EFFECTIVENESS OF RISK MANAGEMENT STRATEGIES ON PERFORMANCE OF THE CUSTOMS AND BORDER CONTROL DEPARTMENT IN KENYA

BY

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DECLARATION

Declaration by Candidate

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DEDICATION

This research project is dedicated to my family and friends for the support they

continue to offer me.

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ABSTRACT

The recent increase in complexities and volumes of international trade, fueled by technological advances have revolutionized global trading practices. This has consequently significantly affected the way customs administrations carry out their responsibilities and organize their business operations. Specifically, risk management process helps Customs administrations to focus on priorities and decisions on deploying limited resources to deal with the areas of highest risk. However, in Kenya, though custom risk management practices application is deemed to provide a wide range of benefits for customs and traders, the effect on the performance of customs and border control is not yet well established and this study aimed at shedding more light into this. The purpose of the study was to determine the effects of risk management strategies on firm performance: a case of Customs and Border Control Department in Kenya. The specific research objectives were to determine the effect of cargo scanning, cargo tracking, customs intelligence and integrated system on performance of customs and border control in Kenya. The guiding theories were Risk Management Theory, Theory of Constraints and Attribution Theory. The population of the study entailed employees working at the C&BC department at the border points and data was collected using both primary means. This was collected using questionnaires. The data collected was analyzed using descriptive including means, percentage frequency and standard deviation as well as inferential analysis. The collected data was presented using tables and figures. From the correlation analysis, Cargo Scanning had a Pearson Correlation of 0.323 and a p-value of 0.000, Cargo Tracking System had a Pearson Correlation of 0.200 and a p-value of 0.001, Customs Intelligence had a Pearson Correlation of 0.14 and a p-value of 0.05 and Integrated System had a Pearson Correlation of 0.438 and a p-value of 0.000. The positive coefficient indicated by the variables imply that they have a positive effect on the performance of the customs department of KRA. In addition, from the regression analysis results, the coefficient of determination (Adjusted R^2) was 0.415 implying that that the regression could explain up to 41.5 percent of the variation in the performance. The study therefore concludes that custom risk management has significant effect on the performance of the customs department in Kenya. The study thus recommends that the KRA management should highly prioritize custom risk management practices among their key strategies. The study also recommends that the government to formulate minimum risk management standards to be met by the customs department of KRA. KRA is also recommended to map customs and other administrations' needs on changes of their current control procedures and IT equipment. The custom department is further recommended to set the broadest scope and the greatest content for risk management systems as far as their national resources allow.

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DEFINITION OF TERMS

Performance: The rate and efficiency at which operations are undertaken in the organization. In this study, the performance of KRA was measured based on the amount of Revenue Collection, Data Collection, Trade Facilitation and Society Protection.

Risk Management: Coordinated activities by administrations to direct and control risk. In this study, the risk management strategies investigated included cargo scanning, cargo tracking, customs intelligence and integrated system.

Risk Analysis: The systematic use of available information to determine how often defined risks may occur and the magnitude of their likely consequences.

Risk: The potential for an unwanted outcome resulting from an incident, event, or occurrence, as determined by its likelihood and the associated consequences.

ABBREVIATIONS AND ACRONYMS

C&BC: Customs and Border Control

CRM: Customs Risk Management

DHS: Department of Homeland Security

WCO: World Customs Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Performance is a measure of the level of success of an organization and can be determined through financial indicators, tax enforcement and Key Performance Indicators (KPIs) that have been set for the different business units within the department (Grigoriou, 2019). Financial information can be obtained from financial reports of the organization. Performance at the Customs and Border Control (C&BC) department can ideally be established based on key factors such as: Changes in revenue collection, reduction in dumping of counterfeit and substandard products, and efficiency in collection of taxes and enforcement of customs policies.

The role of Customs has thus evolved over time from its original revenue collection function to border controls. The basic function of customs officers though still remain as control of cross-border movement of goods and examination of the accompanying documents (Nwankwo, & Olayinka, 2019). Through this border control function, Customs plays a role in protecting society from the inflow and outflow of prohibited or restricted goods that pose a threat to the health and safety of nationals, such as drug trafficking, trade of counterfeits, smuggling and other illegal trade.

The Customs and border control department of KRA accounts for more than 45% of all revenue collection. The department's functions are geologically scattered all through the nation and incorporate air and sea port operations, border operations, x-ray cargo scanners, transit monitoring, trade statistics management function (KRA, 2013). Internationally, studies conducted have however showed that majority of the C&BC departments continue to struggle to perform. Mathew, (2014) did a study on the

computerization system procedure of the Ghana Revenue Authority on the viability of revenue collection using a case investigation of customs division. Muthama, (2013) established a positive impact of automation system usage and the cost of tax administration, automation and viability of revenue collection.

Decrease in international trade costs owing to the efforts for trade facilitation, alongside with the remarkable developments in transportation and communication possibilities, have led to the exponential growth in international trade volume (Komarov, 2016). However, it is observed that the increase in legal trade operations is accompanied with the increase in illegal transactions as customs administrations and other government agencies are not able to manage 100 per cent of all transactions. Subsequently, increase in international trade, increases the workloads of customs administrations as well. Nowadays customs administrations are dealing with such high number of exports, imports and transits that cannot be compared to the transactions of a few decades ago (Cui, & Jiang, 2015).

To improve border control whilst discharging a variety of responsibilities, the international customs community has developed a range of standards and best practices (Kouamo, 2019). They recommend the maximum use of information technology and the adoption of risk management and other modern techniques, which are embodied in the Revised Kyoto Convention and other WCO instruments. From the customs point of view, risks include potential for non-compliance with customs laws such as licensing requirements, valuation provisions, rules of origin, duty exemptions regime, trade restrictions and security regulations as well as potential failure to facilitate international trade (The World Bank Group, 2005).

