EFFECT OF CARGO TRACKING SYSTEM ON CROSS-BORDER TRADE

BETWEEN KENYA AND UGANDA

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DECLARATION

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

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God bless you all.

DEDICATION

This research project is dedicated to my family for their inspiration, encouragement, understanding and prayers towards the successful completion of this course. I pay glowing tribute and gratitude to the Almighty God who has given me the health, strength and wisdom to undertake this course.

ABSTRACT

Trade globalisation and the establishment of economic blocks and agreements have led to increase in export and importation level of goods and services across national boundaries. With the increase of trade volume of businesses, there has been a need to introduce appropriate facilitation measures during the transportation process and at the border post to ease the process of cargo movement. The ratification of the World Trade Organization (WTO) Agreement on Trade Facilitation also requires that we implement measures to ensure faster movement of goods in transit. One of the common trade facilitation measures is the electronic tracking of imported cargo transiting through Kenya. The use of technologies, for example, Radio-frequency identification (RFID), to track physical flow of physical goods is one prominent system that is envisaged to improve the cross-border business activities between countries. The study sought to establish the effect of cargo tracking system on crossborder trade between Kenya and Uganda. Specific objectives was to determine the extent of automation at the Kenya –Uganda border post as well as establish the effect of the cargo tracking system on the level of trade between Kenya and Uganda. The research adopted an exploratory research design and focused on the structure of an enquiry with an aim of drawing inferences from a causal relationship of the data. The targeted respondents were border officials at the Kenya - Uganda border and also at the head office, Cargo tracking department with purposive sampling design being employed to identify the respondents. Primary data was collected using a semi-structured questionnaire. The findings were that the electronic cargo tracking system adopted by Kenya Revenue Authority has 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 due to the implementation of the system. From the regression model, the findings was that the cost monitoring transit cargo had been reduced by a high level as a result of the introduction of the cargo tracking system. Similarly, diversion of transit cargo to the local market had been reduced through the introduction of the cargo tracking system by the KRA. The study concludes that electronic cargo tracking system improves the border efficiency, reduction of transit time and cost of private business. The study recommends synchronization of electronic cargo tracking system and the and RFID system being employed by both Kenya and Uganda to create a seamless operation and management of cargo between the two countries.

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ABBREVIATIONS AND ACRONYMS

ECT	-	Electronic Cargo Tracking System
ECTS	-	Electronic Cargo Tracking System
ICBT	-	Informal Cross-Border trade
IT	-	Institutional Theory
GPS	-	Global Positioning System
KRA	-	Kenya Revenue Authority
KNBS	-	Kenya National Bureau of Statistics
RFID	-	Radio-frequency identification technology
UHF	-	Ultra High Frequency

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Globalisation of trade as well as establishment of economic blocks and agreements has led to an increase in the level of export and importation of goods and services between different countries. With the increase of trade volume of businesses, there has been a need to develop a number of trade facilitation measures at the border post with an aim of improving trade flows among different countries (Djankov et al, 2010). According to Dennis and Shepherd (2011), improvement of trade facilitation measures promotes export diversification by making it much easier for countries to export innovative products that are currently not being exported. The use of technologies, for example, Radio-frequency identification (RFID), to track physical flow of physical goods is one prominent system that is envisaged to improve the cross-border business activities between countries (Raghu Das & Peter Harrop, 2013). Radiofrequency identification (RFID) technology uses wireless communications to track objects and collect information about their location and activity. In addition, RFID is used to access management, payments, and logistics. Globally, the use of RFID to track goods has grown an average rate of 20 percent per annum between 2005 and 2015, significantly higher than the 7 percent growth in flow of goods (Calabrese & Eberhard-Ruiz, 2016). RFID has made it possible for the Kenya Revenue Authority ensure that all cargo destined to Uganda whether direct exports or transit goods are electronically monitored along gazetted and geo-mapped routes. In effect, this has led to increased accountability for the goods being exported from Kenya and transited through Kenya effectively combating illicit and fraudulent trade.

This study will be anchored on the Institutional Theory (IT) and the Transaction Cost (TC) theories. The Transaction cost theory postulate that if there are market based measures, business players will prefer such intervention because they will benefit from the scaleeconomies of the market place. However, McIvor (2005) note that if a firm encounters increased costs in finding a market due to challenges of estimating all contingencies in the agreementor because of the inability to receive a fair price due to the border challenges, then they will opt out of the business arrangement. According to the transaction cost theory, the cost of an event is the underlying reason behind different forms of establishing economic activity. In addition, the theory postulates that transaction costs increase governance structures in business relationships and the ability of the actors to streamline these transaction cost will affect the level of activity involved.

Uganda has been Kenyans' major trading partner for the last two decades with the trade volume increasing from Ksh 6.8 Billion in 1997 to Ksh 52.2 Billion in 2016 (KNBS, 2017). However, there has been a decline in the trade volume between the two countries over the two years because the trade volume had peaked at Ksh 56.5 Billion in 2014 and though this decline has been attributed to increased importance of similar goods from China, the bureaucracy in the transit corridor up to the border point has been an impediment too. Efficiency in the exportation of goods is not only important to the traders but also the revenue authorities in the two countries. Reported cases of diversion of transit cargo being deviated to the local market have occasioned the Kenya Revenue Authority loss of an estimated Ksh 12 Billion annually and this demanded the introduction of real time cargo tracking system to minimise and deter tax evasion through diversion of transit goods. The process of information processing by the border officials and other intelligence agencies is currently quite taxing and the vulnerabilities associated with container stacking are also quite high. It will be of

additional net worth of both cargo owners and customs managers if information on cargo in transit is available in real time to enhance the safety of cargo in transit.

1.1.1 Electronic Cargo Tracking

An Electronic Cargo Tracking System (ECTs) is a system established with an objective of to electronically monitor goods while on transit, and controlthe goods along the corridor route to the destination. Thecargo monitoring process is on real time basis and this is achieved using the Radio Frequency Identification (RFID) and GPS/GPRS technology (Raghu Das & Peter Harrop, 2013). In Kenya, it is a requirement that all outbound trucks/vehicles, tankers and containers loaded with transit goods are fitted with tracking devices for purposes of electronically monitoring and tracking the goods. Further, Musyoka (2016) asserts that the vehicle is fitted with an electronic seal which reports the truck location and reports on all violations on a real time basis.

The Electronic Seal contains a dual mode capacity such that it uses UHF 433.92 MHz for long range communication and LF 125 KHz for short range communication with the communication channelledthrough a reader in the truck's cabin (Huanye, 2010). The electronic cargo tracking system (ECTS) is an initiative whose primary objective is to monitor cargo that is outbound of Kenya's boundaries to ensure that duty is paid and also encourage legitimate and legal trade.

The system uses a series of features such as a virtual fence known as the geo-fence that is setup along gazetted routes used by transporters conveying transit and export cargo. The process starts with the collection of co-ordinates of the gazetted routes that the trucks use, this information is then mapped into the electronic cargo tracking system. If the truck is driven off the geo-fenced route, the system sends out deviation alert which is then dispatched to an enforcement team on the ground to investigate. The use of the RFID allow trucks to be checked only once each way and in the process, cutting crossing times by factors of four or five, from over a day to a few hours. This is quite important, because border post delays restrict trade just like tariffs, while minimisation of clearance and crossing times positively affects a firms to export and growth (Volpe et al., 2015).

