INFLUENCE OF REGIONAL ELECTRONIC CARGO TRACKING SYSTEM ON MANAGEMENT OF TRANSIT GOODS IN KENYA: A CASE OF KENYA REVENUE AUTHORITY CUSTOMS DEPARTMENT

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DECLARATION

This research project report is my original work and has not been presented for a degree in any other university.

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L50/82911/2015

This research project report has been submitted for examination with my approval as the university supervisor.

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DEDICATION

This research project report is dedicated to my lovely wife, Janet Avuti Mwombe, my daughter,

Gael Ruby Neema, my parents, brothers and sisters for motivation and moral support they

extended to me and made this research a success.

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ABBREVIATIONS AND ACRONYMS

EAC East African community

ECTS   Electronic Cargo Tracking System

EMS   Expedited Mail Service

CMC Centralized Monitoring Centre

COMESA Common Market for East and Southern Africa

ICT   Information and Communications Technology

ITMS   Integrated Tax Management System

KRA   Kenya Revenue Authority

MMS   Manifest Management System

PIN   Personal Identification Number

RECTS   Regional ECTS

RRU Rapid Response Unit

SCT   Single Customs Territory

SIMBA   Tradex system used for the declaration of import goods

ABSTRACT

Handling of transit goods by Kenya Revenue Authority has been a challenge for many years. The use of physical escort of transit goods proved inefficient and risky. The licensing of private vendors to track goods had a few positive effects but still fell short of KRA requirements. This challenge is what informed KRA to sign a memorandum of understanding with Uganda Revenue Authority and Rwanda Revenue Authority for the rollout of regional electronic cargo tracking. The research sought to evaluate the influence of regional electronic cargo tracking on management of transit goods in Kenya Revenue Authority. The study seeks to determine the influence of seamless monitoring, transit time, transparency and accountability on management of transit goods. The study was limited to Kenya. The Technology Acceptance Model and system theories were used as RECTS is an information technology system whose influence to Customs operations can be explained by these theories. This was a descriptive research, where the target population was drawn from the KRA customs department staff working in the transit monitoring unit, customs clearing agents, truck drivers and truck owners. Stratified and simple random sampling techniques were used to generate the sample size and the respondents. As sample size of 60 respondents was used to carry out this research. Research data was collected through the use of structured questionnaires and structured interviews. The achieved data was analyzed using Statistical Package for Social Sciences (SPSS) software and presented by use of tables and graphs. The research findings pointed out that seamless monitoring, transit time, transparency among stake holders and accountability positively influence the management of transit goods. The seamless monitoring has ensured quick insemination of alerts to responsible units, quick response to alerts by RRUs, reduced dwell time at Malaba and Busia borders and has drastically reduced the dumping of transit goods in Kenya. RECTS has also led to the reduction of cargo transit time along the northern corridor, led to improvement of transparency among stakeholders in the business and has improved accountability of all transit goods armed with RECTS seals. This has in turned improved the management of transit goods by Customs department of KRA. KRA however needs to invest more finances in the TMU unit to ensure electronic seals are procured, this would reduce delays due to shortage of seals at loading points. Lastly, there is need to deploy more staff for the creation of extra RRU units to reach the optimal required number of 17 units.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Globalization has greatly improved trade in the whole world. Globalization has made the world a single community where an individual can trade in both goods and services with any other person remotely. With the growth in trade across the globe, there has always been need of having trade facilitation so as to ensure the process of doing business, delivering the goods and or service is made as easy as possible without interference through fraud or delays. The increased trade among individuals globally led to the creation of trading block all over the world (Hoffman, 2014). There exist many trading blocks in the world; European Union, association of southeast Asian nations, COMESA, East Africa Community and many others.

Electronic tracking and monitoring was first used in the world war II. The British air force used radio frequency identification (RFiD) in the war especially for air battles. RFiD was used to distinguish between the allied aircrafts and the enemy aircrafts (Smith & Konsynski, 2003). The further advancements in technology over time have since seen RFiD technology being utilized in the airport luggage tracking systems, electronic toll collections, maritime monitoring, logistics and fleet management, anti-theft systems, electronic cargo monitoring among other sectors.

Customs cargo traceability or electronic tracking of customs goods has been implemented in many countries around the world. Notable implementations have been in Hong Kong and Jordan. In 2010, Hong Kong implemented electronic monitoring for goods on transhipment and it has proved to be a success in monitoring and accounting for transhipment goods. On the other hand, Jordan implemented electronic monitoring of transit goods in 2008. This led to the elimination of transit

escorts, time spend at transit sheds reduced drastically, increased cross-border trade and reduced revenue leakages through dumping of goods (Alfitiani, 2010).

Electronic cargo tracking has been widely implemented among African countries. Senegal and many other west African countries have implemented electronic cargo tracking. In 2012, Senegal had completed the implementation of the project and reported tremendous improvement in the management of transit goods (World Customs Organization, 2014). Kenya revenue authority implemented the first electronic cargo tracking by licencing Hi-G-Tek Inc in collaboration with Navisat Telematic in 2010 to provide the technological solution to replace the transit escorts (Hi-G-Tek, 2010). Navisat was later joined by other players like borderless tracking, automated logistics, SGS, I-spy Africa to provide the service on behalf of KRA. The private vendors brought some notable benefits to KRA but they did not meet the expectations of the organization. This led to the signing of a memorandum of understanding between KRA, Uganda Revenue Authority and Rwanda Revenue Authority for the creation of Regional Electronic Cargo Tracking, a solution provide by B'smart solutions.

1.1.1 Regional Electronic Cargo Tracking System

Regional Electronic Cargo Tracking System (RECTS) is an information technology system developed to assist in the electronic tracking of transit goods for revenue authorities of Kenya, Uganda and Rwanda. The goods are physically armed with electronic seals then remotely monitored from the Centralized Monitoring Centre (CMC). 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 Geo-fence that is set-up along gazetted routes used by transporters carrying transit or export cargo. The process starts with the collection of co-ordinates of the routes that the trucks would be using, this information is then stored. If the truck is driven off route, the system sends out Geo-fence violations that are system generated.

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. 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 (Siror,2010).

1.2 Statement of the problem

KRA had licensed external venders to provide cargo tracking services. However, there effectiveness in facilitating trade across the east Africa community had not been up to the expectations. It is important noting that the licensing of the electronic cargo tracking providers by Kenya Revenue Authority did eliminate the physical escort of transit goods, a practice which initially exposed KRA staff to attacks, security risks, harassment and possible manipulation through corruption. The elimination of the escorts greatly reduced the cost of handling transit goods by the authority as the escorting staff used to be paid daily sustenance monies as they move

along the transit corridor. The licensed vendors however did not manage to eliminate dumping of transit goods into the local market.

The creation of East Africa community in 1999 and the subsequent signing of the customs union treaty in 2005, East Africa Community transformed into a single large customs territory. This has proved beneficial for the EAC members. However, it posed a challenge on how the transit goods destined for partner member states would be handled in Kenya. Transporters and importers took advantage of the loopholes that resulted to engage in tax evasion and dumping of goods to Kenya.

The challenges highlighted above are what made the management of Kenya Revenue Authority to re-think about how best transit goods can be managed. Automation has been highlighted as a key pillar for KRA in meeting its obligations and achieving the mission and vision of the organization. In consultation with East Africa Community partner members, adoption of a regional electronic cargo tracking system that utilizes same infrastructure to serve all the countries was agreed upon. This allowed for movement and tracking to be closely monitored seamlessly by all the revenue authorities of implementing countries till the goods reach the country of destination. Regional electronic cargo system, supplied by B'smart solution to the three revenue authorities of Rwanda, Uganda and Kenya has been operational in Kenya for over 20 months and has several benefits. RECTS has brought about seamless monitoring & movement, reduced transit time, transparency and accountability on the cargo that have been tracked using the system. The research therefore sought to establish whether the attributes of regional electronic cargo tracking have influenced the management of transit goods.

1.3 Purpose of the study

The purpose of the research sought to evaluate the influence of regional electronic cargo tracking system on the management of transit goods in Kenya Revenue Authority.

1.4 Objectives of the study

This study was guided by the following objectives;

i.   To determine the influence of seamless monitoring on management of transit goods in KRA.

ii.   To establish the influence of reduced transit time on management of transit goods in KRA.

iii. To assess the influence of transparency among stakeholders on management of transit goods in KRA

iv.   To evaluate the influence of accountability on management of transit goods in KRA

1.5 Research questions

i.   How does seamless monitoring influence management of transit goods in KRA?

ii.   How does reduced transit time influence management of transit goods in KRA?

iii. To what extent does transparency among stakeholder influence management of transit goods in KRA?

iv.   To what extent does accountability influence management of transit goods in KRA?

1.6 Significance of the study

The research report may be of great significance to several groups as highlighted below.

KRA & Government of Kenya: Regional electronic cargo tracking system is an enforcement tool that helps in the curbing of revenue loss through diversion of transit cargo to the Kenyan market. The study may be important to help the organization asses if really RECTS has improved the management of transit cargo and as such help in carrying out improvements in the transit cargo

management process. The study may be important on the government as it would be used as a basis for policy formulation on matters relating to revenue, trade and transit goods handling.

Private Sector: transit goods are cleared by clearing agents and transported by private transport and freight companies. This study may be significant to the private sector as it would influence the business models of organizations and organization policy making as the findings may touch on the cost of doing business within the country.

Academicians: The study findings may be used as a future reference by other researchers on the subject of electronic cargo monitoring application on management of transit goods and even.

1.7 Limitations of the study

The geographical area under study was big and therefore posed a major challenge in data collection. The research had to be narrowed to two border posts of Malaba and Busia. This therefore may limit the generalization of the findings to other border stations.

Drivers were among the respondents in the research. They were sampled randomly due to the challenge with their nature of work which involves continuous movement as the convey cargo to various regions with the East African community.

1.8 Delimitation of the study

The research study focused on Kenya Revenue Authority staff under the transit monitoring section and enforcement staff at the Kilindini gate 18, Malaba and Busia borders. I chose that category of staff as they are directly involved in provision of support in the operation of the Regional Electronic Cargo Tracking System and the two border station are the two major exit stations on the northern transport corridor. The key legislation on the handling of customs goods, East Africa

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community customs management act and EAC customs management regulation was reviewed. The research excluded Uganda and Rwanda where RECTS is also in use. Transporters and clearing agents who had never used RECTS were also excluded from the population of transporters and clearing agents respectively.

1.9 Basic assumptions of the study

The research respondents were honest in their responses concerning the questions asked in the questionnaires.

The respondents did not have other hidden motives while responding to questions but had sincere interest in participating in the research process

The sample size which was used to collect data was a true representation of the whole population targeted in the study.

1.10 Definition of significant terms used in the study

Accountability; in this research proposal, the term has been used to mean being able to generate cargo movement reports, audit trail of goods and being able to reconcile the transit goods released at Mombasa port and those released to foreign countries at exit border stations.

Electronic cargo tracking; monitoring the movement of goods using an online web-based system that generates events and alerts on the status and safety of the goods

Management of transit goods; This refers to the customs release, monitoring, handling of transit goods as they are moved from customs entry station to the customs exit station.