Risk management is therefore a systematic identification and implementation of all measures necessary to limit exposure to customs risk. This tends to determine which persons, goods, and means of transport should be examined, and to what extend (WCO, 2008). The high-risk persons, goods and means of transport are subject of high-level controls and interventions while the low risk ones receive high-level trade facilitation. In Kenya, though custom risk management practices application is deemed to provide a wide range of benefits for customs and traders including better human resource allocation, increased revenue, improved law compliance and regulations, improved collaboration between traders and customs, reduced release time as well as lower transaction costs. The effect on the performance of customs and border control is not yet well established and this study will aim at shedding more light into this.

1.1.1 Global Perspective

The 21st century has seen an improvement in relations between Customs and business worldwide. One noticeable change is that more Customs authorities have adopted client-centric policies. The main aim of this approach is to make Customs more responsive to stakeholders by guaranteeing specific standards for service delivery and service satisfaction, providing a substitute for competition and a benchmark for measuring service quality (Ireland, Cantens & Yasui, 2011). Effective and efficient Customs administrations contribute to facilitating legitimate trade, which is an engine of sustainable economic development.

Accordingly, experiences to date suggest that many Customs authorities in both developed and developing countries have recognized that productive interaction with business is essential for effective and efficient Customs administrations (Jeannard, 2010). According to Widdowson (2005), the two elements of customs control are

regulatory compliance and trade facilitation, which are not contradictory. It is not necessary to decrease the control level in order to facilitate trade, and that it is not an imperative to increase trade barriers in exchange for an increase in control levels. Through applying risk management, Customs aims to improve decision making and minimize impact of risk events on operational activities.

The use of risk management techniques was thus used by the customs administrations in 1980s after the 9/11 events, with the introduction of the first programs for the security of the supply chain, such as the Container Security Initiative (CSI) and the Custom-Trade Partnership Against Terrorism (C-TPAT). Today, risk management for customs authorities has become a world-wide necessity. The legal basis of the use of risk management techniques by customs is Article VIII, Par 1(c) of GATT (1994). Risk management has thus proven to be the most effective means of managing the huge volumes of cargo that enter the country every day of the week because it allows an administration to concentrate resources on areas of high-risk while allowing low-risk cargo to flow unimpeded into the commerce of the country (Kiema, 2017).

1.1.2 Regional Perspective

Many African countries have found it difficult to work out the right mix and sequencing for customs administration (Bird & Zolt 2008). As such, in seeking to reduce corruption, while simultaneously strengthening performance (such as raising revenue collection and enhancing trade facilitation), policymakers have conducted experiments that identify constructive policies. This will depend to a considerable extent on the environment within which it works. The nature of the tax structure and the underlying legal system is a main determinant as is the extent to which taxation is used to achieve objectives other than simply collecting revenue.

Dečman and Klun, (2015) further explains that governments in developing countries face great challenges in mobilizing tax revenues, which result in a gap between what they could collect and what they actually collect. Technology and information systems enable e-government processes to run more effectively and efficiently, changing organizations' structure, people, processes, and regulations. Information systems (IS) are especially efficient in environments where a great amount of data is available and exact calculations are needed for many different stakeholders. Such an area in the public sector is obviously the area of taxation.

1.1.3 Local Perspective

In Kenya, the Customs and Border Control (C&BC) is responsible for administration of customs tax, enforcement and regulation of cross border trade and control of movement of goods and services in and out of the country. The department has in the recent past instituted a number of stringent measures in line with its strategic objectives all in an attempt to improve performance. Most of the achievements made so far such as electronic cargo tracking have been attributed to advancements in the use of technology by the department.

Available evidence suggests that there are some research gaps regarding the performance and strategy implementation. The Customs and Border Control Department of KRA has had several initiatives to improve revenue performance through strategic management including the introduction of RECTS, ACMS, COSIS, SIMBA system, and MMS. All these initiatives are meant to improve performance by KRA. Practice has shown that the old systems of customs administration resulted in huge tax revenue loss due to corruption and the propensity for the taxpayer to pay less

than the due tax. The ICT strategy integrates several systems and processes for easy administration of customs and duties.

In a baseline survey on devolution issued by the Institute of Certified Public Accountants in Kenya (ICPAK, 2014), several counties are generating less revenue than what the already existing local authorities that lay within their boundaries gathered in collectively: raising deep concerns on the capacity of the devolved units in raising own revenue. According to Amin (2013), the counties have weak revenue bases, lack internal audit, have poorly trained personnel, use manual revenue collection systems and some county revenue officers are reluctant to embrace change and this has impacted negatively on revenue collection within the counties.

In Kenya, management of risk is an integral part of the customs departments. Accordingly, under this approach risk management would contribute to increase the possibility of success and reducing both, the probability of failure and the uncertainty of achieving the organizations overall objectives (IRM, 2002). From this point of view, the process of risk management would support each strategic and operational decision taken at all levels of the organization. The main objective of risk management would be then according to this view, to understand in advance the impact of each alternative on the future performance of the organization (Kazungu, 2018).

1.1.4 Kenya Customs and border control

The customs and Border Control Department (C&BC) is one of the revenue department within the Kenya Revenue Authority. The department collects and accounts for 35% of gross revenue collected by KRA. The department was established in 1978 through an Act of parliament and previously referred to as Customs and excise Department. The department administers the East African Customs Management Act (ECCMA) 2004

and other Revenue Acts that impose taxes and levies on imports and exports such as the VAT Act 2015 and miscellaneous Act 2016. The primary function of the department is trade facilitation. This includes facilitating international trade by providing expedited clearance of goods through simplified and harmonized Customs procedures as envisaged under the revised Kyoto Convention.