Electronic cargo tracking has been associated with several benefits to the transporters that include increased efficiency and productivity which results in a cost reduction benefits. The system also aides in improved reliability and service quality, usually thought of as tools to retain good customers and grow market share and revenue and lastly there is improved shipment and container integrity, built around a core of security issues (Huanye, 2010). The system similarly present benefits to the public sector in this case the Kenya Revenue Authority. With the implementation of the system, there is improvement in efficiency and effectiveness of operational performance. It is a tool which is double edged with the expectation that reduction in illicit trade caused by diversion will lead to increased collection of revenue from imports.

1.1.2 International Trade

International business consists of any commercial transaction that crosses the borders of any two nations and comprises a large and growing portion of world's total business (Bennett, 2014). International business entails undertaking of business activities beyond a nation's boundary. International trade is an extension of the domestic trade and includes the transfer of goods, capital and services that comprise of technology, skilled labour, and transportation among others between one or more countries. Foreign investment and capital flows between countries form part of the international trade and this has gained increased popularity because of the because of the growing rate of multinational enterprises. McDonald *et al.*, (2012)

suggest that the transfer of goods, services, people, resources and technologies among markets have major effects on countries and their governments, individuals and companies. At the national level, increased international business activities enables countries to leverage on their national expertise in commerce to deliver goods and services into the international marketplace.

For companies, international business increases opens up new opportunities abroad and in the process be more innovative and efficient in their use of resources in order to produce and market products remain competitive. International trade will be able to afford consumers, increased variety of goods and services and consequently enhance nation's populace living standards. Devinney (2010) further suggest that open borders results in to new ideas, technologies, and ways of doing things to a nation. The degree of the flow of international trade has major effects on business activities because the level of openness of national economies is to external influences such as trade and investment (Grosse, 2005).

The level of international trade is influenced by existing bilateral and multilateral arrangements between countries because it dictates the level of commerce between the countries. Hill (2005) posit that the trade policies and relations differ in scope and content but generally will be influenced by the structure of the economy of countries in the partnership. Globalization process at the international level is yet another important factor that influences and shapes the level of international trade because in the last three decades, the volume of trade among countries and continents have increased and shapes subsequent trade policies. Torre (2008) suggest that since no nation can satisfy its needs by itself alone, international trade has become a means by which countries source those goods and services that they do not produce locally or there exist a deficit in the production process. Devinney (2010) further

suggest that international trade promotes peace between international trading partners because no one partner will wish to start a confrontation that will result in harming of business opportunities.

1.1.3 Cross Border Trade between Kenya – Uganda

In the last three decades, Mpata (2011) opine that there has been a registered increase in levels of international freight, thanks to globalization with the road transport being a critical link in multi-modal freight supply chains. In African the dependence on road transport is even more pronounced due to most countries being land locked or the absence of an efficient railway lines. As a result significant portion of road freight are moved along multinational corridors and this as necessitated development of a road network that connecting two or more countries like the Northern Corridor in Kenya and the Central Corridor through Tanzania serving Burundi, Democratic Republic of Congo, Rwanda Southern Sudan and Uganda. However, Hoffman et al., (2013) point out that while many economic regions are gradually doing away with customs duties at border posts as a form of shoring up of trade, the opposite is true in Africa, because majority of countries are still dependent on customs duties as their primary source of state income.

Apart from the human and non-human trade tariffs, a lack of effective cross-border freight management systems has led to increased incidences of a lack of transparency from the perspective of the consignor and consignee and also lead to less coordination between the actions of different exporters and importers. In addition, a lack of visibility of transparent operations during the movement of transit goods results in long delays at border posts accompanied by many corrupt practices, which often go hand in hand (Hoffman et al, 2013). There is therefore a need to integrate different systems operated by different stakeholders along the road corridor to avoid deliberate manipulation of the process by human operators, who might be difficult to police (Mpata, 2011).

1.2 Research Problem

The need for an efficient border posts and capacity to track transit goods has been debated for a long time because of its perceived benefits (Barka 2012; Norov & Akbarov 2009). Efficient cross-border operations are an important component of the business activities of any country because all countries need to transact with other business units outside its National boundaries to the increased globalisation of trade. For the cargo owners, cargo transporters and freight forwarders, there is need for to have short delays in crossing the border posts while various governments will want to maximise the revenue from customs duties and consequently implement stringent measures at the borders to achieve their objective, which causes long delays at the border posts (Mpata, 2014). In addition, Fitzmaurice (2012) note that while many economic regions are systematically doing away with the charging of customs duties at border posts, the opposite applies in Africa, because majority of countries are still dependent on customs duties as their primary source of state income. Therefore, development of stringent controls is applied at most border posts to ensure that freight does not leak into or from a country before the required duties have been paid. One of the tools that has been to avoid leakages of revenue is the tracking of cargo destined to the neighbouring countries. Electronic cargo tracking is necessarily a pillar of the East African Single Customs Territory aimed at ensuring goods securely arrive at their final destination while intact.

The World Bank's annual Doing Business report for 2015, highlight that, in Africa, it takes three times as many days, twice as many documents and six times as many procedures in comparison to the high income economies (Djankov et al., 2010). In Kenya Particularly, the different multiple cross border agencies require different documentation for the same consignment occasioning delays and inefficiencies. These delays have led to the region's logistics costs to be among the highest in the globe. With this negative state it becomes necessary that African countries come up with appropriate measures that will reduce transport costs from remote areas, improve connectivity and facilitate the movement of goods, services and people across borders. Further, the World Bank (2015) report identifies that the low and narrow export market for African countries necessitates the need for an efficient facilitation measures to increase their export base. Therefore, it becomes imperative that for the African countries to harness the available opportunities, it requires not just a supportive investment environment but targeted action to lower trade-related operating costs, including transport, trade facilitation and logistics services (Norov & Akbarov, 2012).

The interest on the use of tracking system on cross-border trade has attracted interest from governments, scholars and stakeholders. Lund and Manyika (2016) explored on how digital trade is transforming globalisation and found that in the case of governments, the rapid transformation of digital trade introduces factors that need to be addressed including lingering barriers to its growth, appropriate ways of measuring it, and questions about governance and data security. Bhero, et al in 2015 undertook a study on the impact of radio-frequency identification system and information interchange on clearance processes for cargo at border posts in the border posts between South Africa and Malawi. The research finding was that simulation model resulted in improvements of up to 82% with regard to transit time. Hoffman and Lusanga (2015) researched on the effect of combined GPS/RFID system on cross-border management of freight consignments between South Africa and Zambia and found that cross-border operations are hampered by diverse security challenges introduced by customs

authorities versus the need for attaining efficiency objectives of transport operators. In addition, international trade suffers from illegal practices involving truck drivers and customs officials.