Seamless monitoring; the term can be used to refer to two aspects, there being no gap between releasing point and the exit point where the response time of rapid response team and the attention to alerts takes very little time so as not to allow for gaps that can be exploited to steal the goods.

Secondly, the term refers to smooth monitoring transition between partner states where there is no un-tagging of the electronic seals as the goods cross from one country to another.

Transit; to pass through. To enter a country, pass through and exit the country to another foreign country.

Transit goods; goods entering a country, being ferried by a transport vessel to an exit point then being cleared to go to a foreign country.

Transit time; The time taken for goods to exit a country after they are released from the customs entry point

Transparency among stakeholders; the term has several meanings and can be used to refer to various aspects. For the sake of the study, the term as used refer to ease of getting real time cargo &/or driver location and improved ease of communication between customs officers, transporters, police units and clearing agents.

1.11 Organization of the Study

The project research report comprises five chapters. Chapter One deals with introduction and covers background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, delimitation of the study, significance of the study, limitations of the study, basic assumptions of the study, definition of significant terms and organization of the study. Chapter Two is titled Literature review and covers the theoretical framework and empirical study. Chapter Three deals with research methodology and covers research design, target population, sampling procedure, data collection procedures, research instruments, validity of research instrument, reliability of research instrument and data analysis methods. Chapter Four covers data analysis and presentation of findings while chapter Five covers the summary of the findings, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter deals with the introduction, management of transit goods, seamless monitoring and management of transit goods, transit time and management of transit goods, transparency among stakeholders' and management of transit goods, accountability and management of transit goods, theoretical framework where the Technical acceptance model & systems theory were reviewed, knowledge gaps, summary of the chapter and conceptual framework.

2.2 Management of transit goods

The creation of East Africa community in 1999 and the subsequent signing of the customs union treaty in 2005, East Africa Community transformed into a single large customs territory. The customs union was operationalized by the elimination none-tariff barriers, eliminated duties & fees imposed on goods originating from one partner state to another partner state and established a Common External Tariff that guides on how goods originating from outside the EAC would be charged duties. Customs union was implemented with major objectives of liberalizing intra-regional trade within EAC through coming up with mutual benefit arrangement within partner states. In addition, customs integration was expected to enhance efficiency in economic production and enhance domestic, foreign and cross border investment within the east Africa community. Lastly, it is also expected to enhance industrialization and economic growth of EAC. The customs union applies to matters of trade liberalization, simplification and harmonization of trade documentation, valuation and tariffs. In addition, the protocol has brought about joint institutional arrangement, training facilities and programs and trade. It is also worth noting that the protocol seeks to promote exports, produce and exchange of customs & trade statistics. It is the spirit of customs union that inspired the revenue authorities of Rwanda, Uganda

and Kenya to implement the regional electronic cargo tracking system to facilitate seamless tracking and monitoring of the transit cargo from Mombasa port to Rwanda and Uganda (East African Community, 2013).

The customs union has proved to be beneficial for the EAC members. However, it posed a challenge on how the transit goods destined for partner member states would be managed in Kenya. Transporters and importers took advantage of the loopholes that resulted to engage in tax evasion and dumping of goods to Kenya.

The handling of transit goods in Kenya and in the East Africa community are handled in accordance to the EAC customs management act of 2004 and EAC customs management regulation of 2010. All transit goods arriving at the sea port or overland go through the entry process using form C 17B. The development and lounge of the Manifest Management System (MMS) has however led to shifting the entering of transit goods to the MMS system. This currently applies to transit goods destined for Uganda, Rwanda and Tanzania. Upon entering and physical landing of the transit goods at the port, KRA officials carry out physical examination and processing of the goods for release to be transported to the exit border station (Kenya Revenue Authority, 2009).

Prior to 2010 all transit goods released from the port of Mombasa destined to other partner states were physically escorted up to the border stations. This proved costly and risky to both the goods and the escorting staff. This is what informed the licensing of private companies to provide electronic tracking services to KRA (Mugambi, 2016). The sealing of the goods with Electronic cargo tracking seals is done during the processing of the goods for release.

It is a legal requirement for transit goods within EAC to be carried in sealed vehicles are is containers which can be closed and sealed. The conveying vessel should have a label reading "TRANSIT GOODS" printed on it. There is an exception for transit goods that are exceptional loads and this permission has to be given by the commissioner of customs. Furthermore, the vehicle must be constructed in a way that it would be easy to fix the electronic seal, introduction or removal of goods from the vehicle should be impossible until the seal is broken, it should be free from any concealed spaces and the vehicle doors plus hinges should be constructed in a way that it is not easy to break in to (EAC customs management regulation, 2010).

The adoption of RECTS by Kenya, Uganda and Rwanda revolutionized the management of transit goods within the EAC region. Upon release of the transit goods from the port and other release stations, the goods are required by law to move along the gazetted transit corridor routes. The trucks are armed by RECTS electronic seals that make them visible on real time basis at the Centralized Monitoring Centre (CMC) where any security alerts raised by the electronic seal would be handled and escalated to the Rapid response units for quick response in case of suspected dumping or intent to dump. Through collaboration with other partner states, the goods get monitored till the destination. This has proved successful in the management of transit goods and has greatly improved accountability of goods and reduced cargo transit time along the northern transport corridor (Northern Corridor Transit and Transport Coordination Authority, 2017)

2.3 Seamless monitoring and management of transit goods

Fleet management, security of the goods and unrestricted and quick transition from one territorial boundary to another is of great necessity for a successful logistics business (Huckridge et al, 2010). Management of the movement of transit goods from a port to a border station is a purely logistic function that is governed by the customs rules and regulations of a particular state. The application

of technology in logistics has always aimed at reducing manual processes and reducing the barriers to transport that are always encountered during transportation especially during cross-border transportation (Huckridge et al, 2010). An efficient ICT system that is used for fleet management and cargo tracking should possess various attributes including; ease of use, raising of alerts on real time basis, good interface with human capital that handles the system and goods. All this has been proved to have tremendous influence on the way transit goods have been managed.

Electronic cargo tracking technologies employ both electronic gadgets and a web-based software for the monitoring of activities of the vehicle or goods tagged with the electronic gadgets. for a complete tracking system, there are already pre-set routes in the system which a conveying vessel must follow to safely deliver the goods to the intended destination. The pre-set route is referred to as the geo-fence of which, if a conveying vessel moves away from, an off-route alert is generated in the system on a real time basis. During the conveying of the goods from the origin to the destination, so many events and alerts are generated and conveyed to the system for monitoring purposes. In addition, GPS location of the goods and the conveying vessel are also sent to the system after pre-set intervals. The events and alerts generated usually communicate about the safety of the goods and if any emergency response is needed (Shamsuzzoha & Helo, 2011).

The success of any tracking software and system depends on the people using it. It is people who do the monitoring, the tagging of electronic gadgets on the goods, the rapid response and the clearing of the goods at the exit stations. The system raising of alerts is real time thereby providing seamless alerting that helps in allowing for the alert to be responded to in the shortest time possible. The efficient functionality of a tracking system requires seamless response of alerts at the monitoring centre and almost seamless response by the rapid response teams on the transport corridors.

The seamless generation of alerts and seamless response from monitoring teams and rapid response teams is very crucial in transit goods monitoring. Deviation from transit routes and diversion of transit goods to the local market has been a challenge to Kenya Revenue Authority for long. Any system that brings seamless monitoring and response is highly likely to improve management of transit goods (Shamsuzzoha & Helo, 2011).

Transit goods movement through a country are usually taken through various clearing stages until they exit the country. There are many agencies and government bodies concerned with the goods. In east Africa and especially along the northern corridor transport route, various agencies handle the transit goods; Kenya national highways authority and KRA customs being the dominant ones. Time spent at customs areas and weighbridges along the route are major contributors on the cargo transit time (Kubai, 2015).

Clearance at border stations poses a major challenge to transporters and revenue authorities. The time spent during clearance at customs border stations has always been long hence negatively affecting the timely delivery of goods to the importers (Marriott, 2012). In addition, since previous private providers of tracking service to KRA used to un-tag the electronic gadgets at the border, many transporters and scrupulous business people used to take this as a loophole of using unauthorized routes to bring the goods back to the country (*Omolo et al,* 2013). RECTS, a system that is operational in Kenya, Uganda and Rwanda brings the benefits of having seamless movement across the partner state borders. This is expected to bring tremendous benefits in relation to handling of transit goods.

 Electronic monitoring of transit goods and facilitation system, that was implemented by Jordan, has reduced smuggling along the roads within Jordan but let to increased organized smuggling at

the Jordan customs stations after the electronic seals are un-tagged from the transit goods (Alfitiani, 2010). This is a clear indication that electronic tracking deters smuggling of goods on the routes until they reach the border stations. RECTS, a system implemented by three partner states of Kenya, Uganda and Rwanda aims to eliminate the same challenge that had been witnessed for a long time while using the licenced tracking vendors.

2.4 Transit time and management of transit goods

Road cargo transit time refers to the duration transit cargo spends on the road from the loading customs area to the desired final destination. Cargo transit time is an important aspect on the core function of Kenya Revenue Authority of facilitating trade across the east Africa block. This is because this has a direct influence on the speed with which commodities reach the intended market and also directly influences the cost of transport along the northern corridor and other transit routes (Safari & Murenzi, 2014).

There are various aspects that contribute to the cargo transit time, namely; time taken by the drivers on actual driving, visits at the weighbridges along the transit routes, police check along the transit routes, traffic jams and congestion along the roads, meal breaks and rest by the drivers during the movement period and customs clearance procedures along the transit corridor.

In the 1990s and early 2000s, the cargo transit time along the transit routes was usually long with transit period of up to 10days. In addition, the same goods used to take on average 12 days from Mombasa to Kampala and averagely 15 days from Mombasa to Kigali (World bank, 2005). This was majorly used to move the goods on the roads as the trucks used to move in convoys with the escort of Kenya revenue employees.

Table 2.1 Duration for cargo processing in 2005

Delay	Time
Arrival to removal in the port of Mombasa	2 weeks
Mombasa to Nairobi	1-2 days
Transit in Kenya (Convoys)	3-6 days
Border crossing in Malaba	2 days
Malaba to Kampala	1-2 days
Kampala to Kigali	2-3 days

Data for Kenya, Issues in Trade Logistics from World bank, 2005.

The escort of cargo by Kenya revenue authority staff was stopped in 2010 and the role taken over by technology through the licensing of private companies to provide the Electronic tracking of transit cargo across the partner state. This had some little success as the work being handled by private companies removed control and regulation in the handling of the cargo. This led to risks of losing the cargo and delays in addressing the process delays that usually arose. The adoption of the Electronic cargo tracking reduced the transit cargo duration to an average of 7 days for cargo to move from Mombasa to Kampala and 9.2 days for cargo to be moved from Mombasa to Kigali (Safari & Murenzi, 2014). The total transit time from Mombasa to Kigali is subdivided as follows; Personal time for the trip Kigali-Mombasa including resting accounted for 41%, while weighbridges accounted for 2%, border crossing 10% and police check points less than 1%. Overall, non-travel time accounted for 53% of the time while real driving time accounted for 47% as presented in the figure below (Safari & Murenzi, 2014). The Northern corridor observatory report of 2017 notes that there is a tremendous reduction of transit time along the northern corridor in the recent past as highlighted by figure 1.