Other functions include control of imports and exports, travelers, border patrols and surveillance, Revenue collection which includes import and export duties, Airport Passenger Service Charge (ASPC), Import Declaration Form (IDF), Petroleum Development Levy (PDL), Transit Road Toll, VAT, Excise and sugar Levy among others (Biljan, & Trajkov, 2012). The department is also mandated to protect the society and the environment through enforcement of prohibitions and restrictions by barring international trade in illegal substances and materials such as narcotic substances, arms and ammunitions, endangered animal species, counterfeit or sub-standard goods, stolen motor vehicles, smuggled goods among other items.

Risk management approach is included in the 7th KRA corporate plan, strategic planning, whose main aim is to meet the government's revenue targets through a risk-based compliance framework in an equitable, efficient and effective manner. One of the ways to achieve this is by improving border management, which is aimed at improving security at the border stations, and reducing the level of identified contrabands/ illicit trade through a multi-agency approach. This is expected to be achieved by introducing non-intrusive verification tools, scanners, K9s and through activation of risk, profiling (APIs) tools (Seventh Corporate Plan, 2019).

1.2 Statement of the Problem

A study done by the Kenya Institute for Public policy research and analysis revealed that Kenya loses between 6 billion (US$ 84million) to 40 billion (US$490 million) annual potential profits through counterfeiting and piracy (KIPPRA, 2015). The cases of mis-declaration of goods have also caused significant losses. Latest data from the Treasury indicates that tax collections fell to Sh120.1 billion in April 2020 from Sh140.41 billion in April 2019, representing a 14.46 percent drop. The Kenya Revenue Authority (KRA) further lost Sh7.71 billion in collections from retail and wholesale traders such as supermarkets in the year ended June 2020 on the back of eroded consumer purchasing power amid reduced operating hours in the final quarter (KRA, 2021)

The C&BC department in Kenya has also continued to experience numerous challenges relating to transportation of Cargo in transit including theft, delays, regulation and compliance with regulations, which contributed to significant losses to the government (Kiema, 2017). This heightens the need for adoption of custom risk management practices in attempt of mitigating these challenges faced. In today's trading environment, risk management targeting techniques heavily rely on current knowledge and innovative methods like the use of information technology to assist in customs control.

However, Komarov (2016) argues that it is not appropriate to rely solely and exclusively rely on the application of an automated system of risk management, which raises concern. This study therefore specifically looked into cargo scanning, automated economic operators and customs intelligence as some of the risk management strategies used at the Kenya Customs and border control and seek to find their impact on performance. Most of the studies conducted have investigated these variables singly

without determination of the relationship that exists. Additionally, very few studies have been conducted to decipher the phenomenon locally especially in locally in Kenya. Understanding this is imperative in improvement of the performance of customs department that has continued to dwindle.

1.3 Research Objectives

1.3.1 General Objective

To determine the effectiveness of risk management strategies on performance of the Customs and Border Control Department in Kenya.

1.3.2 Specific Objectives

The study was guided by the following specific research objectives.

i) To determine the effectiveness of cargo scanning on performance at the customs department in Kenya.

ii) To find out the effectiveness of cargo tracking on the performance of customs department in Kenya.

iii) To examine the effectiveness of customs intelligence on performance of customs department in Kenya.

iv) To examine the effectiveness of integrated system on performance of customs department in Kenya.

1.4 Research Hypotheses

The study aimed at testing the following research hypothesis.

H_{01}: Cargo scanning has no significant effect on performance at the customs department in Kenya.

H$_{02}$: Cargo tracking have no significant effect on Kenya's Customs department in Kenya.

H$_{03}$: Customs intelligence has no significant effect on performance of customs department in Kenya.

H$_{04}$: Integrated system has no significant effect on performance of customs department in Kenya.

1.5 Significance of the Study

1.5.1 Significance to Practice

To the stakeholders and public, the study will shed more light onto the benefit of appropriate risk management practices. This will enable them appreciate the role of these practices on performance. It will also aid KRA in understanding the exact outcomes to be expected from the various risk management strategies employed.

1.5.2 Significance to Policy

The study findings will help in formulating policies and procedures for improvement of current and new customs risk management strategies at the Kenya Revenue Authority (KRA), for purposes of improving performance. This will be through the formulation and implementation of favorable policies, which will create a conducive environment implementation of these risk management practices. This will go a long way in increasing the productivity and contribution the customs department in Kenya.

1.5.3 Significance to Theory

Additionally, the study will aid other scholars, as they will use it as a point of reference as well as part of literature review while carrying out other research in a similar scope. The study will thus add knowledge to the existing scarce literature in the sector and will form basis upon which further studies will be conducted.

1.6 Scope of the Study

The study was carried out at the Customs and Border Control (C& BC) department at three border points in Kenya. The study focus was on customs risk management strategy on the performance with the dependent variables being the various risk management strategies including cargo scanning, cargo tracking, integrated system and customs intelligence whereas the dependent variable will be performance. Data was collected using both primary and secondary means. The data collected was analyzed using descriptive and inferential analysis, and presented using tables and figures. The study took place from the months of August to November 2021.

1.7 Limitation of the Study

Due to the sensitive nature of risk management practices and performance, some of the respondents were reluctant in participating in the study. The researcher however mitigated this through explaining the relevance of the study to the respondents and seeking of permission from the relevant authorities prior to commencement of the study. The study was also limited by its scope whereby it only concentrated on the C&BC department, which may not be an actual representation of other departments or organizations in other sectors such as clearing and forwarding companies. However, the researcher ensured comprehensive data collection through assessing the reliability and validity of the research instruments.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter constitutes an overview of the available literature related to the research problem presented in the previous chapter. This chapter will introduce the concepts performance and risk management in customs control. It reviews the literature as related to the current study, conceptual definitions and background theories as obtained from previous studies on customs risk management. The chapter concludes with the conceptual framework, summary of the literature and an overview of the research gap.

