic logistics and operations that are sustainable and competitive advantage.

Caris et al (2015) on the other hand conducted his study to evaluate the question of planning in the course of logistics and how it probably helps in making the right

decisions in the chain of intermodal freight. According to his view, there are three models namely (Simba, Lambit and Nodus) which are used in support of the decision making processes.

Bosiach on the other hand posited a model that was to ensure that an integrated system that was to be in charge of Intermodal Transport system. The two models that were coined by Bosiach appears to offer solutions in the event that the transportation is not available.

2.5 Critique of Existing Literature Relevant to the Study

A study by Selviaridis & Spring (2007) stated that performance measurement in vendor relationships should be elaborate and recorded for the basis of making informed decisions for improvement. The study however, did not give proper suggestions on measurement criteria or give details information of how the results should be interpreted. The findings of the have become known as productivity paradox because the studies have not confirmed the expectations of a positive correlation between electronic cargo tracking systems and performance of the transit goods controls.

Study by Oirere (2015) on the Freight Watch International report revealed that the East African countries are on the list of spots in Africa where businesses and supply managers have reported cargo theft as one of the main challenges facing their operations. This ranks alongside corruption, high rates of crime and violence, poor infrastructure, weak governance, political instability and social unrest.

Oirere's study also revealed that while technology behind ECTS became available in early 2004, it was only in April 2010 that the Kenyan government introduced the mandatory installation requirements and Uganda followed in November 2013. However some companies did preempt the legislation and in partnership with private haulers, freight forwarders and government revenue agencies, rolled out cargo tracking technology in East Africa to help curb the thefts and minimize losses on transit cargo. The study only focuses on the challenges that the Customs needed to address but it was not detailed on the operational efficiency of the ECTS itself on transit goods' control (Conway et al. 2006).

2.6 Research Gaps

No study however has been conclusively done on the actual effects on the electronic cargo tracking systems on the efficiency of transit goods control in Kenya. And even more so no studies have touched on the specific effects of the electronic cargo tracking systems. Although most studies indicated that there were need to adopt and implement the electronic tracking through use of effective IT systems, no study discussed the actual effects and how they impact on the transit of goods across the East Africa region.

In relation to research that was undertaken, there were gaps that were identified in relation to the use of electronic devices to track the goods on transit in a manner that would ensure that the tax and duties would be increased. To begin with, there are different levels of ICT penetration. In this case the research has not been exploited to the extent of analyzing these levels of penetration. Secondly, there are a grey areas in terms of lack of advancement in technology to the extent of ensuring that better services are offered. Therefore the tracking technology is viable but there are areas that should be focused by literature and research going forward.

2.7 Summary

This chapter was concerned with giving insights on the effects of electronic cargo tracking system on transit goods control in Kenya by reviewing literature. We revisited theoretical literature theories of literature were resource based theory, instrumental theory and theory of constraints and operational measures. Literature was also reviewed to shade light on the relationship between variables which included cost reduction, cargo security and reduced clearance time. The researcher went on to look at the conceptual framework, critique of the existing literature and finally the research gaps.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives an illustration of the specific approach used in the execution of the study. It gives an overview of the study design and sites population to be covered, sample size, the sampling technique, the data collection instruments and the procedures of data collections were reflected alongside the data presentation analysis techniques.

3.2 Research Design

A research design simply outlines the suitable approaches to be employed to solve the research problem in line with the time frame and cost budget. The design creates the foundation of the entire research work (Rajasekar et al., 2006). In this context, the research design was descriptive research design. According to Kothari (2008), this research design is deemed as the best approach with regard to collection of facts as they are on the ground without any manipulation of the variables under study. Kombo, (2006) further emphasizes that a descriptive study design can be used when the emphasis is determination of the extent to which a phenomenon is influenced by the variables under study. Also Kerlinger (2009) states that descriptive studies are not only restricted to facts finding, but might often results in the formulation of important principles of knowledge and solution to significant problems.

3.3 Population

Orodho (2013) states that a population is the total collection of elements about which inferences are made and refers to all possible cases which are of interest for a study. The population of this study involved Mombasa transporters, ECTS Division (Times Tower), ECTS Regional HQ (Southern Division), Rapid Response Unit and ECTS Authorized Vendors.