	OCT 15 - MAR 16	APR 16 - SEP 16	OCT 16 - MAR 17
Mombasa - Kampala	5.7	4.8	4.1
Mombasa - Kigali	11.4	6.3	5.7
Mombasa - Goma			5.5
Mombasa - Juba	10.1	12.6	11.2
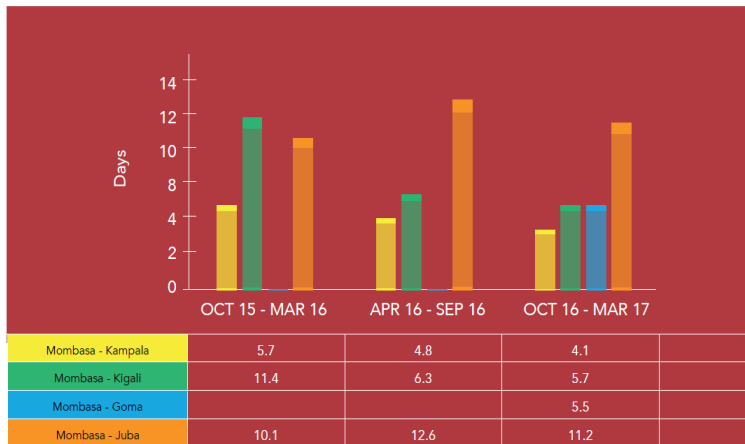
Figure 1: Trends in road transit time from Mombasa to Various destinations from November 2016-March 2017. Data from Northern Corridor Transit and Transport Coordination Authority, 2017.

The adoption of the regional electronic cargo tracking has greatly reduced the transit time along the northern corridor. This has been due to reduced time that is spent at the customs border stations for clearance and hand over of cargo to other revenue authorities and also reduced time wastage by drivers for resting and taking breaks (Northern Corridor Transit and Transport Coordination Authority, 2017). Figure 2 below highlights the Transit time from Mombasa to Kampala, Katuna & Elegu using RECTS

	Mombasa - Kampala	Mombasa - Katuna	Mombasa - Elegu
Transit Time	109.76	121.82	113.66
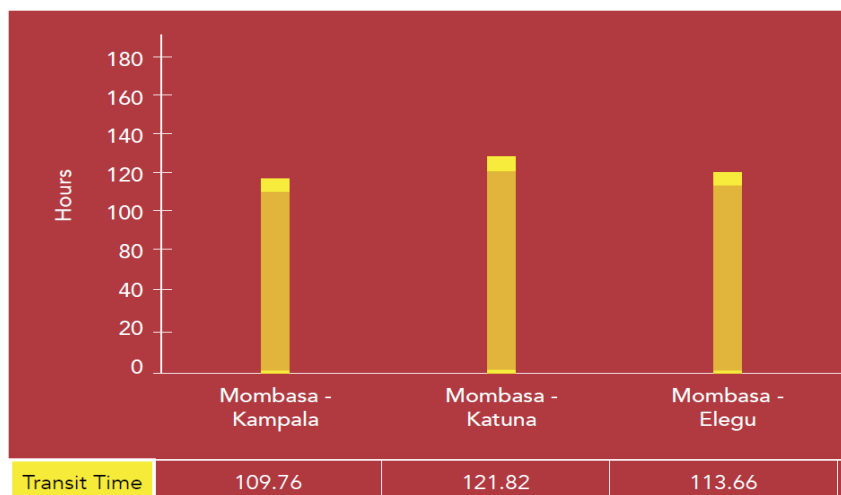
Figure 2: Transit time from Mombasa to Kampala, Katuna & Elegu using RECTS. Data from Northern Corridor Transit and Transport Coordination Authority, 2017.

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Management of transit goods is very critical in ensuring economic growth, not only in Kenya but also in the neighbouring east Africa community member countries. Cargo transit time greatly affects the management of transit goods as it contributed to the cost of handling the goods by Kenya revenue authority and the cost of doing business by the importers, transporters and clearing agents (Northern Corridor Transit and Transport Coordination Authority, 2017). This is the reason; reduction of cargo transit time has been one of the major objectives in the adoption of the regional electronic cargo tracking system.

2.5 Transparency among stakeholders and management of transit goods

The concept of transparency is prone to misinterpretation as it is a broad concept that has very many components which range from corruption, freedom to air views without restrictions and quick and free access to information. Due to the broad nature of the concept of transparency, there has hardly been any consensus on the acceptable definition of the term. Transparency refers to basic and free flow of knowledge on aspects related to a countries economy and policies. Under this definition, the author evaluated transparency based on the ease of access of information by the public and how the government controls, measures and facilitates the flow of information to the public.

In international trade, transparency refers to a level playing field in the matters doing business where there is an open political and business environmental conditions. Being in such environmental conditions, decision making is based on readily available and accessible information. The cost of doing business in developing countries is normally high due to lack of access to government information pertaining various processes within the economy and various government sectors. The lack of information leads to exploitation by middlemen and or agents and also gives a loophole for corruption within the government agencies.

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The movement of transit goods from entry to exit points is a simple process but with many guidelines and regulations that if not well highlighted to the stakeholders, leads to a lot of confusion and misunderstanding. Handling of other shortcomings like transhipment, resolution of disputes, raising of offence demand notes and general facilitation of trade is very dependent on the transparency in the handling of processes within the organization. RECTS, a system that incorporates on site video surveillance, direct access to the transporters and agents by the organization helps ensure the processes are as transparent as possible. Incorporation of other social media platforms like WhatsApp and direct line calls from any concerned stakeholders has greatly improved transparency in the handling of transit goods.

Alfitiani (2010) in the journal titled Jordan's electronic transit monitoring and facilitation system presented to the world customs organization highlights that the introduction of electronic tracking of transit goods in Jordan greatly improved transparency among the key stakeholders. This led to collaboration in the handling of the goods thereby significantly reducing the number of smuggling cases within Jordan road transport corridors.

2.6 Accountability and management of transit goods

The management of transit goods is a very complex process that involves many aspects. this can be broadly expounded as being able to generate a report on the status of any specific transit goods, providing a movement audit trail of transit goods on the road/railway transport system and being able to reconcile between the transit goods that were release at the release stations and the transit goods that are cleared at the release border points of a country. Therefore, accountability can be broadly defined as the rendering of an account of a process which basically implies giving information concerning the process (Kluvers & Tippett, 2010). in this case, an account or

information on the movement of transit goods needs to be readily available from the regional electronic cargo tracking system.

There is a big shift in the trends being experienced in the logistics industry. A logistics institution in need of competing globally needs to invest heavily in technology. Technology is a big driver in the logistics sector through improved efficiency and accountability of the processes and goods within the sector (Goldsby & Stank, 2000). Technology is useful in the tracking of the logistical goods where an organization is able to perform e-tracking of goods and provide real time geographical location of the goods. This equally provides a movement audit trail for the conveying vessel. This is key in reducing delivery time of the logistical goods and also provide a good means of reconciliation for the goods (Tian et al, 2008).

System reports are customized results of queries raised in the system so as to generate data that can be analysed to generate useful conclusions that help in the assessment of processes and make necessary adjustments, enhancements or merely provide statistical information of the performance with the organization using the system (Miler, 2015). A good information technology system should have the provision of generation of operation reports and system reports about the users and activities. The reports should be easy to download and there need to be a provision of customizing the report requirements. The format of the generated reports is of high importance. This is necessary in the manipulation of the report information for the generation of statistical trends and results. Reports generated in pdf and excel format are common on many systems and this brings with it the benefit of protection from editing and easy manipulation of data using Microsoft tools respectively.

The combination of the RFiD and GPS technology in the electronic cargo tracking systems helps in the provision of information after a pre-set duration of time. This duration is set in the system and can be varied based on the system users' requirements. The information generated is usually send to the monitoring system and can also be customised so as to be send on mobile phones as text messages. The information is usually broad and includes the geographical location of the goods, conveying vessel, the safety status of the goods, adherence of the conveying vessel to the pre-set route among other kinds of information (Alfitiani, 2010).

The information send in the tracking system is crucial in the movement audit of the goods and/or the conveying vessel. This can be used to plot the movement of the vessel along the transport corridor. In addition, it can be replayed, so as to show the actual movement of the vessel as it happened highlighting the alerts and events that happened as the vessel moved along the transport route.

Controlled delivery within cargo tracking systems is a key feature that is useful in the reconciliation of deliveries. In addition, the system reports are also of great use while carrying out reconciliations. In most logistics enterprises, fleet management of transport services and delivery of the goods is extremely crucial (Naidoo, 2012). This calls for great improvements in the monitoring, application of technology in the monitoring process proves to the easiest and most efficient way. Reports on the deliveries at the destination points can be easily compared with the reports at the departure stations to confirm goods that have actually reached their destination.

Management of transit goods refers to the clearance, monitoring and handling of transit goods from the customs entry points to customs exit points. Clearing, monitoring and handling cannot be successfully done without proper reconciliation. The use of technology in the reconciliation

process has proved successful in the recent past (Willig, 1998). System reports on cargo loaded at entry points, released at exit points and the movement data can be easily used to get an accurate reconciliation of the transit goods.

2.6 Theoretical Framework

This section highlights the theories that are relevant to the research in question. Technology acceptance model and the systems theory were reviewed.

2.6.1 Technology Acceptance Model (TAM)

This model was developed Davis et al (1989). It is a popular research model that helps to predict how the individual information system users generally use and accept a system. This has been greatly studied to help in understanding how users within an information system end up accepting and embracing a system.

The model highlights that perceived usefulness and perceived ease of use are the two factors that influence the acceptance of a technology system. These two factors greatly influence the individual's behaviour in using computers and systems. Perceived usefulness refers to the user's personal judgement that using the system or technological equipment would positively contribute to his or her job performance.