2.2 Concept of C&BC Performance

Performance may be termed as the rate and efficiency at which operations are undertaken in the organization. The initiative to measure the performance of a firm assists organization to mitigate against factors that may prevent it from achieving its mission and offer certainty. In both OECD and non-OECD countries, one commonly used performance indicator for tax administration is their total revenue body expenditure as a percentage of gross domestic product (GDP)(Visser, & Erasmus, 2005).

Public revenue collection comprises of integral component of fiscal policy and administration in any economy because of its influence on government operations (Abiola and Asiweh, 2012). Sound fiscal responsibility is central to achieving macroeconomic stability and ensuring that the benefits of economic growth. However, how well a customs administration works depends to a considerable extent on the environment within which it works. This is determined greatly by the nature of the tax structure and the underlying legal system to attain the set objectives other rather than simply collecting revenue (Gill, 2000).

Though all countries have custom administrations measures put in place, they vary greatly in the structure. As such, while some countries have independent custom administrations, others have the custom administrations integrated into their systems (Sigey, 2010). Despite there being custom performance measures in every revenue collection organ of the government, the variables measured and how they are measured varies greatly from one administration to another. The most common indicator include revenue collected, clearance times and levels of international trade facilitation (Visser, & Erasmus, 2005).

However, it is not cost effective to measure every activity of a customs organization, but focusing on those key areas that contribute the most to the achievement of the strategic objectives and measuring them is a sound performance management approach (Murithi & Moyi, 2013). Additionally, Alm and Duncan (2014) highlight that there is little systematic information on how "efficient" any tax administration may be in using administrative "inputs" to generate "outputs" such as tax revenues.

2.3 Concept of Customs Risk Management

The World Customs Organization (WCO) defines "Risk Management" in Glossary of International Customs Terms as "Coordinated activities by administrations to direct and control risk" In addition "Risk Analysis" is defined as "The systematic use of available information to determine how often defined risks may occur and the magnitude of their likely consequences." (WCO, 2018). US Department of Homeland Security (DHS) Lexicon defines "risk" as the potential for an unwanted outcome resulting from an incident, event, or occurrence, as determined by its likelihood and the associated consequences. It also defines "risk analysis" as the systematic examination of the components and characteristics of risk. On the other hand, "risk management" is defined as a process of identifying, analyzing, assessing, and communicating risk and

accepting, avoiding, transferring or controlling it to an acceptable level considering associated costs and benefits of any actions taken (DHS, 2010).

Customs Risk Management (CRM), according to the WCO Risk Management Guide, is therefore the systematic application of management procedures and practices, which provide Customs with the necessary information to address movements or consignments, which present a risk. CRM is a means to improve trade facilitation processes by replacing full physical examinations of documents and shipments with planned and targeted working method determining the level and type of inspections. The objective of CRM is the effective selection of high - risk shipments and traders for control while allowing lower or risk-free trade to pass freely and with minimum waiting times.

From customs point of view, risks include the potentials for non-compliance with customs law such as licensing requirements, valuation provisions, rules of origin, duty exemptions regimes, trade restrictions, and security regulations, as well as the potential failure to facilitate international trade. Risk management as systematic identification and implementation of all measures necessary to limit exposure to customs risk, determines which persons, goods, and means of transport should be examined and to what extent. The high-risk persons, goods and means of transport are subject of high-level controls and interventions; despite of low-risk ones that receive high-level trade facilitation. The risk management process helps customs administrations to focus on priorities and decisions on deploying limited resources to deal with the areas of highest risks (Biljan & Trajkov, 2012).

2.4 Theoretical Foundation

The study adopts three main theories namely; Risk Management Theory, Theory of Constraints and Attribution Theory.

2.4.1 Risk Management Theory

Risk Management Theory was introduced and advanced by David, (1997). The theory provides a framework through which risk may be identified, assessed, prioritized followed by coordination measures for minimizing, monitoring and control of the effects of the risks (David, 1997). According to this theory, each organization is prone to be faced with various risk arising from both the internal and external factors. These risks include credit risk, legal liabilities, project failures, uncertainties in the financial markets, deliberate attack from an adversary, disasters as well as or events of uncertain or unpredictable root-cause. These unforeseeable risks despite not being accounted for may result in adverse effects on the performance and overall success of the firm when not well managed.

Risk Management Theory therefore describes the process of coming up with strategies for identifying and managing potential and imminent risks that may affect the organization (Tseng, 2007). It attempts to assess uncertainties, prioritize them and prescribe the best course of action to deal with any uncertainty, especially where information on the risk taking behavior of the decision maker is present. This ensures management is constantly aware and informed about risks that could occur through constant monitoring of its exposure and being strategically positioned and flexible to respond to change.

The relevance of Risk Management Theory in explaining risk management strategies in organizations is supported empirically by studies conducted such as Wu and Olson,

(2010) and Ngugi, (2001) in enabling organizations to anticipate and manage risks thus minimizing losses. On the contrary, Linbo, (2004) argues that the main limitation of the theory is that it creates ambiguity, as it does not distinguish the exact risk management practices to be employed by organizations.

The proposition of this theory to study is in describing that all organizations are prone to experience risks irrespective of the industry or nature of operations, with the customs and border control department being of no exception. This therefore sensitizes the role played by custom risk management practices whereby well-formulated and implemented custom risk management practices are theorizes to be beneficial in improving the overall performance of the customs department.

2.4.2 Theory of Constraints

Goldratt (1984) introduced the theory of constraints (TOC), in describing the challenges or constraints faced by organizations. The theory holds that in any particular organization there exists at least one constraint, which hinder full achievement of the organizational goals (Goldratt, 2017). These constraints prevent the firms from achieving high level of performance and competitive advantage as well as preventing business growth. According to this theory, failure to properly manage these constraints will result in reduction in financial breakthrough (Cyplik, Hadaś & Domański, 2009).