Locally, Kabiru (2016) sought to establish the electronic cargo tracking system and operational performance at Kenya Revenue Authority and on transporters. The findings were that the major challenge in implementing the system is a slight disconnect between what the revenue collector expects and what the system vendors have set-up. Similarly, the research reveals that IT infrastructure is key for the successful implementation of the system. Nkoroi (2015) investigated the informal cross border trade between Kenya and Uganda. The results were that informal cross-border trade (ICBT) between the two countries is a major source of income for people living at border posts, while for government and other institutions such as Uganda Revenue Authority and Kenya Revenue Authority, ICBT as illegalactivity/disguised smuggling and a source of unfair competition thus a loss of revenue. ICBT is carried out by of both nationalities and found that 56 percent of those involved in the trade were Kenyans and 44% Uganda nationals. Apondi (2015) sought to establish the relationship between required trade documentation and the choice of cross-border trade patterns at Busia border post. The study established that trade documentation affects the choice of informal crossborder trade patterns due to constraints such as accessibility and costs which increase trade transaction costs.

On the basis of the above studies that are close to what the researcher intends to study, though several studies have looked at the various facets of electronic tracking of goods, they have not delved into the effect of cargo tracking system on cross-border trade between Kenya and Uganda. Therefore, this gap leads to the following research question, what is the effect of cargo tracking system on cross-border trade between Kenya and Uganda?

1.3 Research Objectives

- i. To determine the extent of automation at the Kenya –Uganda Border post
- ii. To establish the effect of cargo tracking system on trade between Kenya and Uganda

1.4 Value of the Study

The findings of this study are increase the understanding and importance of trade facilitation measures from the view point of the government agencies, academicians and stakeholders in the business community. For the government agencies such as Kenya Revenue Authority and the Ministry of trade, be able to understand how trade facilitation measures such as the cargo tracking system will increase the level of trade and government revenues. This is because the establishment of effective trade facilitation measures will influence the level of trade and minimise the use illegal entry points. Therefore, it is expected that the outcome of the study will assist policy and decision makers in various government institutions and agencies involved in international trade in understanding the positive impact that cargo tracking system can contribute towards reduction of costs to trade and growth of the economy.

The business community will also benefit from the study because it will make them aware of the different trade measures that have been established to streamline entire trade volume between Kenya and Uganda and how to make use of them to increase their trade volume. In addition, the business people will be able to use the research findings to suggest further measures that they need in order to hasten their cargo tracking system.

To the academicians, the study finding is expected to increase the stock of the theoretical and empirical knowledge on Trade Facilitation and related aspects of trade. The study is expected to form appoint of reference and a basis for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter literature of relevance to the study are reviewed. Significant discussion centre on the theories underpinning the study, forms of electronic cargo tracking system and the effect of ECT system on the volume of trade.

2.2 Theoretical Foundation of the Study

This study is based on two theories which are the Institutional theory and Transaction Cost Theory.

2.2.1 Institutional Theory

Institutional theory emphasizes on the need to focus on the formal and legal aspects of government structures in determining the efficiency of trade (Scott, 2004). The theory considers the process by which structures become ingrained as authoritative guidelines for influencing social behaviour (Scott, 2004). The Institutional theory suggests that existence of formal rules and enforcement standards create an impetus for action patterns. In an effort to improve the operational efficiency of the Busia Border Station, the Kenya government as well as the Ugandan authorities will need to improve its efficiency with a view to reducing any form of bureaucracy that will lead to increased cost of operations. The theory considers cross-border differences between countries to consist of complex variety of legal rules and procedures in the host countries (Scott, 2004). Consequently, this position can be used to explain the presence of different trade rules and policies between Kenya and Uganda for technical and market access issues which have been argued to act as barriers to formal trade

(Adeleke et al., 2010). These rules, in particular, have the effect of protecting national markets and obstructing a level playing ground. As a result, growth of formal cross-border flows has remained both low and slow for the African countries. Harmonizing and simplifying trade rules and regulations pertaining to import/export trade, then, is argued, could facilitate cross-border trade, and the integration of national and regional markets (Ang & Michailova, 2008).

The need for improving the efficiency in the border posts has occupied discussions due to the need to improve operational efficiencies and consequently increase level of trade between countries (Barka 2012). A cross-border cargo clearance processes interests' cargo owners, transporters, freight forwarders who will be interested in shorter time in seeking to cross a border crossing with cargo. At the same time, many governments in Africa are interested in maximising revenue collections and consequent will be interested in the introduction of stringent measures at the borders with an aim of increasing revenue collection and at the same time reduce bureaucratic delays at the border post.

The theory notes that existing regulatory environment determine cross-border trade which largely depends on the support accorded to it by the relevant law enforcement institutions. The regulatory pillar of institutions consists of rules and regulations either taken for granted or well supported by public opinion or law enforcement that are intended to encourage certain behaviours and discourage others (Ang & Michailova, 2008). The theory classifies the regulatory environments as either less restrictive or more restrictive. Therefore, as much as institutional arrangements matter in controlling cross-border exchange especially in terms of enforcement, it is important to note that overall, all exchange transactions encounter costs. In effect, conforming to regulations, registration requirements and enforcement of cross-border arrangements carry an element of cost. This dimension of trade is explained by the

transactions cost theory which explains an institutional constraint to the growth of formal trade.

2.2.2 Transaction Cost Theory

The transaction cost theory as advanced by Williamson (1985) opines that the costs of establishing and monitoring the actions of partners in influencing the entry mode choice. Transaction cost theory propose that if there are market based measures, business players will buy-in because a firm can benefit from the economies of scale of the market place. However, McIvor (2005) elucidates that a firm faces increased costs in finding or negotiating a market based agreement due to difficulties of estimating all contingencies in the agreement or because of the inability to receive a fair price due to the problems arising from information asymmetry. The use of the radio frequency identification (RFID) system use in monitoring of cargo in transit, in particular, has created enormous value by improving transit management in long global supply chains, helping reduce inventory costs by up to 70 percent while improving the service offered (Raghu & Harrop, 2013).

McIvor, (2005) assert that transaction costs are the reason behind different forms of organizing economic activity in the two ends of a continuum regarding how to administrate business in markets. Transactions and transaction costs differ between the various governance structures in business relationships and arise from four different classes namely: search costs, contracting costs, monitoring costs and enforcement costs in the business transaction. As a result of this, Faems (2008) opine that transaction theory makes firms vulnerable to its exchange partner's opportunistic behaviour when it's hard to evaluate the partner's performance. In addition, it has been argued that trust reduces some of the risks and uncertainties associated with such economic transactions. The proponents of the relational perspective argue that faith can be used as an alternative governance system for two

compelling reasons. First, trust assures exchange partners that the other party will not act opportunistically even in the presence of such opportunities. This reduces the requirement for drafting complex contracts that are otherwise expensive. Second, trust triggers extensive information sharing between exchange partners and helps in mutual adjustment if the need arises.

According to Aubert (2004), transaction costs represent a friction in the market or cost of using the price mechanism and states that when the marginal costs of using markets are higher than the costs of running a firm, the transaction should be organized within the firm and vice versa. Therefore, when a firm has integrated its operational functions and strategically to organizations, firms may better focus on their most value-creating activities, thereby maximizing the potential effectiveness of those activities. In addition, as business activities increases, costs between cross-border activities may decline, and investment in facilities, equipment, and workforce can be reduced. Further, Sauve and Zampetti (2010) observe that transaction costs of regional trade facilitation are optimised when the most appropriate participants partake in such provision (Arce & Sandler, 2002). As a result, there is need to address coordination and capacity failures, which can occur when disparate national governments independently tackle regional trade facilitation challenges.