Perceived Ease of Use (EOU) highlights how users expect the new system to be easy to use, user friendly without many complications. Technical acceptance model highlights that the two facors greatly determine how the targeted users would actually use the system. The two technical acceptance model determinants are usually affected by external factors mainly social, cultural and political factors. Social factors refer to aspects that come up due to interaction with other people for instance language and skills, while cultural factors refer to the way of doing things within the organization. Lastly, political factors refer to political activities and political crises in the

geographical area that the organization is based. Information technology system users usually evaluate the desirability of employing the system in handling their responsibilities, the outcome of the evaluation also affects the acceptance of the system. Lastly, behavioural intention to use the system is an aspect that refers to the measure of a person choosing to employ the system in handling their activities.
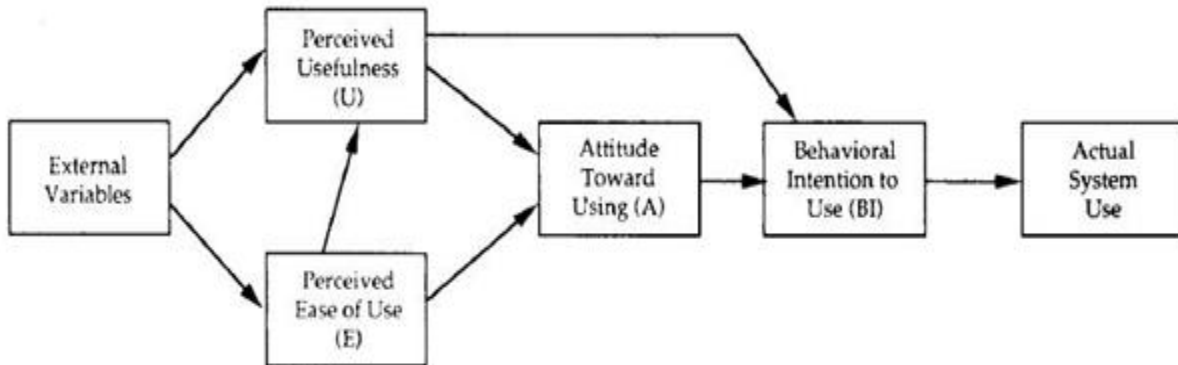
Figure 3: Technology acceptance Model(TAM) (Davis, 1989)

2.6.2 The Theory of Systems

The theory of systems was first developed by Ludwig von Bertalanffy where in his study, he believed that no component of a process or system can be understood by isolating only one part of what plays a significant role in the system. He highlighted that all components in a system are interdependent and do not act on their own. A system is a combination of interrelated and interdependent part or components that help accomplish a process to give the intended output. The diagrammatic representation of the theory of systems is as shown below;
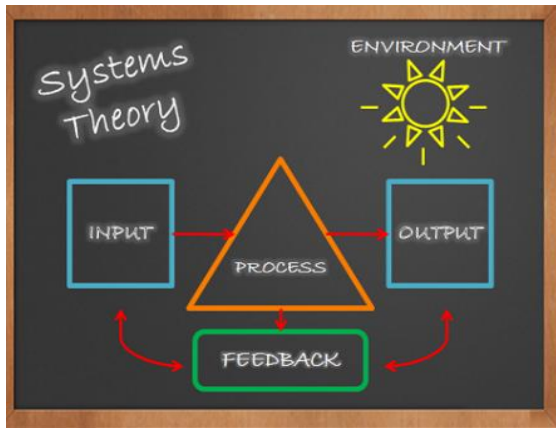
Figure 4: The of systems diagram (Von Bertalanffy, 1968, p. 38)

Bertalanffy idea was that, for one to understand a system, it had to be an open system. In his definition, he noted that an open system has both inputs and outputs. The operation and functioning of the regional electronic cargo tracking can best be explained as an open system. There are many interdependent units and group of stakeholders that play a role in ensuring that the arming and monitoring of transit goods is successful.
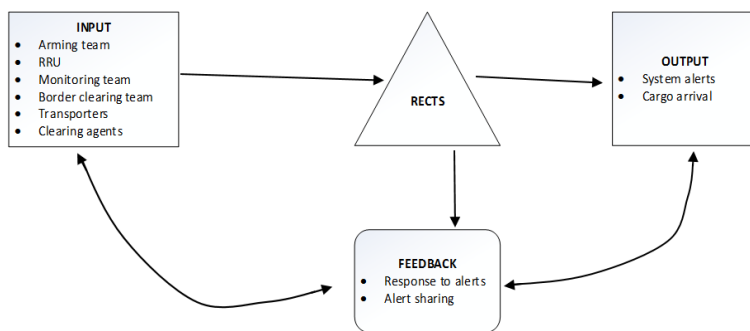
Figure 5: RECTS system with inputs, outputs and feedback

The interaction and interrelation of the various stakeholders that make up the transit monitoring unit help in ensuring the goals and objectives of implementing the system are achieved. This highlights how this theory is relevant and of great importance in the research at hand.

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2.7 Conceptual Framework

A conceptual framework is a diagrammatic representation of ideas that a researcher combines together so as to achieve the research projects purpose. It is a representation of the independent, dependent, moderating and intervening variable related to the research. Figure 5 represents the conceptual framework for this research project report. The independent variables were seamless monitoring, transit time, transparency among stakeholders and accountability while the dependent variable was management of transit goods.

Independent variables

Seamless monitoring
• Arming & disarming at border
• Alert sharing

transit time
• Border dwell time
• Alert & accident response time
• Violation & offense resolution time

Transparency among stakeholders
• Cargo & truck location time
• Improved communication

Accountability
• Report generation
• Cargo movement audit trail
• Ease of reconciliation

Moderating variable

• Government policy
• Business environment

Dependent variable

Transit goods management
• Border Clearance time
• Enhanced communication
• Reduction in number of complaints
• Reduction in cargo dumping cases

• Banning night travel

Intervening variable

Figure 5: Conceptual Framework

2.8 Knowledge Gap

Based on the literature review, application of RFID in tracking has been well-researched. Electronic tracking of goods using RFID technology has been substantially researched too. A few researchers have researched on electronic cargo tracking in Kenya and its effect to cross border trade. However, there is limited research on RECTS that has been operational for 2 years only. Furthermore, the researchers who researched on electronic cargo tracking did not assess its influence on the management of transit goods within KRA. This necessitates research on how RECTS influence the management of transit goods in customs department of KRA. A detailed discussion of the research gaps is provided in the table below.

Table 2.2 knowledge gap

Researcher	Topic	Objective	Findings	Research gaps	Focus of current study
Alfitiani (2010)	Jordan's electronic transit monitoring and facilitation system	To give an insight into the operation of the system as well as providing analysis of the system statistics	significant reduction in the cost of moving goods through Jordan. smuggling attempts has decreased while at the same time transit journey time has reduced by more than 60 per cent.	The research does not focus on how the system has influenced the handling of transit goods by Jordan Customs department.	Current study focused on how electronic monitoring across EAC influences the handling of transit goods by KRA
Kabiru (2016)	Electronic cargo tracking system and operational performance at Kenya Revenue	To determine the extent of implementation of the electronic cargo tracking system by both the transporters and by Kenya	The major challenge in implementing the system is a slight disconnect between what the revenue collector	Research only focused on the level of implementation. Operational performance only focused on Efficiency, cost and safety	Current study focused on how electronic monitoring across EAC influences the

	Authority and on transporters	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	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.	leaving out key aspects like communication, reconciliation and accountability.	handling of transit goods by KRA
Mugambi (2017)	Effect of cargo tracking system on cross-border trade between Kenya and Uganda	The study sought to establish the effect of cargo tracking system on cross-border trade between Kenya and Uganda	The electronic cargo tracking systems licenced by KRA have been able to reduce the level of diversion of cargo to the local market as well as reducing the time taken to clear the cargo at the border points and the collection of duties and fines has been made easier.	There was a research gap on monitoring and handling of the goods, interaction among various stakeholders and accountability of goods	Current study focused on how electronic monitoring across EAC influences the handling of transit goods by KRA

2.8 Summary of the chapter

The chapter extensively reviewed the empirical literature of the study and the relevant theoretical framework for the study. Literature on seamless monitoring, transit time, transparency among sta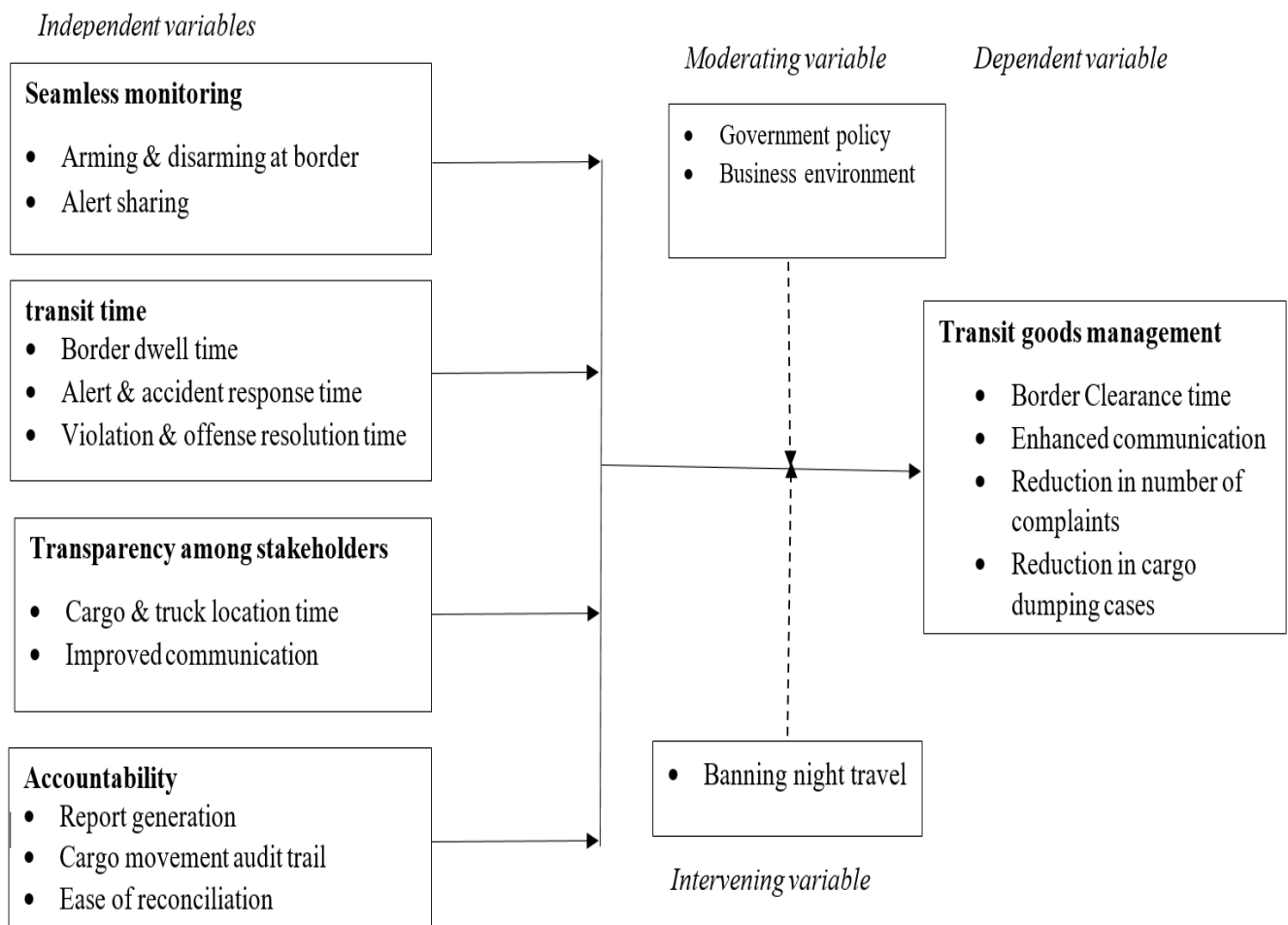keholders and accountability on management of transit goods was substantively reviewed. The review of literature on seamless monitoring indicated that electronic tracking of cargo in Jordan and Hong Kong has greatly led to reduction in the damping of transit goods. Literature review on transit time noted that there had been a substantial reduction in transit time when KRA abandoned physical escort and licensed private companies to provide cargo tracking services. In the past, the transparency and ease of communication between KRA and other stakeholders was poor and the other licensed vendors' systems had not been helpful in accountability and reconciling of transit goods. Technology Acceptance Theory and Systems theory was reviewed and their relevance to the study highlighted.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research design used in the study. It outlines the research design, research target population, sampling procedure, data collection procedures, research instrument validity & reliability, data analysis and ethical considerations.