Constraints experienced by organizations may arise from either internal factors or the external environment (Steyn, 2012). External constraints are when the system can produce more than what the market demands. In such a case, organization should create demand for the product in market while internal constraint is when the system delivers less than the market demand (Leseure, & Alexander, 2017). The main assumption of

the theory thus is that unidentified constraints pose a weak link to the firm, which require additional efforts to mitigate.

This theory describes the need to ensemble activities required in alleviating constraints faced by the organizations (Watson, Blackstone, & Gardiner, 2007). The proposition of the theory to the study is that the customs risks form a major constraint to the performance of the C&BC department. Hence, for performance to be improved there is urgent need to re-evaluate the available risk management practices as well as their appropriateness in mitigating the risks constantly faced by the C&BC department.

2.4.3 Attribution Theory

Heider (1958) as a psychological theory first introduced attribution Theory. It was later developed and advanced by Weiner, (1974). The theory provides a framework through which people's behaviors and interactions are described and understood. The attribution theory has been used in examining the use of information in the social environment to explain events and behaviors. According to Reffett (2007) attributing responsibility for an outcome to an individual highly determines their behaviors and actions.

The importance of the theory to the study is that it proposes three dimensions of performance to be considered; the locus, the stability and the controllability of the causes of the task performance (Weiner, 1974). Hence risk management outcomes are expected to be utilized in understanding of the risk management practices in place, assess the design and implementation of these practices, and test their operating effectiveness. Performance is therefore attributed to efficiency of the risk management mechanisms and commitment of the employees.

2.5 Empirical Literature

2.5.1 Cargo scanning and Performance

Cargo inspection is a critical aspect in safeguarding the supply chain, security and protection of Society against the organized transnational crimes of terrorism, hazardous substances and environmental crimes, and facilitation of legitimate trade (Musyoki, 2017). Many countries of the WCO are working towards the use of inspection equipment, particularly X-ray or gamma ray equipment, to help detect threat materials while increasing the efficiency of Customs controls. Scanning/NII equipment increases the number of consignments, which receive Customs attention without causing undue delay, and it can help to identify illicit goods (WCO, 2016).

Ates, Cocca, and Bititci, (2013) argue that modern technology supports Customs administrations to be more efficient and effective together with the application of modern procedures and practices laid down in the Revised Kyoto Convention (RKC). The international Customs community is confronted with the dual challenges of securing and facilitating international trade. To help member administrations address such challenges, in 2005, the WCO adopted the SAFE Framework and launched the Columbus Program to implement this key WCO instrument. Using non-intrusive inspection (NII) equipment has been incorporated as one of the four core elements in SAFE, aiming to enhance the inspection efficiency and effectiveness (Australian Customs and border protection service, 2011).

Otieno et al, (2013), conducted a study on "the effect of Information Systems on Revenue Collection by Local Authorities in Homa Bay County, Kenya" and found out that ICT investment is very vital to Local Authorities in enhancing revenue collection. This is because computerized Information Systems had a positive effect on income collection. Automation of commission actions for example revenue collections

enhanced due to well-timed revenue collection, enhanced administration integrity and provision of clear records.

In 2015/2016, the X-ray cargo-scanning unit in Kenya made a number of high-profile interceptions. At one point, nine top-of-the range vehicles concealed as bicycles and toys from the United Kingdom and in transit to Uganda were intercepted. Investigations unearthed more vehicles, which had been registered irregularly and the culprits were brought to book. Over 20 containers of new garments disguised as cold rooms as well as three containers of milk powder disguised as gypsum boards, undeclared electronics, spare parts, ivory and sandalwood, were also intercepted (Musyoki, 2017). The scanners have also helped to prevent dumping of cheap, substandard and harmful products in the local market.

Nwankwo, and Olayinka, (2019) analyzed the design and implementation of a cost-effective solution for managing the secure transmission and processing of acquired cargo images across different locations. In this study, the details of implementation of the prototype using open source tools are presented. The socio-technical approach is adopted while the implementation strategy follows a hybrid approach involving both structured and object-oriented methods. The application is programmed using PHP, Ajax and MySQL. The application enables a risk management and cargo scanning organization to relay large volumes of scanned cargo images in highly compressed secure formats in such a way that consistency and integrity are ensured as the files are relayed to remote sites for further image analysis, as well as their storage in relational databases such as MySQL. Access, processing, and share over the network with other stakeholders involved in the international trade facilitation cycle is ensured through encryption and digital signing.

2.5.2 Cargo Tracking and Performance

Naidoo (2012) proposes that for productive C&BC operations, the department should rely on ECTs than the existing patterns. ECTs help ease harmonious assimilation of the road user's shareholders' demands that are not attainable to C&BC section when the GPS detecting information reflecting truck movements and weigh bridge information formed by road agencies is applied. In addition, modern systems such as ECTs facilitate establishment of vehicles upon arrival at the border and at the customs gate. Other activities facilitated include document scanning presented on behalf of cargo owners and broadcasting functions conducted by the customs officials during inspections.

In 2013, Hoffman, Lusanga and Bhero (2013) reviewed a combined GPS/RFID system for improved cross-border management of freight consignments. In their analysis, they deducted that the incapability of road freight transport is one of the main factors that derail the economy of Sub-Saharan Africa. In various border points, long delays are evident hence the single biggest contributor towards the slow average movement of freight. Cross-border activities tend to be hampered by the conflicting security objectives of customs authorities and efficiency goals of transport operators.