2.3 Technology Adoption in Tracking and Monitoring of Transits Goods

Technology adoption to improve the efficiency of cross-border trade has been discussed in various international trade studies. Naidoo (2012) suggests that for effective border trade, there is need for the cross-border management system to be anchored on the adoption of technology compared to existing systems. The use of technology will facilitate harmonious integration of the road user's stakeholder's needs that are not accessible to customs authorities in which GPS tracking information reflecting truck movements, as well as weigh

bridge information generated by roads agencies is used. In addition, new systems facilitate identification of trucks upon arrival at the border and at the customs gate, document scanning submitted on behalf of cargo owners and at the same time capturing of the actions taken by customs officials during inspections (Hoffman, 2014).

The GPS tracking system is a requirement for all freight vehicles and is used to support vehicle recovery and also fleet management and is a mandatory requirement to qualify for insurance, for example in Kenya (Kabiru, 2016). The GPS tracking system can be used as a subsets of tracking data by customs authorities for determining compliance by the fleet trucks. By linking the tracking information to the pre-declarations submitted to customs it will be possible for customs authorities to build up a behavioral profile for each consignment by the time that it reaches a border. The use of electronic seals and active RFID is of additional value to both cargo owners and customs authorities due to its ability to relay real time security status of cargo in transit (Siror, 2010). The RFID integrates electronic identifiers into the container sealing devices being ferried on trailer and shipping vessel or alternatively on cargo items. The popular tracking method is to have a RF link between the seal and the tracking unit on the truck and this is implemented by integrating an active RFID transponder with tamper detection capability into the seal, as well as linking an active RFID reader to the GPS tracking device of the truck. This will have the benefit of permanent installation of the active RFID reader in the truck rather than the need to install and remove the tracking device for each trip (Meltzer, 2013).

Hoffman (2014) suggest that the passive RFID is widely used in automated vehicle identification applications, and holds several benefits over alternative auto-ID technologies such that it can be read at longer ranges compared to barcodes and at higher speeds allowing detection of vehicles in normal traffic situations. In addition, the RFID technology has a

shorter read range compared to active RFID to ensure accurate identification of specific vehicles moving through specific lanes that they are taking. The ability to store additional information on tags makes it possible to provide information about the status of the vehicles without requiring online checks, and can also support a higher level of authenticity by storing encrypted codes (Siror, 2010).

2.4 Effect of Cargo Tracking System on Border Trade

The capacity of an operation to match excellence of its system to customer requirements lies at the heart of any operations based strategy. Kidd and Crandel (2012) suggest that efficiency is concerned with doing things right and in the case of KRA, being able to increase revenue collection with a decline in cost will constitute one form of efficiency. The Electronic Cargo Tracking System (ECTs) enables the revenue authority to get more and more cargo cleared every day at a much faster rate at the border post. This move helps in decongesting the border points and ensuring that cargo that is moving across the border arrives to its destination at the expected time and date expected (Cohen & Levinthal, 2000).

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

The electronic cargo tracking system offers a platform whereby data can be analyzed accurately and therefore KRA being able to generate useful insights into its operational performance and is done on a real time basis and therefore the information collected and circulated is timely and relevant. Similarly, an electronic system eliminates the paper works involved in the old ways of doing business. ECT system also has been associated with increased quality of service and cost control (Siror, 2010) which means that customers are willing to do business with the revenue authority and this leads to more trade and revenue collection. This is because goods arrive at the border points and are quickly cleared to leave for the next station. Technology allows for faster processing of data, easier retrieval of information, and in some cases automation leads to the reduction of human errors. When technology is used in repetitive operational tasks, there is a reduction in mistakes or complete elimination, and the time it takes to complete a task is greatly reduced.

A proper Information Technology system must be set up to facilitate the smooth running of the system. The system much have a proper back-up mechanism given that the information captured on a daily basis is quite a lot (Belissent, 2009). It is paramount that personnel incharge are trained on how to use the system which means there is a cost factor to this. Majority stakeholders affiliated in this sector i.e. the transporter and the government will be able to see the consolidation of the processing and clearance of goods. The other benefit of ECT system is to minimise cases of dumping of goods in the local market as well as control counterfeit products such as medicine in the country.

2.5 Empirical Studies

Several studies have been undertaken to establish the link between employment of a tracking system of exports and the volume of trade between neighboring countries. Suleymenova and Syssoyeva-Masson, (2017) sought to determine the various approaches to promoting intra-

regional trade in staple foods in sub-Saharan Africa. The premise of the study was that the missed opportunities for the development of private sector and specifically staple food crossborder trade are due to the existence of numerous trade barriers, which vary across countries and evolve rapidly, sometimes unpredictably, with time. The study adopted a case study approach whereby senior policy makers in the southern African countries were interviewed. The study identified official tariff and non-tariff barriers, restricted and limited access to inputs, corruption, high transportation costs and significant informal trade and gender barriers to trade

Kabiru (2016) sought to determine the effect of electronic cargo tracking system and operational performance at Kenya Revenue Authority and on transporters between Kenya and other East African Countries. The study adopted an exploratory research design and had the transporters, headquarters, loading point, and border point; port and patrol officials. Using qualitative data collected via the questionnaires, the findings was that the tracking system has been beneficial in improving the overall operational performance for both Kenya Revenue Authority and the transporters who have already implemented the system and are using it especially for the cargo that is outbound. Based on the findings most of the users appear to be neutral especially on critical matters such as the system infrastructure and its capabilities. The study concluded that in order to implement the electronic cargo tracking system successfully it was important for the revenue collector to accurately define the system expectations and its benefits so that the vendors can be able to build a reliable system that will assist in achieving the set goals.

Ross (2016) researched on tracking and tracing Tobacco Products in Kenya. The research took a case study approach whereby cigarette manufacturers as well as the Kenya revenue Authority officials were interviewed. The findings indicate that the new system, accompanied by an electronic cargo monitoring system, has reduced the size of the illicit cigarette market and substantially increased tax revenue for the Kenya Revenue Authority (KRA). The experience of Kenya highlights the importance of political will, consistency, and comprehensiveness of the system addressing tax evasion, because piecemeal measures have only short- term effects. In addition, the study recommends that the tracking and tracing system needs to be monitored and reviewed continuously for performance to ensure robustness and stability of the system and to deal with possible mutation of tax evasion schemes.

Lund and Manyka (2016) sought to determine the role of digital trade in strengthening the global trade and investment system for sustainable development in the developing countries. The research delved on specifically three ways the digital transformation process is taking place namely; through cross-border flows of purely digital goods; use of digital wrappers and through the creation of online platforms for production, exchange, and consumption. The researchers contend that both large and small companies, as well as individual entrepreneurs and consumers, in both developed economies and the emerging world will be increasingly affected by the digital developments, which constitute both an opportunity and a competitive challenge. However, for governments and policymakers, the rapid transformation of digital trade raises important issues that will need to be addressed, including lingering barriers to its growth, appropriate ways of measuring it, and questions about governance and data security.