3.2 The Research Design

The research design is a clear step by step description of how the research process was done. A descriptive research design was used in the research where the research was mainly to seek the answer to the question "what". A descriptive research is used to justify practices implemented, make judgements on what aspect of the project is affecting the stakeholders and also help in the creation of theories (Kothari, 2004). A descriptive research was used to obtain the picture of stakeholders' opinion concerning the influence of regional electronic cargo tracking system to the management of transit goods in kenya. These findings were then used to improve the performance of the system and operation stakeholders so that more positive effects of regional electronic cargo tracking could be felt in the handling of transit goods.

3.3 Target Population

"The totality of cases of people, organization or institutions which pose certain common characteristics that are relevant to the study" Mugenda (1999). The research sought to get information from all people involved in the handling of transit cargo from the port of Mombasa all the way to the exit borders. Major focus was given to Malaba and Busia borders. A target pollution of 261 was targeted. The target population was staff of Kenya Revenue Authority in Transit

Monitoring Unit (TMU), clearing agents and transport and logistics companies. The total

population of unique number of trucks (transporters) and unique clearing agents was achieved by

analysing RECTS statistics between the months of April 2018 and June 2018. Table 3.1 shows a

tabulation of approximate total target population of the stakeholders of which a sample was

selected and used in data collection for the project.

Table 3.1: Total population

Category	Total population
KRA CMC staff	32
KRA RRU staff	46
KRA Arming team staff	17
KRA release and exit point staff	16
Transporters (Truck owners)	14
Truck drivers	112
Clearing agents	24
TOTAL	**261**

KRA Transit monitoring unit, 2018

3.4 Sample size and sampling procedure

Sampling is the process of identifying respondents to be used in the research process from the total

target population (Kothari, 2004). The sampling was done in a manner that the respondents gave

a clear representation of the target population as much as possible. According to Kothari, (2004),

"A sample design is a definite plan for obtaining a sample from a given population. It refers to the

technique or the procedure the researcher would adopt in selecting items for the sample. Sample

design may as well lay down the number of items to be included in the sample i.e., the size of the sample. Sample design is determined before data are collected".

In this study, the researcher applied stratified sampling. Three 'stratas' namely; KRA staff, clearing agents & transporters were created. Stratified sampling was used together with non-probability sampling design to achieve samples that are a true representation of each stratum. Borg and Gall, 2003, states that at least 30% of the total population should be selected as a sample representing the whole population. Thus, this approach was used in selecting the sample size for the KRA staff and clearing agent strata. A sample size of between 10% and 30% is a good representation of a target population of less than 10,000 elements (Mugenda & Mugenda, 2013). Therefore, a sample size of 10% of the total population of transporters was adequate for analysis.

Due to the complexity of the operations within KRA and the transport sector, simple random sampling was used to pick the respondents that formed the sample size. Table 3.2 shows the sample sizes of the stakeholders that the researcher involved in the research process.

Table 3.2 Sample size

Category	Target number	Percentage
KRA CMC staff	10	31.25
KRA RRU staff	15	32.60
KRA Arming team staff	6	35.29
KRA release and exit point staff	5	30.00
Transporters (truck owners)	4	28.57
Truck drivers	12	10.71
Clearing agents	8	33.33
TOTAL	**60**	

3.5 Research Instruments

Structured questionnaires and structured interview were the research instruments used in the study. The research questionnaire was pre-tested to check whether it would collect relevant information and that the wording was clear, understandable and specific to the data required. The responses from the pilot study were analyzed and the feedback used to improve the wording of the final research questionnaire. The questionnaires were administered face to face to respondents in Nairobi while respondents in Mombasa, Malaba and Busia received the questionnaires via E-mail. The structured interview questions were developed from indicators that received significant differing responses from the respondents. This was used in the interview with the manager of TMU unit to give more clarification concerning the indicators in question.

3.5.1 piloting of instruments

The research questionnaire was piloted with a small group of 10 respondents who were part of the sample size. They filled the questionnaires and returned. The questionnaire responses were analysed. This was helpful in evaluating the total approximate cost and time that would be used in data collection. The findings also helped improve the research instrument design and the rewording of questions that were ambiguous.

3.5.2 Validity of research instrument

Validity refers to the degree to which an instrument measures what it is supposed to measure (Kothari, 2004). The instrument was pre-tested with a smaller group of respondents. Based on the responses, a review of the set questionnaire was done to ensure that emotional, leading and ambiguous questions were re-worded. This also helped reset the questions to make them simple and clear so as not to confuse the respondents but rather lead to receiving, straight to the point and relevant responses.

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3.5.3 Reliability of research instrument

The test-retest method was used to assess the reliability of the instruments used in the research. Some respondents were issued the questionnaire twice then a correlation of the responses for each questionnaire was done to ascertain whether there is consistency or not.

During the data collection process, reliability was improved by getting a broader sample size to help improve the equivalence aspect of the findings. In addition, distribution of the questionnaires was done then the respondents given some time to respond at their most convenient time. This helped reduce chances of respondents filling the questionnaires in a hurry or with boredom and fatigue as that would have reduced the reliability of the findings.

3.6 Data collection procedure

The researcher relied on both primary and secondary sources of data for information. Secondary sources included Kenya Revenue Authority policy documents, official performance data, internal reports and RECTS system statistical data.

Primary data was obtained through the use of structured questionnaires, observation and structured interviews. Due to the wide spread of the population all-over the geographical are in question, the questionnaire provided the most convenient tool of data both for the researcher and the respondents.

3.7 Data Analysis and presentation Methods

Qualitative data was summarized in an Ms Word document. Quantitative data was achieved by analysing open ended questions and the views of the respondents on the effects of RECTS in the transit cargo management summarized.

The quantitative data collected during the research was analysed using the Statistical Package for Social Sciences (SPSS) software. Inferential statistics was utilized in analysing the collected data to determine the influence of regional electronic cargo tracking on management of transit goods in customs department of Kenya Revenue Authority. Inferential statistics was utilized in analysis to help ascertain the relationship between variables.

The model took the following form;

$Y = A + \beta_1X_1 + \beta_2X_2 + \beta_3X_3$

Where;

Y = Management of transit goods

β_1 = slope of seamless monitoring

β_2 = slope of transit time

β_3 = slope of transparency among stakeholders

and β_4 = slope of accountability

X1   = Chosen value of seamless monitoring

X2   = Chosen value of transit time

X3   = Chosen value of transparency among stakeholders

X4   = Chosen value of Accountability

A = Constant

The F- test was used to determine the significance of the regression while the coefficient of determination, R^2, was used to determine how much variation in management of transit goods is explained by seamless monitoring, transit time, transparency among stakeholders and accountability. A confidence level of 95% was utilized while doing the analysis with SPSS. The

outcome of the Quantitative data analysis was in terms of mean and standard deviation. This was then presented using tables.

3.8 data presentation methods

The data from the research findings was presented in tables. The results achieved from the analysis tool used were presented in tabular for against their respective statements. This was followed by another tabular presentation for the regression test results where the research was modelled to evaluate the influence of the independent variables on the dependent variable.

3.9 Ethical considerations

The research respondents chose to participate in the research on their own and were not coerced or forced to take part in the research. In addition, there was respect for anonymity and confidentiality relating to the identity of the respondents.it is also worth noting that there was respect for privacy of the respondents as they were taking part in the research. Lastly, research permits to collect data were sought from Kenya Revenue Authority and National Commission for science, Technology & Innovation (NACOSTI)

3.8 Operationalization of variables

Objective	Variable	Indicators	Measurements	Type of analysis	Tool of analysis
To determine the influence of seamless monitoring on management of transit goods in KRA.	Independent variable- seamless monitoring Dependent variable- management of transit goods	• Availability of seals at loading points • Movement with seals • Alert availability to users • Alert response time • Alert escalation jurisdiction • Alert response jurisdiction	Ordinal Interval	Descriptive	Mean and Standard deviation
To establish the influence of reduced transit time on management of transit goods in KRA.	Independent variable- transit time Dependent variable- management of transit goods	• Rate of cargo clearance at the border • Decongestion of border points • Quality of service • Daily cargo cleared quantity • RRU response time • Accident response time • Theft response time • Violation resolution time • Offence compounding time	Ordinal Interval	Descriptive	Mean and Standard deviation
To assess the influence of transparency among stakeholders on management of transit goods in KRA	Independent variable- transparency among stakeholders Dependent variable- management	• System data capture • Reduction in cargo dumping • Truck searching time • Improved communication • Ease of contacting KRA	Ordinal Interval	Descriptive	Mean and Standard deviation

	of transit goods	• Attention to stakeholders' reports			
To evaluate the influence of accountability on management of transit goods in KRA	Independent variable-accountability Dependent variable-management of transit goods	• Generation of customized reports • Transit time reports • Use of reports in border clearance • Movement audit trail • Use of trail reports in offence resolution • Reconciliation of transit goods	Ordinal Interval	Descriptive	Mean and Standard deviation

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

This chapter presents the questionnaire response rate, presents the research findings, analysis of findings and discussion of the research outcomes. The research findings are presented in percentages, frequency distributions, mean and standard deviations.

4.2 Questionnaire response rate

During data collection, a total of 60 questionnaires were issued to respondents and 47 of them were returned. This represented a response rate of 78.33%. Mugenda and Mugenda (2003), highlights that a response rate of 50% is adequate, 60% is good and a response rate of 70% and over is excellent and is best for data analysis and reporting. This therefore asserts that the response rate for research was excellent.

4.2 General information and bio data

The general information considered and relevant in the study was organization/ sector a respondent is employed in, the age group of the respondent and the level of education of the respondent. The results obtained from the collected data are represented in tables 4.1, 4.2 & 4.3 below.

Table 4.1 Organization/Sector of employment

	Frequency	Percent	Valid Percent	Cumulative Percent
Kenya Revenue Authority	29	61.7	61.7	61.7
Clearing Agent	6	12.8	12.8	74.5
Transporter	12	25.5	25.5	100
Total	47	100	100	

Table 4.2 Age group of the respondent

	Frequency	Percent	Valid Percent	Cumulative Percent
18-28Yrs	11	23.4	23.4	23.4
29-39Yrs	23	48.9	48.9	72.3
40-50Yrs	12	25.5	25.5	97.9
51-60Yrs	1	2.1	2.1	100
Total	47	100	100	

Table 4.3 Level of education

	Frequency	Percent	Valid Percent	Cumulative Percent
Form 4	7	14.9	14.9	14.9
College Certificate	4	8.5	8.5	23.4
Diploma	13	27.7	27.7	51.1
Undergraduate Degree	20	42.6	42.6	93.6
Master's Degree	3	6.4	6.4	100
Total	47	100	100	

The results in table 4.1 indicates that majority, 61.7% of the respondents were employees of Kenya revenue authority working with the Transit monitoring sections of the Customs department. Furthermore, 12.8% of the respondents were clearing agents whose goods have been armed and tracked with RECTS seals. Lastly, 25.5% of the respondents were transporters, where the truck owners and drivers were categorized together.