Jordan and Alfitiani (2010), observed that numerous states have applied several techniques to handle transit traffic in current times and one of them is electronic transport monitoring and facilitation framework. The monitoring system through the ECTs has led to significant decline on transport of goods expenses through the country, as they do not demand travelling in a convoy of vehicles, which has been a condition in many nations. The enhanced transit traffic has also led to less smuggling operations and transport time journey has curtailed by at least 60%. Thus, transit time actually declines when ECTs are applied.

Mugambi, (2017) did a study on the effect of cargo tracking system on cross-border 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 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.

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. 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.

2.5.3 Customs Intelligence and Performance

Customs intelligence entails inspection of very large volumes of experts, import and transit consignment, to ensure compliance with the underlying customs laws, regulations and procedures. In the past, custom officers used manual inspection, whereby they physically inspect the goods and the enclosed documents at the border whether they had complied with the regulations and procedures, before releasing the consignment.

Risk management targeting techniques rely on current knowledge and innovative methods, based on the application of intelligent IT systems that expedite customs inspections. Before these techniques were introduced, inspection was heavily dependent on the experience, judgment and insight of customs officers. IT-based intelligent risk analysis can also help minimize corruption by avoiding possible discretionary intervention by the customs authority in the selection of shipments to be controlled. This system collects all necessary data for risk analysis, enters these into risk analysis equations and produces results to be used for decision-making (Desiderio & Bergami 2014).

Owing to current technological advances, international trade have increased tremendously over the last three decades. According to WTO trade statistics, the value of worlds merchandise rose from US$2.03 trillion in 1980 to US$19 trillion in 2018, which is equivalent to 7.3per cent growth per year on average in dollar terms (WTO, 2019). This means that there is enormous quantities of commodities and products exchanged across international markets. This has caused congestions at the ports, airports and other points of entrance of exit, and therefore there is need for customs authorities to reduce congestion at border points, and assure fast release so as to avoid disruption in the supply chain, and at the same time ensure compliance with the regulatory requirements.

Conrow (2003) claimed that customs risk management coupled with good intelligence and effective data analysis allows the profiling and targeting of cargo prior to arrival at a port so that low risk cargo can be released immediately and high-risk cargo can be diverted for physical examination.

Komarov, (2016) examined the basic principles and requirements of international standards for the customs risk management. The stages of customs risk management formation in Ukraine and prospects of its development are determined. The role of forming the maturity of risk management is emphasized for the implementation of integrated risk management in the customs authorities. The ways of implementation of integrated customs risk management are offered and an innovative model of integrated risk-management in the activity of customs bodies of Ukraine is developed on base the quality management, change management and knowledge management. The use of different types of benchmarking in the implementation of the proposed model is seen as an effective tool for improving the efficiency of all activities and management of the customs system.

Al-Shbail, (2020) accessed the impact of risk management on revenue protection: an empirical evidence from Jordan customs. The findings show that all risk targeting criteria except random selectivity (RS) and HS code have a significant positive association with RP. The findings also revealed that RS is an effective tool to prevent traders with fraud and offenses history from a prediction of targeting patterns and to assess the traders' compliance and make sure their declarations are free from fraud or offenses. Moreover, the findings of this study indicate that customs administrations should adopt alternative programs such as authorized economic operator and post clearance audit as an effective means to measure and improve compliance.

2.5.4 Integrated System and Performance

Bhero, and Hoffman, (2014) studied Optimizing Border-Post Cargo Clearance with Auto-ID Systems. The study found out that there is need to bring a system with a human activity monitoring functionality to the proposed system. Also, the system will be more complete if it can monitor movement of cargo throughout the transit period of cargo

from source to destination. If the tracking data is shared or linked to customs' cargo risk engines, then it becomes easier to separate compliant from non-compliant cargo. This would further enhance the usefulness of the system with the overall expected improvement in trade facilitation.

Hsu et al, (2015) looked at import cargo processing in an air cargo terminal. It then constructed a customs clearance-network based on cargo, information and human flows. The study concluded that flow network lead to the sub-division of the network into several operational units and a customs clearing team would work on separate units. The analysis, indicated performance of about 63%. However, the researchers indicated a decrease in percentage when the volume of cargo handled per given time increased beyond a certain limit. This decrease in performance is attributed to the limit in the number of work teams working on customs clearance.

Dias, (2015) accessed Integrated approach for import/export certificate processing for efficient cargo clearance. A questionnaire was circulated among a sample of 100 importers and exporters or their representatives in order to gather information on ground level practical problems faced by them. Existing laws and regulations as well as regulatory processes at several agencies were examined to identify the correct legal position and any existing automated solutions. It was found that in almost all the instances manual procedures are in use in the issuance of certificates (licenses/permits) and in subsequent debit/write-off steps introducing delays, duplications and poor control effects. It is recommended that Automated Certificate Processing System be put into use integrated with the existing Customs Automated System.

Kabui, and Mwaura, (2019) investigated the Effect of Single Window System on cargo clearance efficiency at the port of Mombasa. The study adopted a quantitative approach

targeting a population of 155 respondents. Stratified sampling technique was used to get a sample size of 112 respondents. Data was collected using a structured questionnaire with Likert scale measurement. The study found that Single Window concept has positive effect on Shipping procedures (p-value 0.952), Pre-clearance permits (p-value 0.861), Customs goods declaration procedures (pvalue 0.950) and hence improved cargo clearance efficiency at the port of Mombasa. The study recommends more studies to be done on variables that affect cargo clearance efficiency at the port of Mombasa which were not covered under this study.

Amankwah-Sarfo, et al., (2018) studied how import clearance digitalization can impact socioeconomic development in developing country context. Port digitalization has become important because the governments in developing countries to support socioeconomic development can use it. A growing body of research on port systems exists; however, this has focused more on implementation and use with less attention on socioeconomic impact. Given this gap, this paper employed qualitative interpretive case study as the methodology to investigate import clearance digitalization in Ghana. The findings show that import clearance digitalization can help improve efficiency in customs clearance, increase government revenue and reduce port-related corruption.