3.4 Sampling Frame

Sampling frame is a source material or device from which a sample is drawn. It is a list of all those within a population who can be sampled, and may include individuals, households or institution (Zikmund & Babin, 2012). The sampling frame

for this study therefore was the Mombasa transporters, ECTS officials, RECTS officials, rapid response unit officials and ECTS authorized vendors.

Table 3.1: Target Population

Organization Officials	Total Number
Mombasa transporters	252
ECTS officials	20
RECTS officials	48
Rapid response unit officials	50
ECTS vendors	109
Total	479

3.5 Sample Size and Sampling Technique

Sampling is the process of selecting a sub group in the population that will be used in the research to point out the phenomena that is being interrogated by the research. In this case, the study will use a random stratified sampling technique. This kind of a technique works in a manner that a population is divided into small groups known as strata (Goertz & Mahoney, 2012). The researcher then randomly picks individuals from the strata the people who would take part in the research. Yamane (1967:886) provides a simplified formula to calculate sample sizes. This formula was used to calculate the sample sizes in Tables 2 and 3 and is shown below. A 95% confidence level and $P = 0.05$.

$$n = N / 1 + N(e)^2$$

Where n is the sample size, N is the population size, and e is the level of precision. When this formula is applied to the above sample, we get a sample size of 220.

$$n = 479 / 1 + 479(0.05)^2 = 218$$

The number of the respondents to which the questionnaires were administered to each stratum as shown below:

Table 3.2: Sampling Frame and Sample Size

Organization Officials	Total Number	Sample Size
Mombasa Transporters	252	115
ECTS officials	20	9
RECTS officials	48	22
Rapid Response Unit	50	23
ECTS Vendors	109	49
Total	479	218

3.6 Data Collection Instruments

Data collection is the process of gathering information about a phenomenon using data collection instruments (Goertz & Mahoney, 2012). The data collected was primary in nature through the use of questionnaires which included both close ended and open ended questions. The use of questionnaires for primary data collection has numerous benefits. For example, questionnaires are easy to administer, are less costly, and ensures greater depth of response (Mugenda & Mugenda, 2013). For the purpose of this study, the questionnaire was appropriate since answers are easier to code, statistically analyze and less articulate respondents are not disadvantaged. For this study 220 questionnaires were administered.

3.7 Data Collection Procedures

In this study, data was collected by use of questionnaires which was physically delivered to respondents together with a questionnaire forwarding letter accompanied by an introduction letter from The Kenya School of Revenue Administration (KESRA). The researcher made follow ups to ensure that the questionnaires are fully completed and mailed back promptly.

3.8 Pilot Testing

The main objective of pilot testing is to ascertain the accuracy and validity of the instruments before they are used in the actual study (Mugenda & Mugenda, 2013). The research instrument for this study was carefully constructed to ensure their reliability and validity in the attainment of the objectives of the study. 18 respondents were involved in the pilot study, which represents 10% of the sample size. Content validity of the research questionnaire was ensured by consulting the research

supervisor. Reliability of the research questionnaire was ensured using Cronbach's alpha coefficient. The data to be collected during the piloting was analyzed and the results used for appropriate amendment of the instruments. According to Frank and Wallen (2012), a reliability coefficient of 0.7 was an acceptable value for research purposes, hence the instruments were considered reliable for data collection.

3.9 Data Analysis

After collection of data through questionnaires, it was prepared in readiness for analysis by editing, handling blank responses, coding, categorizing and keying into Statistical Package for Social Sciences (SPSS) version 25 computer software for analysis. Descriptive statistics included frequencies, percentages, means and standard deviations. Inferential statistics included multiple regression analysis and correlation analysis. A multivariate regression model will be used to link the independent variables to the dependent variable as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu$$

where;

Y represents efficiency of electronic cargo tracking system in Kenya customs

β_0 represents the y-intercept

X_1 , X_2 and X_3 represent transportation cost of transit goods, security of transit goods and clearance time of transit goods respectively

β_1 , β_2 and β_3 represent the coefficients of transportation cost of transit goods, security of transit goods and clearance time of transit goods respectively

μ is the error term

CHAPTER FOUR

RESEARCH FINDINGS AND ANALYSIS

4.1 Introduction

This chapter presents the response rate, background information of respondents, results of descriptive statistics and inferential statistical results.