The results in table 4.2 on the age of the respondents indicate that 23.4% of the respondents were aged between 18-28 years, 48.9% were aged between 29-39 yrs,25.5% of the respondents aged between 40-50 years and finally 2.1% of the respondents were aged between 51-60 years. This highlights that a majority of the respondents were middle aged as 48.9% were aged between 29-39 years.

Table 4.3 presents the results of the level of education of the respondents. 14.9% of the respondents have a form 4 certificate as their highest level of academic qualification, 8.5 % have college certificates, 27.7% have college diplomas, 42.6% have undergraduate degrees and 6.4% have master's degrees. This is a clear indicator that all the respondents can be said to be literate as all of them at least had a form 4 certificate.

4.3 Influence of seamless monitoring on management of transit goods

This section of the questionnaire sort to establish the influence of seamless monitoring on the management of transit goods. The indicators for seamless monitoring were; availability of seals at loading points, movement of seals to destination countries, availability of alerts to all users, alert response time and real time assignment of alerts to RRUs. The range was 'strongly Agree (1)' to 'Strongly Disagree' (5). A standard deviation of >0.9 implies a significant difference on the impact of the variable among respondents

Table 4.4 Influence of seamless monitoring on management of transit goods

Statement	Mean	Std. Deviation
Availability of seals at loading points has reduced truck loading time at Mombasa port	2.06	1.071
Trucks are allowed to move with the seals to destination country	1.47	.654
Alerts are available to all users logged on to the system	1.84	1.036
System alerts are responded to in the shortest time possible	1.90	1.136
RRUs receive the alerts falling in their jurisdiction immediately the alerts are assigned	1.74	.682
The CMC only responds to alerts occurring within Kenya.	1.52	.962

The research findings on Table 4.4, indicate that the respondents strongly agreed that the trucks are allowed to move with the seals to the destination countires (M=1.47). Furthermore, the results indicate that the respondents agree that availability of seals at loading points has reduced truck loading time at the port, availability of alerts to all users, alerts are responded to in the shortest time possible, real time assignment of alerts to RRUs and response to alerts occurring within Kenya influences the management of transit goods (M= 2.06, 1.84, 1.9, 1.74 & 1.52). Furthermore, there was an insignificant difference among the respondents on the impact of movement of seals to destination countries & real time assignment of alerts to RRUs as the standard deviations were < o.9 (SD = 0.654 &0.682 respectively). However, there was a significant difference among the respondents on the impact of availability of seals at loading points, availability of alerts to all users, alert response time & response to alerts occurring within Kenya as the standard deviations were >0.9 (SD=1.071, 1.036, 1.136 & 0.962 respectively).

4.4 Influence of transit time on management of transit goods

This section of the questionnaire sort to establish the influence of transit time on the management of transit goods. The indicators for transit time were; Hastened cargo clearance, Decongestion of border points, improved quality of service, increased cargo quantity cleared daily, RRU response rate, Accident response rate, Theft response rate, violation resolution time & Offence compounding time. The range was 'strongly Agree (1)' to 'Strongly Disagree' (5). A standard deviation of >0.9 implies a significant difference on the impact of the variable among respondents

Table 4.5 Influence of transit time on management of transit goods

Statement	Mean	Std. Deviation
Due to RECTS, the clearance of cargo at the border point has been hastened	1.72	.826
RECTS has facilitated the decongestion of the border points	1.89	.814
The quality of service to transporters & clearing agents has improved	1.68	.810
RECTs enables KRA to get more cargo cleared every day at a much faster rate at the border post	1.91	.830
RRU responds in the shortest time possible once an alert is allocated to them based on their jurisdiction area	2.00	.933
Accident are attended to immediately to stop loss of cargo	1.81	.711
Theft alerts from transporters are taken seriously and attended to quickly	1.64	.673
RRU takes a short time to resolve and release the driver after commission of a violation	2.02	.906
Offences raised are compounded quickly to allow the transporter continue with the journey	2.00	.760

The research findings on Table 4.5 indicates that the respondents agreed that RECTS has led to hastened cargo clearance at borders, Decongestion of border points, improved quality of service, increased cargo quantity cleared daily, RRU response time is short, Accident response rate is fast, Theft response rate, RRU take a short time to resolve violation cases & Offence compounding time influences the management of transit goods (M= 1.72, 1.89, 1.68, 1.91, 2.0, 1.81, 1.64, 2.02 & 2.0 respectively). Furthermore, there was an insignificant difference among the respondents on the impact of Hastened cargo clearance, Decongestion of border points, improved quality of service, increased cargo quantity cleared daily, Accident response rate, Theft response rate & offence compounding time as the standard deviations were < o.9 (SD = 0.826, 0.814, 0.810, 0.830, 0.711, 0.673 &0.752 respectively). However, there was a significant difference among the

respondents on RRU response time & Violation resolution time as the standard deviations were >0.9 (SD=0.933 & 0.909 respectively).

4.5 Influence of stakeholders' transparency on management of transit goods

This section of the questionnaire sort to establish the influence of stakeholders' transparency on management of transit goods. The indicators for stakeholders' transparency were; Real time data sharing, reduction in dumping of transit cargo, reduced search and recovery time, facilitative communication, willingness by transporters & agents to report incidences and communication from Agents & Transporters taken seriously and responded to quickly. The range was 'strongly Agree (1)' to 'Strongly Disagree' (5). A standard deviation of >0.9 implies a significant difference on the impact of the variable among respondents

Table 4.6 Influence of stakeholders' transparency on management of transit goods

Statement	Mean	Std. Deviation
The adoption of RECTS system enables data captured on the system to be shared on a real time basis resulting to reduced dumping, reduced tax evasion and cargo theft in the country	1.84	.820
Cargo dumping has been reduced drastically	1.74	.893
There is reduction in time spent searching for a truck with violations due to provision of real time location	1.48	.508
There is improved and facilitative form of communication between KRA staff, transporters and clearing agents	1.71	.588
Transporters are willingly calling KRA staff to request for assistance, report accident and or theft of cargo	1.79	.623
Communication to RRU & CMC from transporters is taken seriously and attended to quickly	1.79	.750

The research findings on Table 4.6 indicates that the respondents strongly agree that There is reduction in time spent searching for a truck with violations due to provision of real time location (M=1.48). furthermore, the respondents to a large extend agreed that Real time data sharing, reduction in dumping of transit cargo, facilitative communication, willingness by transporters & agents to report incidences and communication from Agents & Transporters taken seriously and responded to quickly influences the management of transit goods (M= 1.84, 1.74, 1.71, 1.79 & 1.79). Furthermore, there was an insignificant difference among the respondents on the influence of Real time data sharing, reduction in dumping of transit cargo, reduced search and recovery time, facilitative communication, willingness by transporters & agents to report incidences and communication from Agents & Transporters taken seriously and responded to quickly on management of transit goods as all the standard deviations were < o.9 (SD = 0.820, 0.893, 0.508, 0.588, .0623 &0.750 respectively).

4.6 Influence of accountability on management of transit goods

This section of the questionnaire sort to establish the influence of accountability on management of transit goods. The indicators for accountability were; Generation of customized reports as per user needs, transit time reports, use of system reports during border clearance, provision of movement audit trail for post-clearance audit, use of movement audit trail in offence resolution and use of cargo reconciliation. The range was 'strongly Agree (1)' to 'Strongly Disagree' (5). A standard deviation of >0.9 implies a significant difference on the impact of the variable among respondents

Table 4.7 Influence of accountability on management of transit goods

Statement	Mean	Std. Deviation
The system allows for generation of customized reports as per the users need	1.48	.508
The system provides reports on transit time of every cargo armed	1.52	.508
System reports can be generated and be used by team at border stations to hasten the cargo clearance process	1.77	.717
The system provides movement audit trail that is used for customs post-clearance audit	1.87	.718
The system cargo movement audit trail has been used for faster conclusion of offences	1.90	.651
The system has been helpful in reconciling the goods released at port and those that exit at the borders	1.65	.551

The research findings on Table 4.7 indicates that the respondents strongly agree that the system allows for generation of customized reports as per the users need hence positively influencing the management of transit goods (M=1.48). in addition, the respondents, to a large extend agree that, transit time reports, use of system reports during border clearance, provision of movement audit trail for post-clearance audit, use of movement audit trail in offence resolution and use of cargo reconciliation influences the management of transit goods (M= 1.52, 1.77, 1.87, 1.90 & 1.65). Furthermore, there was an insignificant difference among the respondents on the influence of Generation of customized reports as per user needs, transit time reports, use of system reports during border clearance, provision of movement audit trail for post-clearance audit, use of movement audit trail in offence resolution and use of cargo reconciliation on management of transit goods as all the standard deviations were < o.9 (SD = 0.508, 0.508, 0.717, 0.718, 0.651 &0.551 respectively).

4.7 Influence of regional electronic cargo tracking on management of transit goods

In this study, regression analysis was used to determine the influence of RECTS on management of transit goods in Customs department of Kenya Revenue Authority. A multiple regression of the four independent variables on the dependent variable was done resulting to the model summary presented below in table 4.7

Table 4.7 Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.991[a]	0.982	0.98	0.078256

Predictors: (Constant), X4, X2, X1, X3

Where;

X1- Seamless monitoring & movement

X2- Transit time

X3- Transparency among stakeholders

X4- Accountability

The findings indicated in table 4.7, model summary, the R square value of the model is 0.982. This represents the proportion of variance in Management of transit goods which can be explained by seamless monitoring & movement, transit time, transparency among stakeholders & Accountability. This represents the measure of the overall association of the combination of all the independent variables and the dependent variable. This therefore implies that seamless monitoring & movement, transit time, transparency among stakeholders and accountability, all achieved by the RECTS system, have a 98.2% influence on management of transit goods. The adjusted R square represents the proportion of variance in Management of transit goods which can be

explained by seamless monitoring & movement, transit time, transparency among stakeholders & Accountability after exclusion of any extraneous predictors to the model.