Nkoroi (2015) investigated the state of informal cross border trade between Kenya and Uganda. The study targeted 150 traders operating across the Kenya Uganda border as well as 10 key informants who included customs officials, security and immigration personnel. Respondents were sampled purposively, section will be picked randomly prioritize the traders perspectives of the trade and willingness to participate, however a deliberate effort will be

made to triangulate all their views. The study revealed that ICBT is a major source of livelihood for people living at border posts, while for government and other institutions such as URA and Police, ICBT as illegal activity/disguised smuggling and a source of unfair competition thus a loss of revenue. ICBT is carried out by men and women of whom, 56 percent were Kenyans and 44% Uganda nationals, and 88 percent are able to read and write. The study recommended that at the operational level there is need for gender specific strategies, programs and activities that recognize the different needs and capacities of men and women traders.

Bhero et al.(2015) investigated the impact of a radio-frequency identification system and information interchange on clearance processes for cargo at border posts of South Africa. The researcher adopted a descriptive research methodology whereby the border post officials were interviewed. The findings was that the average transit time across all cargo types decreased from 17.40 hours to a minimum of 12.53 hours at 80% of pre-declared cargo and then increased slightly to 13.60 hours at 100% pre-declared cargo with the adoption of RFID in the cargo clearing system. This was attributed to the number of customs officials set to a fixed number and therefore as more and more cargo is pre-declared, the demand for customs processing capacity increases beyond what is available; hence the increase after reaching a minimum.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter contains a description of the methods and procedures that were used to carry out the study. It gives summary information regarding the methodologies adopted and applied in this study. It describes the research design, target population, data collection procedures and methods, data analysis and data presentation.

3.2 Research Design

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

3.3 Population of the study

A study population is the complete group of individuals or companies that the researcher wishes to investigate (Sekaran & Bougie, 2010). It is defined in terms of availability of elements, time frame, geographical boundaries and topic of interest. The population of this study were Border Officials at the Kenya – Uganda border and also at the head office, Cargo tracking department.

3.4 Sampling Design

The researcher adopted purposive sampling whereby respondents that are considered knowledgeable in the research area were sampled. Sampling decisions are made for the explicit purpose of obtaining the richest possible source of information to answer the research questions. Purposive sampling decisions influence not only the selection of participants but also settings, incidents, events, and activities for data collection (Ploeg, 1999). The sample size for this study were 30 Border and Headquarter officials selected randomly from the pool of officials.

3.5 Data Collection

The study used primary data which was collected using semi-structured questionnaire. The open-ended questions were intended to allow the respondents to answer questions without any restriction while the closed ended questions were intended to restrict respondent's answers to specific range of answers which helped the respondents to respond quickly. The questionnaire consisted of three sections. Section A covered respondents' demographic information while section B sought to establish the various factors electronic cargo tracking and trade volume at the Busia and Malaba border posts. The questionnaires were administered through the "drop and pick" later strategy and targeted the employees of Kenya Revenue Authority at the headquarters and the border points. Mugenda (2003) notes that the use of questionnaire ensures that confidentiality is upheld, saves on time and is easy to administer. The respondents gave their responses in a five point Likert scale. The researcher collected data from ten respondents at the Cargo tracking department at the head office and twenty officers at the Busia and Malaba border post. This include officers from the Uganda side of the border.

3.6 Data Analysis

The data was analyzed by use of descriptive statistics to summarize and relate variables which were attained from the administered questionnaires. The data was classified, tabulated and summarized using descriptive measures, percentages and frequency distribution tables while tables and graphs were used for presentation of findings. However, before final analysis was performed, the data was cleaned to eliminate discrepancies and thereafter, classified on the basis of similarity and then tabulated. In accomplishing all analysis details with efficiency and effectiveness, the researcher utilized the Statistical Package for Social Sciences (SPSS) software. The data was analysed using inferential statistics to determine the effect of cargo tracking system on the volume of trade between Kenya and Uganda.

The model took the following form: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$

Whereby the variables were as follows

Y = Trade Volume

 β_1 , β_2 , β_3 , and β_4 represent the coefficients of

X1 = Cargo Clearance speed

X2 = Loss of cargo

- X3 = Cost of cargo tracking
- X4 = Ease of collecting fines and Duties
- α = Constant term indicating the level of
- ε = Error term: representing, other factors other than the above

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 Y is explained by X. This was done at 95% confidence level. The Statistical Package for Social Sciences (SPSS) was used to analyze the data.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis, findings and discussion. The findings are presented in percentages and frequency distributions, mean and standard deviations. A total of 30 questionnaires were issued out. The completed questionnaires were edited for completeness and consistency. Of the 30 questionnaires distributed, 24 were returned. The returned questionnaires' represented a response rate of 80% and this response rate was deemed to be adequate in the realization of the research objectives (Mugenda and Mugenda, 2003).

4.2 General information and bio data

The general information considered in this study included the nationality, age of the respondent, length of service with the Revenue Authority and academic qualification. The results are presented in Table 4.1.

Nationality	Frequency	Percent	Cumulative Percent
Kenyan	19	79.2	79.2
Uganda	5	20.8	100.0
Total	24	100.0	
Age of the Respondent			
18-28 yrs	2	8.3	8.3
29-39 yrs	9	37.5	45.8
40-50 yrs	8	33.3	79.2
51-60 yrs	5	20.8	100.0
Total	24	100.0	
Length of continuous service with Revenue Authority			
0-3 yrs	2	8.3	8.3
4-7 yrs	3	12.5	20.8
8-11 yrs	7	29.2	50.0
Above 12 yrs	12	50.0	100.0
Total	24	100.0	
Level of education			
Degree	11	45.8	45.8
Post graduate diploma	1	4.2	50.0
Masters	12	50.0	100.0
Total	24	100.0	

Table 4.1 : General information and Bio data

Source: Research Data (2017)

The result in Table 4.1 indicates that of the respondents, majority (79.2%) were Kenyan while 20.8% were Ugandan. With regard to the age of the respondents, 37.5% of the respondents were aged between 29-39 years while 33.3% were aged between 40-50 years. This means that close to 80% of the respondents were aged less than 59 years and with over 60% of the respondents having worked with the Revenue Authority for over 10 years, they can be deemed, ceteris paribus, to be knowledgeable on matters relating to the tracking of cargo undertaken by the Revenue Authority.

The findings in Table 4.1 further indicate that, with regard to the respondent's educational level, majority (50%) of them had attained Masters Level of education while 45.8% had attained degree level in education. This indicates that over 90% the respondent had attained degree and above in level of education thus, they are considered to be knowledgeable enough to understand and answer the questions in the questionnaires appropriately. Besides, 4.2% of the respondent had attained a post graduate diploma in education level.

4.3 Extent of Automation of Cargo Clearance

In this section of the questionnaire, the respondents were asked the extent to which KRA had implemented electronic cargo tracking system. This was important for the study in order to determine whether electronic cargo tracking system has had an effect on Kenya Revenue Authority operations of clearing cargo at the Kenya Uganda Border. The results are presented in Table 4.2.

	Frequency	Percent	Cumulative Percent
Slightly	1	4.2	4.2
Moderately	5	20.8	25.0
Quite a bit	16	66.7	91.7
Totally	2	8.3	100.0
Total	24	100.0	

Table 4.2: Extent of Automation of Cargo Clearance

Source: Research Data (2017)

The result on table 4.2 indicates that 66.7% of the respondent are of the view that KRA had implemented quite a bit of electronic cargo tracking system, only 8.3% of were of the view that it had totally implemented the system in its operations. To a moderate extent, 20.8 % of the respondents indicated that indeed cargo tracking system had been implemented.