4.2 Response Rate

Out of all the 220 questionnaires that were given to respondents, 125 questionnaires were duly filled and returned. Therefore the response rate was 57.3% which is over the 50% threshold stipulated by Kothari and Garg (2014). The results are revealed in Table 4.1.

Table 4.1: Response Rate

	Frequency	Percent
Questionnaires duly filled and returned	125	57.3
Questionnaires not returned	93	42.7
Total	218	100.0

4.3 Reliability Test Results

The reliability of the research questionnaire was examined. Table 4.2 shows the results.

Table 4.2: Reliability of the Research Questionnaire

Constructs	Cronbach's Alpha	Test Items
Transportation cost of transit goods	0.811	5
Security of transit goods	0.792	5
Clearance time of transit goods	0.715	5
Efficiency of electronic cargo tracking system in Kenya customs	0.842	5

The results indicate that efficiency of electronic cargo tracking system in Kenya customs had the highest Cronbach's alpha coefficient (0.842). It was determined that transportation cost of transit goods had the second highest Cronbach's alpha coefficient (0.811). Security of transit goods had the second lowest Cronbach's

alpha coefficient (0.792) while clearance time of transit goods had the lowest Cronbach's alpha coefficient (0.715). This implies that the research questionnaire was reliable as all the constructs had Cronbach's alpha coefficients higher than 0.7.

4.4 Demographic Analysis

The researcher sought demographic information from the respondents. These are the gender, age, educational level, the roles of respondents and time the respondents had been in the organization.

4.4.1 Distribution of Respondents by Gender

The study examined the gender of respondents as revealed in Table 4.3.

Table 4.3: Distribution of Respondents by Gender

Gender of respondent	Frequency	Percent
Male	84	67.2
Female	41	32.8
Total	125	100.0

The findings indicate that 84 (67.2%) respondents were male. 41 (32.8%) respondents were female. This implies that the gender of respondents may not have had significant effect on efficiency of electronic cargo tracking system in Kenya customs.

4.4.2 Distribution of Respondents by Age

The age of respondents was also examined. The results are shown in Table 4.4.

Table 4.4: Distribution of Respondents by Age

Age bracket	Frequency	Percent
21 to 30 years	70	56.0
31 to 40 years	37	29.6
41 to 50 years	18	14.4
Total	125	100.0

The findings indicate that 70 (56.0%) respondents were aged between 21 and 30 years. 37 (29.6%) were in the aged between 31 and 40 years. It was determined that 18 (14.4%) respondents were in the age bracket of 41 to 50 years. This implies that

the age of the respondents may not have had significant effect on efficiency of electronic cargo tracking system in Kenya customs.

4.4.3 Distribution of Respondents by Educational Level

The researcher ascertained the educational levels of respondents. Table 4.5 depicts the results of analysis.

Table 4.5: Highest Educational Level of Respondents

Educational Level	Frequency	Percent
Post secondary	59	47.2
Secondary	37	29.6
Graduate	29	23.2
Total	125	100.0

The study found out that 59 (47.2%) respondents had attained post secondary education. 37 (29.6%) respondents had attained secondary education. It was also established that 29 (23.2%) respondents were graduates. This implies that the educational level of the respondents may not have had significant effect efficiency of electronic cargo tracking system in Kenya customs.

4.4.4 Distribution of Respondents by Role in the Organization

The study also examined distribution of respondents according to the organizational roles played. The results are depicted in Table 4.6.

Table 4.6: Role in the Organization

Position	Frequency	Percent
Transporter	62	49.6
ECTS vendor official	36	28.8
RECTS official	15	12.0
ECTS official	6	4.8
Rapid response unit official	6	4.8
Total	125	100.0

The findings indicate that 36 (28.8%) respondents were ECTS vendor officials. 34 (27.2%) respondents were transporters. It was found out that 27 (21.6%) respondents

were ECTS officials. 22 (17.6%) respondents were RECTS officials while 6 (4.8%) respondents were rapid response unit officials.

4.4.5 Distribution of Respondents by Period of Time in the Organization

The study also examined the distribution of respondents according to the period of time they had worked in their organizations. The results of analysis are shown in Table 4.7.