2.6 Conceptual Framework

In this study, the dependent variables being the various risk management strategies whereas the dependent variable will be custom and border control performance as shown in Figure 2.1.

Independent variable   *Dependent variable*

```
┌────────────────────┐
│ Integrated System  │──────────────┐
└────────────────────┘              │
                                    │
                                    │        ┌──────────────────────────┐
┌────────────────────┐              │        │    C&BC Performance      │
│ Cargo Scanning     │──────────────┤        │    Revenue Collection    │
└────────────────────┘              ├───────▶│    Data Collection       │
                                    │        │    Trade Facilitation    │
┌────────────────────┐              │        │    Society Protection    │
│ Cargo Tracking     │──────────────┤        │                          │
└────────────────────┘              │        └──────────────────────────┘
                                    │
┌────────────────────┐              │
│ Customs intelligence│─────────────┘
└────────────────────┘
```
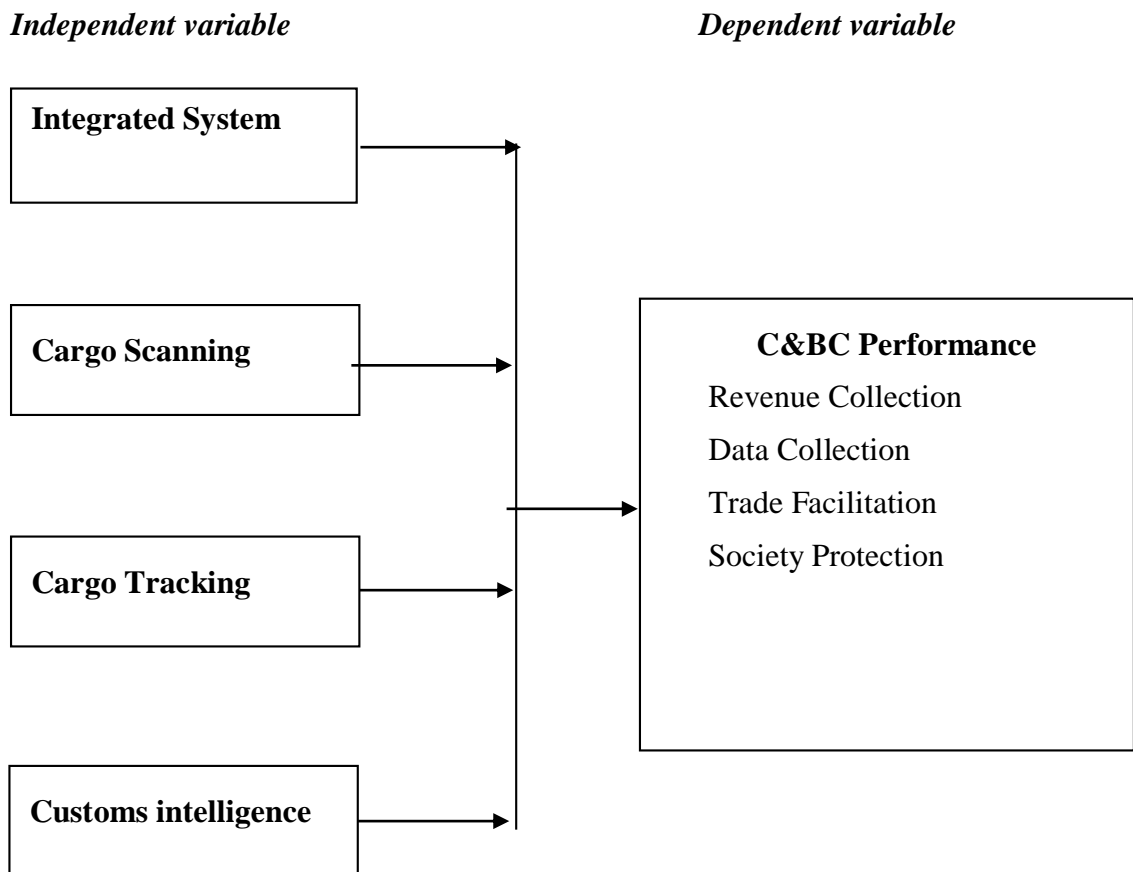
Figure 2. 1: Conceptual Framework
Source: Researcher, (2021)

2.7 Research Gap and Summary

In effort to achieve appropriate balance between trade facilitation and regulatory control, custom authorities have therefore been pushed to change the way they carry out their responsibilities. Consequently, many administrations have implemented a more disciplined structured approach to manage potential failures. Risk management strategies have been applied to more selective and targeted controls to detect custom fraud and other irregularities or offences. This has helped them increase efficiency of their operations and streamline processes and procedures, thereby reducing the regulatory burden on the commercial sector (Widdowson, 2005). Though the available theoretical framework tries to explain the effects of risk management practices, the available empirical studies is not fully conclusive as shown by Table 2.1.

The available studies have produced mixed results. While some studies established that there was a relationship among the variables while other studies failed to establish any relationship among them. Additionally, there is scarcity of studies conducted encompassing all the three variables namely; cargo scanning, authorized economic operators and customs intelligence. Also there are few studies conducted locally more in the C &BC. This study therefore sought to address this research gap by determining the effects of customs risk management strategy on the performance of the customs and border control in Kenya.