4.4 Factors influence implementation of Electronic Cargo Tracking Systems at Kenya

Revenue Authority

This section of the questionnaire sought to establish from the respondents the factors that influence implementation of electronic cargo tracking systems. The range was 'very small extent (1)' to 'very great extent' (5). A standard deviation of >0.9 implies a significant difference on the impact of the variable among respondents

	Mean	Std. Deviation
Technology	4.625	.875
Training	4.033	.950
Organizational Culture	3.921	1.083
Organization Structure	3.292	1.160
Types of Products	3.133	1.167

Table 4.3: Factors influence implementation of Electronic Cargo tracking systems

Source: Research Data (2017)

The finding on Table 4.3 indicates that to a large extent, technology adopted by the Kenya Revenue Authority influences the implementation of electronic cargo tracking system (M=4.625, SD=0.875). The low standard deviation on the result shows that majority of the respondent agreed that the effect of the existing technological infrastructure had huge impact on electronic cargo tracking system (ECTS) implementation by KRA. Similarly, the training

carried out to the staff to implement the system was to large extent influencing adoption of electronic cargo tracking system (M= 4.033, SD=0.950). To a moderate extent, organizational culture (M=3.921, SD=1.083) and organizational structure influenced the implementation of the electronic cargo tracking system.

4.5 The User ability of the Cargo Tracking system by the Kenya Revenue Authority

This section of the questionnaire sought to establish the ability of the cargo tracking system to be applied by different types of users to access services offered by the Kenya Revenue Authority. The range was 'Strongly Disagree' (1)' to 'strongly agree '(5). The result on the user ability of the cargo tracking systems by KRA is presented in Table 4.4.

Statement	Mean	Std. Deviation
Diversion of cargo to the local market has been reduced due to the tracking system	4.439	.658
Due to the system, the clearance of cargo at the border point has been hastened	4.245	.908
The collection of duties and fines has been made easier due to the implementation of the system	4.179	.588
Cargo theft has reduced drastically since the introduction of the ECT system	4.035	.509
The system is able to report a violation on real time	3.927	.588
There is a reduction of dangerous cargo being diverted to the local market	3.823	.550
The system captures all the details of outbound cargo and trucks	3.626	.590
The cargo tracking cost has been reduced with the adoption of RFID tracking technology	3.533	.817

Table 4.4:	User ability of the cargo	tracking system by	the Kenya Revenue Authority
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Source: Research Data (2017)

The findings in Table 4.4 shows that to a large extent, the cargo tracking system had been able to reduce the level of diversion of cargo to the local (M=4.439, SD=0.658) 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 due to the implementation of the system (M=4.179). To moderate extent, the findings was that the cargo tracking cost has been reduced with the adoption of RFID tracking technology and also been able to reduce the theft of cargo because the system is able to report violation and report the violation in real time (M=3.927).

In addition, the introduction of the cargo tacking system had reduced the cargo transit time taken by transporters to reach Busia and Malaba borders leading to faster turnaround for transit trucks. This has been further facilitated by improved the coordination in the cargo clearance system between Kenya and Uganda. Similarly, the respondent supported that implementation of the ECTS has effected efficient manpower deployment, improved accountability and led to ease of doing business at Malaba and Busia border. The respondents reported improved communication at the border and reduced cases of diversion of transit cargo.

4.6 Effect of Cargo Tracking System on trade between Kenya and Uganda

The researcher sought to establish the effect of cargo tracking system on trade between Kenya and Uganda. The range of the scale was 'Very low extent (1)' to 'Very great extent' (5). The results are presented in Table 4.5.

Statement	Mean	Std. Deviation
The quality of service to the traders has improved due to the	•	
increased speed of service delivery from the adoption of ECT	4.375	.576
system		
The adoption of RFID system enables data captured on the system	l	
to be shared on a real time basis resulting to reduced dumping	, 4.292	.751
reduced tax evasion and cargo theft in the country		
Traders are now more willing to do business with the KRA	L	
because of the efficiency that ECT system offers revenue	4.250	.532
authorities and this leads to more trade and revenue collection		
ECT has facilitated the decongestion of the border points and	l	
ensuring that cargo that is moving across the border arrives to its	4.042	.550
destination at the expected time and date		
Adoption of the ECT system eliminates the paper works involved	l	
in the old ways of doing business at the border post and this helps	3.958	1.160
in making the clearance faster		
The Electronic Cargo Tracking System (ECTs) enables KRA to)	
get more and more cargo cleared every day at a much faster rate at	3.917	.504
the border pos		
The level of human errors has reduced since the introduction of	2 702	022
ECT and this has increased traders usage of the Busia border post.	5.192	.833
ECT system has a platform whereby data can be analyzed	l	
accurately and therefore KRA being able to generate useful	2.058	1 224
insights into its operational performance and individual trader	2.958	1.534
operations		

Table 4.5: Effect of cargo tracking system on trade between Kenya and Uganda

Source: Research Data (2017)

The findings in Table 4.5 reveals that to a great extent, the quality of service offered to the traders has improved due to the increased speed of service delivery from the adoption of ECT system (M=4.375, SD=0.576) and it shows that there is positive effect of electronic cargo

tracking system on trade between Kenya and Uganda. Similarly, the adoption of RFID system enables data captured in the system to be shared on a real time basis resulting to reduced dumping, reduced tax evasion and cargo theft in the country.

The ECT system has led to traders willing to do business with the KRA because of the efficiency that ECT system brings to the revenue authority and this leads to more trade and revenue collection (M=4.250). In addition, the electronic cargo tracking system has facilitated the decongestion of the border points with trucks and this ensures that the movement of cargo across the border arrives to its destination at the expected time and date (M=4.042,SD=0.550). On the side of moderate extent, the adoption of the ECT system eliminates the paper works involved in the old ways of doing business at the border post and this helps in making the clearance faster and enable KRA to get more and more cargo cleared every day at a much faster rate at the border pos (M=3.9167, SD=0.50361). From the findings, the low standard deviation indicates that there is concurrence among the respondents on the effect that the cargo tracking system has on trade between Kenya and Uganda.

4.7 Relationship between Cargo Tracking System and Trade Volume

For quantitative analysis the study used regression analysis to establish the relationship between the adoption of the cargo tracking system and trade volume between Kenya and Uganda. To determine the same, the relationship between the overall mean of each of the four cargo tracking resultant factors was regressed with the resultant mean from the trade volume outcome on each respondent was determine. The results model summary is presented in Table 4.6. The coefficient of determination is a measure of how well a statistical model is likely to predict future outcomes.

Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the
				Estimate
1	.716 ^a	.51266	.42162	.34371

Source : Research Data

- a. Dependent Variable: Trade volume
- b. Predictor Variable: (constant); X₁ = cargo clearance, X₂ = loss of cargo; X₃ = cost of cargo monitoring, X₄ = Ease of collecting fines and duties

The coefficient of determination, r^2 is the square of the sample correlation coefficient between outcomes and predicted values. As such it explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (trade volume) that is explained by all the four independent variables. From the results in Table 4.6, the four independent variables that were studied, explain 51.3% of the marketing performance as represented by the R^2 . This implies that the four independent variables resulting from the adoption of the cargo tracking system contribute about 51.3% to level of trade volume between Kenya and Uganda while other factors not studied in this research contributes 48.7% of the level of trade volume between the two countries. The standard error of the estimate (S_e) indicates that on average, the trade volume level deviate from the predicted regression line by a score of 0. 34371.

The researcher further conducted a multiple regression analysis so as to determine the relationship between the parameters of cargo tracking system resultant factors and level of trade volume between Kenya and Uganda. The finding is presented in Table 4.7.

Model		Unstandardized		Standardized	t	Sig.
		Coefficients		Coefficients		
		В	Std. Error	Beta		
	(Constant)	.356	1.587		.224	.727
	X ₁	.041	.330	.029	.123	.907
1	X ₂	.494	.292	.381	1.694	.151
	X ₃	281	.235	295	-1.195	.286
	X ₄	.206	.192	.144	1.073	.040

 Table 4.7 : Model Summary of simple regression for Trade volume

Source : Research Data 2017

From the findings in the Table 4.7, the regression equation is :-

$$Y = 0.356 + 0.029 X_1 + 0.381X_2 - 0.295X_3 + 0.144X_4$$

Where;

Y = Trade volume;

 X_1 = cargo clearance, X_2 = loss of cargo; X_3 = cost of cargo monitoring, X_4 = Ease of collecting fines and duties

The value of the intercept (B_0) indicates that the level of trade volume when all the explanatory variables are zero is 0.356. This implies that was the cargo tracking system be non-existent, then the current level of trade volume between Kenya and Uganda will be maintained at 0.356.

The coefficient of cargo clearance was 0.029 implying that the trade volume level will increase by 0.029 units for every unit increase in the cargo tracking system. Similarly, the level of trade volume between Kenya and Uganda will increase by 0.381 units for every unit increase in the cargo tracking system and the cost of cargo tracking between Kenya and

Uganda will reduce by 0.295 by the introduction of the cargo tracking system. Similarly, the ease of collecting fines and penalties by the revenue authority increases by a value of 0.144 with an increase of a unit cargo tracking system by the revenue authority. From the regression results it clearly indicates that there exists a positive relationship between cargo tracking system and the level of trade between Kenya and Uganda.

4.5 Discussion of the findings

The study sought to establish the effect of cargo tracking system on cross-border trade between Kenya and Uganda. The level of inefficiencies witnessed at the border post can be attributed to prevalence of paper work in the clearance of goods across the border. According to Hoffman (2014) the central premise of total quality control in organizational operations is for higher quality to be attained at lower cost through the establishment of a proper management system and operational design and that by using the right management approach, new technology, and re-engineered operational processes, it is possible to achieve higher cross-border efficiency at lower cost. This explains the use of the electronic cargo tracking system to track cargo destined for neighbouring countries. Siror (2010) opines that to find a solution to the long procedural hold-ups in releasing transit goods being cleared at the border post and also to reduce diversion of transit goods, it is necessary to identify the primary contributors to the long delays experienced to move freight consignments across multinational borders. He submits that based on the recent studies, human processes of tracking export goods and processing at the border post is a major contributor of inefficiencies.

The findings were that the electronic cargo tracking system adopted by Kenya Revenue Authority has 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 due to the implementation of the system. The findings are line with the aspirations of the African Union's Agenda 2063 in the SSA countries which seeks to accelerate the implementation of past and existing continental initiatives for growth and sustainable development. This led to the establishment of a Regional Electronic Cargo Tracking System (RECTS) between Kenya, Uganda, and Rwanda to help in curbing cases of diversion of the transit goods. This system should facilitate reduced transit time, deter cargo theft and eventually eliminate diversion of goods in transit. Countries will seal loopholes that lead to revenue loss because of the diversion of un-taxed goods into the market. According to the Trademark East Africa, RECTS will also eliminate the need for physical escort and monitoring of sensitive cargo (TMEA, 2017). Similarly, Naidoo (2012) opine that if the electronic cargo tracking system is to be implemented effectively there is need for the neighbouring countries to have their operations integrated and anchored on their prevailing adoption of technology compared to existing systems.

The finding also was that besides the exchange of information between customs and other stakeholders, the ECT system will also permit the dynamic scheduling of processing capacity at custom areas based on the anticipated cargo arrival volumes. However, as Hoffman (2014) found out, there is need for the cargo processing to be efficient at all other control points along the transit corridor because without changing the processing capacities at other stations within the border post system, there cannot be witnessed substantially improved overall system performance. There is need for the Revenue Authorities to partner with organizations that aim to promote economic development through trade by facilitating physical access to markets (TMEA, 2017).

On the effect that the electronic cargo tracking system has had on the level of trade between Kenya and Uganda, the study established that, the system had led to improved quality of service offered to the traders and also enabled the 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. Consequently, the ECT system has led to traders willing to do business with the KRA because of the efficiency that ECT system brings to the revenue authority and this leads to more trade and revenue collection. Further, the electronic cargo tracking system has facilitated the decongestion of the border points with trucks and this ensures that the movement of cargo across the border arrives to its destination at the expected time and date. This finding supports the position of Siror, (2010) who note that the ECT system is associated with increased quality of service and cost control. Similarly, Huanye, (2010) supports the findings by pointing out that ECT system also aides in improved reliability and service quality, usually thought of as tools to retain good customers and grow market share and revenue and lastly there is improved shipment and container integrity, built around a core of security issues.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

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

5.2 Summary of the Findings

The study established that the electronic cargo tracking system implemented by Kenya Revenue Authority has become a dominant way to track goods that are destined for neighbouring countries such as Burundi, Democratic Republic of Congo, Rwanda and Uganda. The common identified factors that affect implementation of the system were the level of technological preparedness of the organization, training of both the staff and stakeholders on the usage of the system. The study revealed that diversion of cargo to the local market has been reduced due to the tracking system. The study finding indicated that due to the implementation of the system, clearance of cargo at the border point has been hastened and the collection of duties and fines had been made easier.

The findings show that ECTS implementation improves border efficiency, reduces of transit time and time taken to clear goods at the border. Reduced transit and border clearance times leads to lower private cost of business. Moreover, it improves customs coordination with other agencies at the border. Additional efficient manpower deployment is effected to ensure effectiveness and efficiency. In the process there has been marked improvement in the accountability of all stakeholders involved in the cross border trade. Further, the study revealed that the quality of service to the traders had improved due to the increased speed of service delivery occasioned by the adoption of the ECT system. RFID 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. More so, ECTS has deterred commissioning of transit violations which more than often lead to loss of government revenue.

5.3 Conclusion

The inefficiencies experienced at border post are largely the result of lack of reliable information to enable customs authorities to make accurate and timely decisions, as well as a lack of transparency that allows customs officials and truck drivers to conspire in commissioning illegal activities. A new improved cross-border management concept need to be installed to leverage currently available technologies to make available much richer data sets and enable customs to accurately distinguish between compliant and potentially noncompliant consignments arriving at a border. The system will use a combination of both passive and active RFID to capture audit trails of freight consignments, in the process improving both the efficiency and security of cross-border operations.