Table 4.7: Period of Time in the Organization

Years	Frequency	Percent
1 to 5 years	54	43.2
6 to 10 years	37	29.6
Below 1 year	20	16.0
Over 10 years	14	11.2
Total	125	100.0

The findings indicate that 54 (43.2%) respondents had worked in their organizations for 1 to 5 years. 37 (29.6%) respondents had worked in their organizations for 6 to 10 years. It was established that 20 (16.0%) respondents had worked in their organizations for less than a year. 14 (11.2%) respondents had worked in their organizations for over years. This implies that majority of respondents understood the trade processes as done in their organizations.

4.5 Descriptive Analysis

The study also analyzed the opinions of respondents using means and standard deviations (Std Dev).

4.5.1 Transportation Cost of Transit Goods

The researcher analyzed the opinions of the respondents on transportation cost of transit goods. Table 4.8 depicts the results.

Table 4.8: Descriptive Statistics for Transportation Cost of Transit Goods

	N	Mean	Std Dev
Waiting costs due to roadblocks are low	125	2.57	1.187
Waiting costs as a result of weighbridges are low	125	2.40	1.437
Costs of paying for services of vendors for transit cargo tracking are low	125	2.37	1.273
The costs of maintenance and repair of trucks have reduced	125	2.29	.990
The costs of paying drivers of transit goods have reduced	125	1.87	.647

The findings indicate that the respondents were undecided on whether waiting costs due to roadblocks are low or not (mean = 2.57; std dev = 1.187). The respondents disagreed that waiting costs as a result of weighbridges are low (mean = 2.40; std dev = 1.437). It was determined that the respondents disagreed that costs of paying for services of vendors for transit cargo tracking are low (mean = 2.37; std dev = 1.273). The respondents disagreed that the costs of maintenance and repair of trucks have reduced (mean = 2.29; std dev = 0.990). The respondents also disagreed that the costs of paying drivers of transit goods have reduced (mean = 1.87; std dev = 0.647).

4.5.2 Security of Transit Goods

This study also scrutinized the opinions of the respondents on security of transit goods. Table 4.9 shows the results.

Table 4.9: Descriptive Statistics for Security of Transit Goods

	N	Mean	Std. Dev
It is easy to track stolen cargo	125	3.46	1.111
Cases of transit cargo diversion have reduced significantly	125	3.34	1.128
It is easy to track and monitor diverted transit cargo	125	3.30	1.150
Real time information about transit cargo is available at any given time throughout the transit time	125	3.29	.974
Cases of transit cargo theft have reduced significantly	125	3.18	1.071

The findings indicate that the respondents were undecided on whether it is easy to track stolen cargo or not (mean = 3.46; std dev = 1.111). The respondents were also

undecided on whether cases of transit cargo diversion have reduced significantly or not (mean = 3.34; std dev = 1.128). It was determined that the respondents were undecided on whether it is easy to track and monitor diverted transit cargo or not (mean = 3.30; std dev = 1.150). It was found out that the respondents were undecided on whether real time information about transit cargo is available at any given time throughout the transit time or not (mean = 3.29; std dev = 0.974). It was noted that the respondents were undecided on whether cases of transit cargo theft have reduced significantly or not (mean = 3.18; std dev = 1.071).

4.5.3 Clearance Time of Transit Goods

The opinions of respondents on clearance time of transit goods. Table 4.10 shows the results.

Table 4.10: Descriptive Statistics for Clearance Time of Transit Goods

	N	Mean	Std. Dev
The time taken in registration and documentation process for goods at the borders has reduced	125	2.76	1.081
Offloading and loading of cargo at the port of Mombasa is fast	125	2.73	1.103
The inspection of goods at the borders is fast and effective	125	2.62	1.126
Goods are quickly and effectively inspected at the port of Mombasa	125	2.57	1.095
The time taken in registration and documentation process for goods at the port of Mombasa has reduced	125	2.35	1.018

The findings indicate that respondents were undecided on whether the time taken in registration and documentation process for goods at the borders has reduced or not (mean = 2.76; std dev = 1.081). The respondents were also undecided on whether offloading and loading of cargo at the port of Mombasa is fast or not (mean = 2.73; std dev = 1.103). It was established that the respondents were undecided on whether the inspection of goods at the borders is fast and effective or not (mean = 2.62; std dev = 1.126). It was noted that the respondents were undecided on whether goods are quickly and effectively inspected at the port of Mombasa or not (mean = 2.57; std dev = 1.095). It was found out that the respondents disagreed that the time taken in

registration and documentation process for goods at the port of Mombasa has reduced (mean = 2.35; std dev = 1.018).