Table 4.8 Parameter estimates

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.172	0.063		-2.714	0.010
X1	0.167	0.029	0.201	5.656	0.000
X2	0.53	0.034	0.593	15.59	0.000
X3	0.223	0.036	0.224	6.18	0.001
X4	0.185	0.038	0.117	4.839	0.000

Dependent Variable: Management of transit goods

The model regression equation took the following form;

$$Y = A + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where;

Y = Management of transit goods

β_1 = slope of variable 1

β_2 = slope of variable 2

β_3 = slope of variable 3

and β_4 = slope of variable 4

X1   = Chosen value of seamless monitoring & movement

X2   = Chosen value of transit time

X3   = Chosen value of transparency among stakeholders

X4   = Chosen value of Accountability

A = Constant (Y-axis intercept)

ε = Error term: representing, other factors other than the above

The results in table 4.8 above can be input in the regression equation as below;

$$Y = -0.172 + 0.201X_1 + 0.593X_2 + 0.224X_3 + 0.117X_4 + \varepsilon$$

The research findings indicate that the value of the Constant A (Y-axis intercept) is -0.172. this means that when the values of the explanatory variables are zero, we would have a negative level of management of transit goods implying increase in the time of clearing cargo at border points, lack of communication among stakeholders, inability to do proper movement audit trails and cargo reconciliation and increased number of complaints in relation to the transit goods.

Furthermore, seamless monitoring & movement influences the management of transit goods at a rate of 0.201, transit time influences management of transit goods at a rate of 0.593, transparency among the stakeholder's influences management of transit goods at a rate of 0.224 and accountability influences management of transit goods at a rate of 1.117. the results also indicate that all the coefficients are statistically significant as the significance values are below 0.05 (0.00, 0.00, 0.01& 0.00).

In conclusion, from the regression results, there is a positive relationship between regional electronic cargo tracking and the management of transit goods by customs department of Kenya Revenue Authority.

4.8 Summary of structured interview findings

The respondent from the structured interview highlighted the following aspects concerning RECTS based on the structured interview questions.

The availability of seals at loading point (Mombasa port) has not been consistent at all times. There are a few moments a shortage of arming seals is experienced therefore causing delays in the arming of cargo and subsequent delay in the release of cargo from Mombasa port. It was highlighted that the number of seals procured and currently in operation are below the targeted number of seals. There approximate number of seals in operation is 2,000 seals as compared to a target of 17,000 seals. The other aspect affecting availability of seals at the port is reliability of the courier service provider, EMS, to provide a quick and reliable service. Return seals are delivered to Malaba, where EMS picks and proceeds to deliver to Mombasa after making a stop at Nairobi headquarters. This creates delays in the delivery. Lastly, it was indicated that the servicing of the seals upon arrival at Mombasa also contributed in creating delays as the seals are few, any time taken to service leads to insufficient seals at the port as the quantity of seals is small and stretched in termed of use.

The interviewee highlighted that speed of response and resolution of alerts by RRUs has not been quick and fast. This was attributed to the big geographical area covered by each and specific RRU. For instance, it was highlighted that the RRU at Sameer centre in Nairobi covers, responds and handles all alerts between Mtitio Andei and Mai Mahiu. There are 5 operational RRUs along the northern corridor as compared to a requirement of 12 RRU to ensure operational efficiency. This has negatively affected service delivery and performance.

The interviewee clarified on the research findings that had indicated a significant difference among respondents concerning the question on the availability of alerts to system users. It was indicated

that alerts are not available to all RRUs but rather on a specific RRU the alert is assigned to. Furthermore, allocated alert appear to the RRU electronic gadgets in queues. This implies that the first alert allocated has to be attended to and resolved before the next one pops up. This causes delays especially because of large geographical areas under coverage.

Furthermore, the research findings indicated a significant difference among respondents concerning the time taken to compound and settle offences cases in TMU. The interviewee expounded that most offence cases occur during truck movement and cases are raised and compounded by RRU officers. In EAC Customs Management Act, compounding of offence cases can only be done by clearing agents and or Truck owners. These two stakeholders do not move along with the goods. This therefore excludes drivers from taking part in offence compounding unless they are given a written consent by the clearing agents and or Truck owners. This technicality has led to delays in offence compounding therefore delaying the movement of transit goods and ultimately leading to increase transit time along the northern corridor.

Lastly, the interviewee acknowledged that RECTS has positively influenced cargo reconciliation within transit monitoring unit. The system reports are generated directly through a query and the output immediately used in the cargo reconciliation. This has immensely improved efficiency within the TMU unit.

4.9 Discussion of the findings

The research sought to establish the influence of Regional Electronic Cargo Tracking system on the Management of Transit goods. Primary data for the research was achieved by use of a questionnaire where 60 questionnaires were presented to respondents with research questions based on the indicators that had been identified for measurement.

Firstly, the findings were that seamless monitoring & movement positively influence the management of transit goods. Seamless movement & monitoring positively influence management of transit goods at a rate of 0.201. The results indicate that the respondents agree that movement of seals to destination countries, availability of alerts to all users, alert response time, real time assignment of alerts to RRUs and response to alerts occurring within Kenya influences the management of transit goods. However, there was an indifferent agreement concerning the influence of availability of seals at arming points on management of transit goods. This was expounded by the structured interviewee who highlighted the challenge in the number of available seals. For optimal performance of operations, the targeted number of seals is 17,000. However, there are only 2000 available seals leading to shortage of seals from time to time. The shortage of seals is also contributed to by inefficiency in the operations of the courier service provider.

The research findings also indicate that transit time influences the management of transit goods at a rate of 0.593. The findings were that the respondents agree that Hastened cargo clearance, Decongestion of border points, improved quality of service, increased cargo quantity cleared daily, RRU response time, Accident response rate, Theft response rate & Offence compounding time influences the management of transit goods. However, there was an indifferent agreement on the offence resolution time. There were varying views from the respondents as some felt the duration for resolution of offences was long. An interview with the management at TMU highlighted that under EAC Customs Management Act, compounding of offence cases can only be done by clearing agents and or Truck owners. These two stakeholders do not move along with the goods. This therefore excludes drivers from taking part in offence compounding unless they are given a written consent by the clearing agents and or Truck owners. This technicality has led to delays in

offence compounding therefore delaying the movement of transit goods and ultimately leading to increase transit time along the northern corridor.

The research found out that respondents to a large extend agreed that Real time data sharing, reduction in dumping of transit cargo, reduced search and recovery time, facilitative communication, willingness by transporters & agents to report incidences and communication from Agents & Transporters taken seriously and responded to quickly, influences the management of transit goods. Alfitiani (2010) in the journal titled Jordan's electronic transit monitoring and facilitation system presented to the world customs organization highlights that the introduction of electronic tracking of transit goods in Jordan greatly improved transparency among the key stakeholders. The research findings clearly highlight that this was the same feeling concerning the impact of RECTS on transparency as the respondents agreed that the transparency has positively influenced management of transit goods. The privately owned vendors who are licenced by KRA to provide cargo tracking services have always not been transparent with KRA as this would negatively affect their customers hence affected their businesses (Oirere, 2015).

Lastly, the findings in the research concluded that the reconciliation capabilities of RECTS have positively influenced management of transit goods as the respondents agree to a large extend that the indicators of accountability, Generation of customized reports as per user needs, transit time reports, use of system reports during border clearance, provision of movement audit trail for post-clearance audit, use of movement audit trail in offence resolution and use of cargo reconciliation have improved management of transit goods.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter of the research is outlined into summary of the findings, conclusions, recommendations and suggestions for further research.

5.2 Summary of the Findings

The study established that Regional Electronic Cargo tracking system, jointly owned by Kenya, Uganda and Rwanda revenue authorities positively influences the management of transit goods in the customs department of Kenya Revenue Authority. The four attributes of RECTS identified and tested were seamless monitoring, reduced cargo transit time, transparency among stakeholders and accountability of transit goods.

The findings indicated that seamless monitoring through real time availability of data, alerts and continuous monitoring across partner states has improved the management of transit goods and drastically reduced dumping of the goods to the local Kenyan market.

The findings further indicated that transit time has greatly been reduced by the adoption of RECTs and this has in turn improved the management of transit goods. This was supported by the findings from the respondents who acknowledged that cargo dwell time at border stations has reduced, response to alerts and violations is done within a short time and offences are resolved and compounded in good time.

In addition, transparency among stakeholders has greatly improved as information is freely available to transporters and clearing agents. Furthermore, the results indicated that the transporters and clearing agents are able to willingly make calls to TMU team to report cases of

accidents, theft which are then respondent to in the shortest time possible. This has greatly improved the management of transit goods within the organization.

Lastly, the research findings noted that RECTS has greatly improved the accountability of transit goods within KRA and this has in turn positively influenced the management of transit goods. This has been attributed to the easiness of generating customized reports on the goods being armed using the system. Furthermore, audit trail reports highlighting the movement of the goods and reconciliation statistics were agreed upon by the respondents as important aspects making accountability of transit goods easy.

5.3 Conclusions

The management of transit goods by customs department of Kenya Revenue Authority has gone through various phases. The pre-2010 era where transit customs goods used to be physically escorted to the border station proved to be the most challenging and financially extensive to KRA. This did not reduce the dumping of transit goods as the escorting staff of KRA were always exposed to security dangers, harassment and tiresome travels along the transit routes while escorting the goods. In addition, this proved costly to KRA as the escort vehicles were always fueled and escorting members of staff paid daily subsistence monies for their up keep. The second era replaced the physical escorts where KRA licensed private entities to provide electronic cargo tracking services on behalf of the authority. This move helped reduce operation costs involved in the management of transit goods. However, this did not eliminate the dumping of transit goods in the Kenyan market as most of the licensed entities failed to put up functional rapid response teams and greatly focused on the business aspect of the service instead of fighting the transit cargo dumping menace.

RECTS forms the third era in the management of transit goods by KRA where, KRA in collaboration with other revenue authorities in the east Africa community, procured a cargo tracking system from B'smart company. The infrastructure was set up in Kenya, Uganda and Rwanda to allow for the tracking of the goods through the countries seamlessly without any disarming before goods arrive at their destinations. The seamless monitoring has ensured quick insemination of alerts to responsible units, quick response to alerts by RRUs, reduced dwell time at Malaba and Busia borders and has drastically reduced the dumping of transit goods in Kenya. RECTS has also led to the reduction of cargo transit time along the northern corridor, led to improvement of transparency among stakeholders in the business and has improved accountability of all transit goods armed with RECTS seals. This has in turned improved the management of transit goods by Customs department of KRA.

There are however some aspects that need to be improved to realize the full potential and benefit of RECTS to customs service department of KRA. Firstly, there is need for deployment of more manpower to the TMU unit to ensure that the targeted number of 12 RRU units instead of the 5 existing ones in realized. This would reduce geographical area coverage per a single RRU therefore reducing delays in response to alerts. Lastly, there is need for more financial injection so as to raise the number of electronic seals currently under operation from 2000 seals to the projected figure of 17000. This would ensure more cargo is tracked with RECTS and no delays at the port due to lack of seals.

5.5 Recommendations for Policy and Practice

1. The study found out that the number of available electronic seals are below the requirements. Furthermore, the logistical handling of the available seals in terms of transporting the seals from Rwanda and Uganda to Mombasa port have a negative effect on the performance of

RECTS and management of transit goods. It is recommended that the revenue authorities should procure more seals to meet the 17000 seals recommended for optimal operation of RECTS. In addition, there should be direct transportation of seals from the disarming points back to Mombasa port to reduce delays experience due to stop-overs at Malaba and Nairobi.