Based on the study findings, the study concludes that electronic cargo tracking system has positive impact on cross-border trade between Kenya and Uganda. It was found that diversion of cargo to the local market, the clearance of cargo at the border point as well as easy collection of duties and fines being experienced by the revenue authorities have been made possible by the adoption of the cargo tracking system. The study consummated that ECTS implementation improves the border efficiency, reduction of transit time and cost of private business. From the study, the ECT also improves the coordination with other border agencies at the borders and led efficient manpower deployment and improved accountability of goods along the transit goods supply chain.

In addition, the quality of service to the traders has improved due to the increased speed of service delivery from the adoption of ECT system. Therefore, the adoption of RFID 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.

5.4 Limitations of the Study

The study used key informants from the border officials of Kenya and Uganda, which put constraints on the generazability of the results to other borders. The sample selection may also limit the generalization of results to the overall population. The narrow and specific focus of this study means the results are limited to borders officials who may not translate to other industry and national contexts.

The other limitation of this study is that the border people were spread between the two countries but only some were taken into consideration. For collecting data, a large amount of financial resources and huge time are required which was not available during the study.

5.5 Recommendations for Policy and Practice

The study found out that effect of cargo tracking system on cross-border trade between Kenya and Uganda has deterred diversion of transit cargo to the local market due to real time monitoring of the cargo electronically. Increased coordination and information sharing has improved the clearance efficiency of cargo at the border points. It is recommended that the two countries should adopt electronic cargo tracking system to improve the border efficiency, reduction of transit time and reduce cost of private business.

The study established that the two countries had adopted the electronic cargo tracking system and it is recommended that it should be enhanced to improve the transactions at the borders which leads to improved revenue collection at the borders while reducing transit goods violations. It also leads to the adoption of RFID system which shares real time information on the movement thereby leading to reduced dumping, reduced tax evasion and cargo theft while goods are in transit. Therefore, more adoption of the ECT system and RFID system is recommended to improve the business transactions at the borders of Kenya and Uganda.

With the ratification of the World Trade Organization (WTO) Agreement on Trade Facilitation, facilitation of clearance of goods under transit is anchored in Article 11 of the agreement (Freedom of Transit) which aims at ensuring transit cargo moves unperturbed from their country of origin to their destination countries. It is recommended that ECTS is enhanced to be the pillar of trade facilitation as integrated with other technological improvements it would eliminate the need for humongous paper work required and lead to even faster movement and clearance of goods under transit.

5.6 Suggestion for Further Research

The study was undertaken on the effect of cargo tracking system on cross-border trade between Kenya and Uganda. It is recommended that future research studies can examine the effect of cargo tracking system on the transit goods supply chain. A similar study should therefore be done on other border point in Kenya. The study recommends that a further study should be carried out to establish the challenges facing cargo tracking system on cross-border trade between Kenya and Uganda.

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

Date..... To.....

Dear Sir/Madam,

RE: <u>COLLECTION OF RESEARCH DATA – EFFECT OF ELECTRONIC CARGO</u> <u>TRACKING SYSTEM ON CROSS BORDER TRADE BETWEEN KENYA AND</u> <u>UGANDA.</u>

I, Nicholas Mugambi, is an MBA student in the School of Business Administration – International Business at The University of Nairobi. I am currently conducting a research on the "effect of cargo tracking system on cross-border trade between Kenya and Uganda"

Am in the process of gathering relevant data for this study. You have been identified as one of the collaborators and respondents in this study based on your job knowledge and experience in this field. I kindly request for your assistance towards making this study a success.

In view of this, I kindly request you to take some time to respond to the attached questionnaire on the above subject matter. I wish to assure you that your responses will be treated with utmost confidentiality and will be used solely for the purpose of this study.

I thank you in advance for your time and responses. It will be appreciated if you can fill the questionnaire within the next 5 days to enable data analysis and finalization of the study.

Yours Sincerely

Nicholas Mugambi

Student Reg No. D61/79487/2015

APPENDIX II

QUESTIONNAIRE

SECTION A: GENERAL INFORMATION AND BIO DATA

- 1. Name of the respondent?
- 2. Nationality a) Kenyan () b) Ugandan ()
- **3.** What is your age bracket?

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

- 4. For how long have you been working at the Revenue Authority?
 - a) 0-3 years () b) 4-7 years () c) 8-11 years () d) 12 years and above ()
- 5. What is your highest academic qualification?
 - a) Diploma () b) Degree () c) Post Graduate Diploma () d) Masters () e) Doctorate ()

Section B: EXTENT OF AUTOMATION OF CARGO CLEARANCE

- 6. To what extent, do you think electronic cargo tracking system is implemented by Kenya Revenue Authority?
 - Not at all()Slightly()Moderately()

Quite a bit	()	
Totally	()	

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

	Very small	Small	Moderate	Large	Great
	extent	Extent	extent	extent	extent
Technology					
Training					
Types of Products					
Organizational					
Culture					
Organization					
Structure					

8. Below is the user ability of the cargo tracking system by the Kenya Revenue Authority.

Please indicate the extent to which the system has been able to achieve the following.

Key: 1= Strongly Disagree 2= Disagree, 3= Indifferent, 4= Agree, 5= strongly agree

	Statement	5	4	3	2	1
1	The system captures all the details of outbound cargo					
	and trucks					
2	Due to the system, the clearance of cargo at the border					
	point has been hastened					
3	The cargo tracking cost has been reduced with the					
	adoption of RFID tracking technology					
4	Diversion of cargo to the local market has been reduced					
	due to the tracking system					
5	The collection of duties and fines has been made easier					
	due to the implementation of the system					
6	Cargo theft has reduced drastically since the					
	introduction of the ECT system					
7	The system is able to report a violation on real time					
8	There is a reduction of dangerous cargo being diverted					
	to the local market					

9. What other attribute has the implementation of the ECT introduced in the cargo tracking

system

.....

Section C: Effect of cargo tracking system on trade between Kenya and Uganda

10. With regard to the adoption of the electronic cargo tracking system, please indicate the extent to which ECT system has facilitated the level of trade between Kenya and Uganda.

Key: 5) Very great extent () 4) Great extent () 3) Moderate extent ()

2) Low extent () 1) Very low extent ()

	Statement	5	4	3	2	1
1	The Electronic Cargo Tracking System (ECTs) enables					
	KRA to get more and more cargo cleared every day at a					
	much faster rate at the border pos					
2	ECT 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					
3	The adoption of RFID 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					
4	ECT system has a platform whereby data can be					
	analyzed accurately and therefore KRA being able to					
	generate useful insights into its operational performance					
	and individual trader operations					
5	Adoption of the ECT system eliminates the paper works					
	involved in the old ways of doing business at the border					
	post and this helps in making the clearance faster					
6	The quality of service to the traders has improved due to					
	the increased speed of service delivery from the					
	adoption of ECT system					
7	Traders are now more willing to do business with the					

	KRA because of the efficiency that ECT system			
	revenue authority and this leads to more trade and			
	revenue collection			
8	The level of human errors has reduced since the			
	introduction of ECT and this has increased traders usage			
	of the Busia border post.			

THANK YOU SO MUCH FOR YOUR TIME