4.5.4 Efficiency of Electronic Cargo Tracking System in Kenya Customs

The researcher examined the views of respondents on efficiency of electronic cargo tracking system in Kenya customs. The results of analysis are shown in Table 4.11.

Table 4.11: Descriptive Statistics for Efficiency of Electronic Cargo Tracking System in Kenya Customs

	N	Mean	Std. Dev
Costs associated with late deliveries have reduced	125	3.39	1.224
Cases of tax evasion have reduced	125	3.35	1.049
Costs due to delayed clearance of cargo trucks at the borders have reduced	125	3.35	1.240
The process of collecting duties and taxes is now easy	125	3.34	1.425
Trade costs associated with bureaucratic procedures have reduced	125	3.24	1.227

The study found out that the respondents were undecided on whether costs associated with late deliveries have reduced or not (mean = 3.39; std dev = 1.224). The respondents were undecided on whether cases of tax evasion have reduced or not (mean = 3.35; std dev = 1.049). It was found out that the respondents were undecided on whether costs due to delayed clearance of cargo trucks at the borders have reduced or not (mean = 3.35; std dev = 1.240). The respondents were undecided on whether the process of collecting duties and taxes is now easy or not (mean = 3.34; std dev = 1.425). It was noted that the respondents were undecided on whether trade costs associated with bureaucratic procedures have reduced or not (mean = 3.24; std dev = 1.227).

4.6 Inferential Analysis

The researcher carried out correlation and multiple regression analysis in relation to the dependent and the independent variables of the study.

4.6.1 Relationship Between Transportation Cost of Transit Goods and Efficiency of Electronic Cargo Tracking System in Kenya Customs

The relationship between transportation cost of transit goods and efficiency of electronic cargo tracking system in Kenya customs was analysed. Table 4.12 depicts the results.

Table 4.12: Correlation Analysis for Transportation Cost of Transit Goods

		Efficiency of electronic cargo tracking system in Kenya customs
Transportation cost	Pearson Correlation	.510**
of transit goods	Sig. (2-tailed)	.000

** . Correlation is significant at the 0.01 level (2-tailed).

The findings indicate that there is a positive and significant relationship between transportation cost of transit goods and efficiency of electronic cargo tracking system in Kenya customs ($r = 0.510$; $p < 0.05$). It means that that improved transportation cost of transit goods is associated with increased efficiency of electronic cargo tracking system in Kenya customs and vice-versa.

4.6.2 Relationship Between Security of Transit Goods and Efficiency of Electronic Cargo Tracking System in Kenya Customs

The researcher examined the relationship between security of transit goods and efficiency of electronic cargo tracking system in Kenya customs. The results of analysis are shown in Table 4.13.

Table 4.13: Correlation Analysis for Security of Transit Goods

		Efficiency of electronic cargo tracking system in Kenya customs
Security of transit	Pearson Correlation	.546**
goods	Sig. (2-tailed)	.000

** . Correlation is significant at the 0.01 level (2-tailed).

The study findings indicate that there is a positive and significant relationship between security of transit goods and efficiency of electronic cargo tracking system in Kenya customs ($r = 0.546$; $p < 0.05$). It means that improving security of transit

goods is associated with improved efficiency of electronic cargo tracking system in Kenya customs and vice-versa.

4.6.3 Relationship Between Clearance Time of Transit Goods and Efficiency of Electronic Cargo Tracking System in Kenya Customs

The researcher examined the relationship between clearance time of transit goods and efficiency of electronic cargo tracking system in Kenya customs. The results of analysis are shown in Table 4.14.

Table 4.14: Correlation Analysis for Clearance Time of Transit Goods

		Efficiency of electronic cargo tracking system in Kenya customs
Clearance time of transit goods	Pearson Correlation	.369**
	Sig. (2-tailed)	.000

** . Correlation is significant at the 0.01 level (2-tailed).

It was noted that there is a negative and significant relationship between clearance time of transit goods and efficiency of electronic cargo tracking system in Kenya customs ($r = 0.369$; $p < 0.05$). It means that improved clearance time of transit goods is associated with increased efficiency of electronic cargo tracking system in Kenya customs and vice-versa.

4.6.4 Multiple Regression Analysis

The researcher also examined the combined effect of clearance time of transit goods, transportation cost of transit goods and security of transit goods on efficiency of electronic cargo tracking system in Kenya customs. The results of analysis are shown in Table 4.15.