2. The findings also found out that the alert response time, and offence resolution time contributes to increase of transit time. This in turn negatively affects the management of transit goods. The conclusion on the findings was that there was varied opinion among respondents as a good number felt the response and offence resolution time by was longer than their expectations. This was attributed to the small number of RRUs, 5 in number as compared to the recommended 17, along the northern corridor. This had led to RRUs being allocated large geographical areas that negatively affect their operations. It is recommended that Customs management deploy more staff to facilitate the increase of RRU units to the recommended 17 for optimal operations.

3. The compounding of offences was found to be another challenge that negatively affect the management of transit goods as the exercise at times took long than expected by the respondents. This was highlighted as due to the inability of drivers to participate in the compounding of offences without consent of the truck owners and or the clearing agents. It is recommended that TMU implements a wholesome approach to offence compounding where a truck owner in Mombasa can present himself or herself to TMU officials for offence compounding even if the commission of the offence is in a different region

4. The respondents strongly agreed that accountability of goods has a big influence on management of transit goods. The use of system reports was found to be of great important on accountability and reconciliation. It is recommended that TMU invests more human

resources in the reconciliation of transit goods. Frequent refresher training also needed on cargo reconciliation for the staff within the TMU unit.

5.6 Suggestions for Further Research

The research was on the influence of regional electronic cargo tracking on management of transit goods: case of Kenya Revenue Authority customs department. The research focused on seamless monitoring & movement, transit time, transparency among stakeholders & accountability. The study recommends a further study on the cost benefit of implementation and operation of RECTS by the Revenue Authority

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

EDWIN NYONGESA,

PO BOX 1340-50200,

BUNGOMA.

27TH June 2018.

Dear Respondent,

SUBJECT: QUESTIONNAIRES FOR COLLECTION OF RESEARCH DATA

I, EDWIN NYONGESA, is a Post Graduate Student at The University of Nairobi pursuing a Masters of Arts degree in Project Planning and Management. I am required to carry out a research and submit a research report. I am carrying out a research on influence of regional electronic cargo tracking on management of transit goods: case of Kenya Revenue Authority.

To achieve this goal, I request you to help in filling the questionnaire to the best of your knowledge. Kindly note that the responses will be treated with utmost confidentiality and privacy. In addition, the information will only be used for academic purposes only.

Thank you in advance for your participation, I look forward and will appreciate if you can respond to the questionnaire in 7 days. This will help me adhere to the research timeframe guidelines.

Yours faithfully,

EDWIN NYONGESA
L50/82911/2015

APPENDIX II: RESEARCH QUESTIONNAIRE FOR KRA STAFF

Please respond to the questions as clearly as possible. Tick in the boxes where appropriate and where spaces are provided, fill in your answers. KRA staff to respond to all questions while transporters and clearing agents to skip sections indicated "KRA staff only".

SECTION A: GENERAL INFORMATION AND BIO DATA

1. Name of the respondent? ....(*Optional*)

2. What is your age bracket?

a) 18-28 years (   )   b) 29-39 years (   )   c) 40-50 years (   )   d) 51-60 years (   )

3. Name of your organization …………………………………

4. What is your highest academic qualification?

a) Diploma (   )   b) Degree   (   )   c) Post Graduate Diploma (   )   d) Masters   (   )   e)

Doctorate (   )

section B: influence of seamless monitoring on management of transit goods

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
Arming at port & disarming at the border	Availability of seals at loading points has led to reduction of time taken by trucks at Mombasa port					

	Truck are allowed to move with the seals up to the destination country					
Alert sharing	Alerts are available to all users logged on to the system					
	System alerts are responded to in the shortest time possible					
	RRUs receive the alerts falling in their jurisdiction immediately the alerts are assigned					
	The CMC only responds to alerts occurring within Kenya.					

section C: influence of transit time on management of transit goods

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
Border dwell time	Due to RECTS, the clearance of cargo at the border point has been hastened					
	RECTS has facilitated the decongestion of the border points and ensuring that cargo that is moving across the border arrives to its destination at the expected time and date					
	The quality of service to transporters & clearing agents has improved due to the increased speed of service delivery from the adoption of RECTS system					

		1	2	3	4	5
	RECTs enables KRA to get more and more cargo cleared every day at a much faster rate at the border post					
Alert and accident response time	RRU responds in the shortest time possible once an alert is allocated to them based on their jurisdiction area					
	Accident are attended to immediately to stop loss of cargo					
	Theft alerts from transporters are taken seriously and attended to quickly					
Violation & offence resolution time	RRU takes a short time to resolve and release the driver after commission of a violation					
	Offences raised are compounded quickly to allow the transporter continue with the journey					

section D: influence of stakeholders' transparency on management of transit goods

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
Cargo & driver location	The adoption of RECTS system enables data captured on the system to be shared on a real time basis resulting to reduced dumping, reduced tax evasion and cargo theft in the country					
	Cargo dumping has been reduced drastically					

	There is reduction in time spent searching for a truck with violations due to provision of real time location					
Improved communication	There is improved and facilitative form of communication between KRA staff, transporters and clearing agents					
	Transporters are willingly calling KRA staff to request for assistance, report accident and or theft of cargo					
	Communication to RRU & CMC from transporters is taken seriously and attended to quickly					

section E: influence of accountability on management of transit goods

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
Report generation	The system allows for generation of customized reports as per the users need					
	The system provides reports on transit time of every cargo armed					
	System reports can be generated and be used by team at border stations to hasten the cargo clearance process					
Cargo movement audit trail	The system provides movement audit trail that is used for customs post-clearance audit					
	The system cargo movement audit trail has been used for faster conclusion of offences					

reconciliation	The system has been helpful in reconciling the goods released at port and those that exit at the borders					

Thank you for accepting to take part in the research.

APPENDIX III: RESEARCH QUESTIONNAIRE FOR TRANSPORTERS & CLEARING AGENTS

This questionnaire is designed to collect data on the Influence of Regional Electronic Cargo tracking

on management of transit goods: case of Kenya Revenue Authority customs department

 from the transporters and clearing agents. Please respond to the questions as clearly as possible.

Tick in the boxes where appropriate and where spaces are provided, fill in your answers.

SECTION A: GENERAL INFORMATION AND BIO DATA

5. Name of the respondent? ....(*Optional*)

6. What is your age bracket?

   a) 18-28 years (   )   b) 29-39 years (   )   c) 40-50 years (   )   d) 51-60 years (   )

7. Name of your organization …………………………………

8. What is your highest academic qualification?

   a) Form 4   (   )   b) Certificate   (   )   c) Diploma (   )   d) Degree   (   )

section B: influence of seamless monitoring on management of transit goods

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
Arming at port & disarming at the border	Availability of seals at loading points has led to reduction of time taken by trucks at Mombasa port					

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	Truck are allowed to move with the seals up to the destination country					

section C: influence of transit time on management of transit goods

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
Border dwell time	Due to RECTS, the clearance of cargo at the border point has been hastened					
	RECTS has facilitated the decongestion of the border points and ensuring that cargo that is moving across the border arrives to its destination at the expected time and date					
	The quality of service to transporters & clearing agents has improved due to the increased speed of service delivery from the adoption of RECTS system					
	RECTs enables KRA to get more and more cargo cleared every day at a much faster rate at the border post					
Alert and accident response time	RRU responds in the shortest time possible once an alert is allocated to them based on their jurisdiction area					
	Accident are attended to immediately to stop loss of cargo					
	Theft alerts from transporters are taken seriously and attended to quickly					

Violation & offence resolution time	RRU takes a short time to resolve and release the driver after commission of a violation					
	Offences raised are compounded quickly to allow the transporter continue with the journey					

section D: influence of stakeholders' transparency on management of transit goods

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
Improved communication	There is improved and facilitative form of communication between KRA staff, transporters and clearing agents					
	Transporters are willingly calling KRA staff to request for assistance, report accident and or theft of cargo					
	Communication to RRU & CMC from transporters is taken seriously and attended to quickly					

Thank you for accepting to take part in the research.

APPENDIX IV: STRUCTURED INTERVIEW

This structured interview questions are designed to collect data on the Influence of Regional Electronic Cargo tracking on management of transit goods: case of Kenya Revenue Authority customs department from top managers in the Transit Monitoring Unit of Kenya revenue authority.

section A: influence of seamless monitoring on management of transit goods

1. Comment on the availability of seals at loading points and any challenges experienced in the handling and management of the seals

2. What is your feeling concerning the response of alerts by RRU and any possible influence on how you manage transit goods along the northern corridor?

3. Give a highlight on the availability of alert to system users especially the RRUs

4. How has RECTS influenced violation response and offence resolution with Transit Monitoring Unit? There were differing opinions among respondents on the issue of violation resolution time.

5. How has RECTS system influenced cargo reconciliation in the Transit Monitoring Unit?

Thank you for accepting to take part in the research.

APPENDIX V: RESEARCH PERMITS

UNIVERSITY OF NAIROBI
OPEN DISTANCE AND e–LEARNING CAMPUS
SCHOOL OF OPEN AND DISTANCE LEARNING
DEPARTMENT OF OPEN LEARNING
NAIROBI LEARNING CENTRE

Your Ref:

Our Ref:

Telephone: 318262 Ext. 120

Main Campus
Gandhi Wing, Ground Floor
P.O. Box 30197
N A I R O B I

27th September, 2017

REF: UON/ODeL/NLC/29/315

RE: EDWIN NYONGESA   - REG NO: L50/82911/2015

The above named is a student at the University of Nairobi Open, Distance and e-Learning Campus, School of Open and Distance Learning, Department of Open Learning pursuing Master of Arts in Project Planning and Management.

He is proceeding for research entitled **"Influence of Regional Electronic Cargo Tracking on Management of Transit Goods: Case of Kenya Revenue Authority Customs Department"**

Any assistance given to him will be appreciated.

27 SEP 2018

CAREN AWILLY
CENTRE ORGANIZER
NAIROBI LEARNING CENTRE

CM-HRO

1340-50200
Bungoma.

Gilbert
Ask applicant to attach questionnaire
Afranlie
18/10/18

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KENYA REVENUE AUTHORITY
ISO 9001:2015 CERTIFIED

Ref: KRA/5/1003/24

5th November, 2018

Edwin Nyongesa
P.O. Box 1340-50200
BUNGOMA

Dear Edwin,

RE: REQUEST TO CONDUCT RESEARCH AT KRA

Reference is made to your letter dated **27th October, 2018** from University of Nairobi on the above subject.

We are pleased to inform you that approval has been granted for you to conduct research at KRA on the '**Influence of regional electronic cargo tracking on management of transit goods**'- A case study of KRA.

Please note that the data/information availed/collected should be for academic purposes only and should be treated with utmost confidentiality.

Kindly share your findings with the Authority on completion of the study.

Yours sincerely,

Alice Munyao
For: Deputy Commissioner – HR

APPENDIX VI: PLAGIARISM REPORT

Influence of regional electronic cargo tracking on management of transit goods.case of kenya revenu authority customs department

ORIGINALITY REPORT

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