Table 4.15: Multiple Regression Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.681	.464	.451	.73341

a. Predictors: (Constant), Clearance time of transit goods, Transportation cost of transit goods, Security of transit goods

b. Dependent Variable: Efficiency of electronic cargo tracking system in Kenya customs

The study found out that there is a positive and strong relationship between clearance time of transit goods, transportation cost of transit goods and security of transit goods and efficiency of electronic cargo tracking system in Kenya customs ($R = 0.681$). It was determined that 45.1% of the variation in efficiency of electronic cargo tracking system in Kenya customs can be explained by clearance time of transit goods, transportation cost of transit goods and security of transit goods ($R^2_{adj} = 0.451$). These findings denote that implies that clearance time of transit goods, transportation cost of transit goods and security of transit goods determine efficiency of electronic cargo tracking system in Kenya customs. However, model has an error of 0.73341 in predicting efficiency of electronic cargo tracking system in Kenya customs.

The regression analysis of variance (ANOVA) was conducted to assess the fit of the model for the data (Lind, Marchal, & Wathen, 2012). The results of analysis are shown in Table 4.16.

Table 4.16: Results of ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	56.338	3	18.779	34.913	.000
Residual	65.084	121	.538		
Total	121.422	124			

a. Predictors: (Constant), Clearance time of transit goods, Transportation cost of transit goods, Security of transit goods

b. Dependent Variable: Efficiency of electronic cargo tracking system in Kenya customs

The findings indicate that there is a statistically significant relationship between clearance time of transit goods, transportation cost of transit goods and security of transit goods and efficiency of electronic cargo tracking system in Kenya customs ($F = 34.913$; $p < 0.05$). It is implied that the model was fit for the data. The study also conducted the t-tests to examine the statistical significance of each independent variable's coefficient of regression. The pertinent results of analysis are shown in Table 4.17.

Table 4.17: Evaluating Individual Regression Coefficients

	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	.103	.341		.301	.764
Transportation cost of transit goods	.362	.087	.311	4.188	.000
Security of transit goods	.516	.085	.426	6.107	.000
Clearance time of transit goods	.265	.096	.197	2.754	.007

a. Dependent Variable: Efficiency of electronic cargo tracking system in Kenya customs

The study found out that transportation cost of transit goods predicts efficiency of electronic cargo tracking system in Kenya customs significantly ($t = 4.188$; $p > 0.05$). It was revealed that security of transit goods significantly predicts efficiency of electronic cargo tracking system in Kenya customs ($t = 6.107$; $p < 0.05$). The study found out that clearance time of transit goods significantly predicts efficiency of electronic cargo tracking system in Kenya customs ($t = 2.754$; $p < 0.05$). It is revealed that the predictor variables, clearance time of transit goods, transportation cost of transit goods and security of transit goods would be included in the multiple regression equation as they were statistically significant ($p < 0.05$) (Lind, Marchal, & Wathen, 2012). The multiple regression function in Equation 4.1 was used to explain the results of analysis.

$$Y = 0.510X_1 + 0.546X_2 + 0.369X_3 \dots\dots\dots \text{Equation 4.1}$$

The findings indicate that improving transportation cost of transit goods by 1 unit increases efficiency of electronic cargo tracking system in Kenya customs by 0.510 unit ($\beta_1 = 0.510$; $p > 0.05$). The study established that enhancing security of transit goods by 1 unit enhances efficiency of electronic cargo tracking system in Kenya customs by 0.546 unit ($\beta_2 = 0.546$; $p > 0.05$). It was revealed that that improving clearance time of transit goods by 1 unit increases efficiency of electronic cargo tracking system in Kenya customs by 0.318 unit ($\beta_3 = 0.369$; $p > 0.05$).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of key research findings, the conclusions drawn from the findings, recommendations and areas for further research.

5.2 Summary

This section outlines the major findings of the research study.

5.2.1 Transportation Cost of Transit Goods and Efficiency of Electronic Cargo Tracking System in Kenya Customs

The findings indicate that the respondents were undecided on whether waiting costs due to roadblocks are low or not. The respondents disagreed that waiting costs as a result of weighbridges are low. It was determined that the respondents disagreed that costs of paying for services of vendors for transit cargo tracking are low. The respondents disagreed that the costs of maintenance and repair of trucks have reduced. The respondents also disagreed that the costs of paying drivers of transit goods have reduced. It was found out that there is a positive and significant relationship between transportation cost of transit goods and efficiency of electronic cargo tracking system in Kenya customs ($r = 0.510$; $p < 0.05$). The study established that improving transportation cost of transit goods by 1 unit increases efficiency of electronic cargo tracking system in Kenya customs by 0.362 unit ($\beta_1 = 0.362$; $p > 0.05$).

5.2.2 Security of Transit Goods and Efficiency of Electronic Cargo Tracking System in Kenya Customs

The findings indicate that the respondents were undecided on whether it is easy to track stolen cargo or not. The respondents were also undecided on whether cases of transit cargo diversion have reduced significantly or not. It was determined that the respondents were undecided on whether it is easy to track and monitor diverted transit cargo or not. It was found out that the respondents were undecided on whether real time information about transit cargo is available at any given time throughout the transit time or not. It was noted that the respondents were undecided on whether

cases of transit cargo theft have reduced significantly or not. It was revealed that there is a positive and significant relationship between security of transit goods and efficiency of electronic cargo tracking system in Kenya customs ($r = 0.546$; $p < 0.05$). It was found out that enhancing security of transit goods by 1 unit enhances efficiency of electronic cargo tracking system in Kenya customs by 0.516 unit ($\beta_2 = 0.516$; $p < 0.05$).

5.2.3 Clearance Time of Transit Goods and Efficiency of Electronic Cargo Tracking System in Kenya Customs

The findings indicate that respondents were undecided on whether the time taken in registration and documentation process for goods at the borders has reduced or not. The respondents were also undecided on whether offloading and loading of cargo at the port of Mombasa is fast or not. It was established that the respondents were undecided on whether the inspection of goods at the borders is fast and effective or not. It was noted that the respondents were undecided on whether goods are quickly and effectively inspected at the port of Mombasa or not. It was found out that the respondents disagreed that the time taken in registration and documentation process for goods at the port of Mombasa has reduced. The study found out that there is a positive and significant relationship between clearance time of transit goods and efficiency of electronic cargo tracking system in Kenya customs ($r = 0.369$; $p < 0.05$). The study established that improving clearance time of transit goods by 1 unit increases efficiency of electronic cargo tracking system in Kenya customs by 0.265 ($\beta_3 = 0.265$; $p > 0.05$).

5.2.4 Efficiency of Electronic Cargo Tracking System in Kenya Customs

The study found out that the respondents were undecided on whether costs associated with late deliveries have reduced or not. The respondents were undecided on whether cases of tax evasion have reduced or not. It was found out that the respondents were undecided on whether costs due to delayed clearance of cargo trucks at the borders have reduced or not. The respondents were undecided on whether the process of collecting duties and taxes is now easy or not. It was noted that the respondents were undecided on whether trade costs associated with bureaucratic procedures have reduced or not.

5.3 Conclusions

This study made a number of conclusions in line with study objectives. This study concluded that transportation cost of transit goods has a positive and significant influence on efficiency of electronic cargo tracking system in Kenya customs. It was also concluded that security of transit goods positively and significantly influences efficiency of electronic cargo tracking system in Kenya customs. The study also concluded that clearance time of transit goods has a positive and significant influence on efficiency of electronic cargo tracking system in Kenya customs.

5.4 Recommendations

Based on the findings of this study, several recommendations were made to KRA and the government as well as ECTS vendors. Firstly, the customs in conjunctions with the vendors should roll out a program to ensure reduction of costs of installation of the ECTS gadgets in order to encourage the transporters. Rather than just using these gadgets for transit only, some transporters should be encouraged to use ECTS systems to control the local deliveries as well thereby reducing the total transport costs and at the same time generating revenue for the customs. The more the users of the ECTS systems, the high the revenue generated.

Secondly, the customs and the vendors must provide intervention programs and agile response unit that can pre-empt situations and respond immediately so that the gap between an alarm and the time of response is significantly reduced. This will ensure full confidence in the ECTS systems to provide security for the transit cargo. The laws associated with the transit controls must be made conspicuous and accessible to all parties into the transit. Thirdly, customs together with government and county governments should guarantee safety of the roads, in addition to installation of ECTS systems and providing monitoring platforms. This can be achieved by ensuring the roads are passable and the police patrol units are available on intervals. The challenges of corruption and bribery should be dealt with adequately and conclusively.

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KRA/KESRA/MSA/002

09TH NOVEMBER, 2017

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: REQUEST TO COLLECT RESEARCH PROJECT DATA

This is to certify that Bramwel Malele of admission number HDB335-Co16-2410/2016 is a bona fide student of the Kenya School of Revenue Administration (KESRA), Mombasa Campus. He is in his final year of study and is currently conducting a research project in partial fulfilment of the requirements leading to the award of a Postgraduate diploma in Customs Administration. Mr. Malele is in the process of gathering data that will strictly be used for academic purposes only. Regarding this issue, the School would like to seek your permission to allow him to collect information that relates to his research from your organization.

Thank you for your support and cooperation.

Yours sincerely,


Mutuvi Masila
Ag. Principal – KESRA, Mombasa Campus.



Tuliye Ushuru Tujitegemee !


KENYA
VISION 2030

Appendix II: Research Questionnaire

This questionnaire is meant to collect data for a research study entitled “*Factors influencing efficiency of electronic cargo tracking system in Kenya customs*”. Please respond to the questionnaire by ticking (✓) and filling where appropriate.

SECTION A: GENERAL INFORMATION

Kindly put a tick (✓) against the correct choice.

1. What is your gender?
Male [] Female []
2. Kindly indicate your age bracket
Below 20 years [] 20-30 years []
31-40 years [] 41-50 years []
51-60 years [] Above 60 years []
3. What is the highest level of education you have attained
Primary [] Secondary [] Post-secondary []
Graduate [] Post graduate [] Specify any other.....
4. Please indicate your role in the organization
Transporter [] ECTS official [] RECTS official []

Rapid response unit official [] ECTS Vendor official []
5. How long have you been in the current organization?
Below 1year [] 1-5 years []
6 -10 years [] Over 10 years []

Section B: Transportation Cost of Transit Goods

Please indicate your level of agreement or disagreement with statements in the table below using a 5-point scale: *Strongly Agree=5, Agree=4, Neutral=3, Disagree=2, Strongly Disagree=1* by ticking (√) in the appropriate box

	Statement	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly agree
1	Waiting costs due to roadblocks are low					
2	Waiting costs as a result of weighbridges are low					
3	The costs of paying drivers of transit goods have reduced					
4	Costs of paying for services of vendors for transit cargo tracking are low					
5	The costs of maintenance and repair of trucks have reduced					

Section C: Security of Transit Goods

Please indicate your level of agreement or disagreement with statements in the table below using a 5-point scale: *Strongly Agree*=5, *Agree*=4, *Neutral*=3, *Disagree*=2, *Strongly Disagree*=1 by ticking (✓) in the appropriate box

	Statement	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly agree
1	It is easy to track stolen cargo					
2	Cases of transit cargo theft have reduced significantly					
3	It is easy to track and monitor diverted transit cargo					
4	Cases of transit cargo diversion have reduced significantly					
5	Real time information about transit cargo is available at any given time throughout the transit time.					

Section D: Clearance Time of Transit Goods

Please indicate your level of agreement or disagreement with statements in the table below using a 5-point scale: *Strongly Agree=5, Agree=4, Neutral=3, Disagree=2, Strongly Disagree=1* by ticking (✓) in the appropriate box

	Statement	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly agree
1	The time taken in registration and documentation process for goods at the port of Mombasa has reduced					
2	Goods are quickly and effectively inspected at the port of Mombasa					
3	Offloading and loading of cargo at the port of Mombasa is fast					
4	The time taken in registration and documentation process for goods at the borders has reduced					
5	The inspection of goods at the borders is fast and effective					

Section F: Efficiency of Electronic Cargo Tracking System in Kenya Customs

Please indicate your level of agreement or disagreement with statements in the table below using a 5-point scale: *Strongly Agree=5, Agree=4, Neutral=3, Disagree=2, Strongly Disagree=1* by ticking (✓) in the appropriate box

	Statement	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly agree
1	Cases of tax evasion have reduced					
2	The process of collecting duties and taxes is now easy					
3	Trade costs associated with bureaucratic procedures have reduced					
4	Costs associated with late deliveries have reduced					
5	Costs due to delayed clearance of cargo trucks at the borders have reduced					