Table 2. 1 Research Gaps

Author & Year	Title	Findings	Research Gaps
Otieno et al, (2013)	Effect of Information Systems on Revenue Collection by Local Authorities in Homa Bay County, Kenya	The study found out that ICT investment is very vital to Local Authorities in enhancing revenue collection.	A key limitation of the study is that it did not investigated how the ICTs influenced overall performance as it concentrated mainly on revenue collection. The geographical scope was also limited to only Homa Bay County.
Mugambi, (2017)	Effect of cargo tracking system on cross-border trade between Kenya and Uganda.	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.	This study failed to investigate other border points in Kenya.
Kabiru (2016)	Effect of electronic cargo tracking system and operational performance at Kenya Revenue Authority and on transporters between Kenya and other East African Countries.	The findings was that the tracking system has been beneficial in improving the overall operational performance	This study was done investigating operational performance leaving out other aspects of performance including financial and sustainability.
Al-Shbail, (2020)	Impact of risk management on revenue protection: an empirical evidence from Jordan customs.	The findings show that all risk targeting criteria except random selectivity (RS) and HS code have a significant positive association with RP.	This study was undertaken from an international setting in Jordan which tends to differ with the local setting in Kenya.

Author & Year	Title	Findings	Research Gaps
Bhero, and Hoffman, (2014)	Optimizing Border-Post Cargo Clearance with Auto-ID Systems	The study found out that there is need to bring a system with a human activity monitoring functionality to the proposed system.	The study was narrowly focused on cargo clearance without broadening the concept to the organizational performance.
Hsu et al, (2015)	Import cargo processing in an air cargo terminal.	The study concluded that flow network lead to the sub-division of the network into several operational units and a customs clearing team would work on separate units.	This study was limited to only the air cargo without consideration of the cargoes at the ports and inland ports.
Dias, (2015)	Integrated approach for import/export certificate processing for efficient cargo clearance.	It was found that in almost all the instances manual procedures are in use in the issuance of certificates (licenses/permits) and in subsequent debit/write-off steps introducing delays, duplications and poor control effects.	The study failed to investigate the effect of these practices on the performance.
Kabui, and Mwaura, (2019)	Effect of Single Window System on cargo clearance efficiency at the port of Mombasa.	The study found that Single Window concept has positive effect on Shipping procedures	The study however did not investigate other constructs of risk management of cargos and this study will aim at investigating this.
Amankwah-Sarfo, et al., (2018)	Import clearance digitalization and socioeconomic development in developing country context.	The findings show that import clearance digitalization can help improve efficiency in customs clearance, increase government revenue and reduce port-related corruption.	The study was however, limited by scope to only Ghana hence could not be equally compared locally.

Source: Study Literature Review (2021)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter encompasses the entire approach, which was adopted in undertaking the study so as to achieve the research objectives. Specifically, the chapter discusses the research design, population of the study, study sample, data collection methods, pilot study, data analysis techniques and ethical considerations to be met by the study.

3.2 Research Design

A research design describes the scheme or plan of the general research approach adopted to a particular study. The research design can either be descriptive or exploratory. It explains why and how there is a relationship between two or more aspects of a situation. This study used an explanatory research design which enables one to obtain information concerning the current situation and other phenomena and wherever possible to draw valid conclusion from the facts discussed (Creswell, 2008). As described by Mugenda and Mugenda, (2008) the research design entails a systematic and empirically inquiry where the researcher has no control over the study variables as they have already manifested or cannot be directly manipulated. Moreover, this research design is suitable where the researcher needs to draw conclusion from a population hence was the most appropriate for the study.

3.3 Target Population

The population for this research comprised of employees working at the Kenya Revenue Authority who are under the C&BC department and border points at nonstop border posts at Namanga, Busia and Malaba. This constituted a total of 540 respondents as shown by Table 3.1.

Table 3. 1 Study Population

Border Post	Number
Namanga	220
Busia	140
Malaba	180
Total	**540**

Source: KRA, (2021)

3.4 Sample Size and Design

3.4.1 Sample Size

To identify the study population, Yemane's formula was adopted.

Slovin's formula is:

$$n = \frac{N}{1 + N(e^2)}$$

Where n = number of samples, N = total population and e = error margin / margin of error at 7%

By applying the formula, a sample size of 230 respondents were studied using at 10% margin of error.

3.4.2 Sampling Design

The different population categories formed the strata for the study. The weight of the stratum was identified by relating the number of respondents under the strata in relation to the entire population as shown by Table 3.2. Stratified random sampling was then employed in selecting of respondents from each border post. Simple random sampling guaranteed each member had an equal chance of being selected to participate in the study.

Table 3. 2 Study Population

Border Post	Population	Sample	Percentage
Namanga	220	94	41%
Busia	140	60	26%
Malaba	180	76	33%
Total	540	230	100%

3.5 Data Collection Instruments

The study used primary method of data collection. Primary data entails first-hand information, which has not been published. This was done using questionnaires. A structured questionnaire made of both open ended and closed ended questions was employed to collect data. A five point Likert scale was used for the subjects to choose their responses which then enabled the researcher to quantitatively analyze the data. The questionnaires were administered by drop and pick method. After dropping the questionnaire, the respondents were given at least one week to respond and follow-ups made via emails and phone calls. The researcher then visited the various areas under the study on several occasions for a follow-up on the research questionnaires and collecting them.

3.6 Pilot Study

To enhance reliability and validity, the questionnaire was pre-tested on 6% (10) of the population selected from other departments at KRA head office. The respondents selected for pilot study did not form part of the study. Pilot testing was done with the aim of obtaining more reliable feedback. Cronbach's alpha was then be used to assess internal consistency and reliability of the questionnaire based on the feedback of the pilot test. The piloted sample were encouraged to make comments and suggestions

concerning instructions, clarity of questions and relevance. This revealed vague questions, deficiencies in the questionnaire and provided an opportunity to analyze the data to see if the methods of analysis were appropriate.

3.6.1 Reliability of the Instrument

The data from the pilot test was tested using Cronbach alpha. Cronbach's alpha was used to determine the internal consistency or average correlation of items in the survey instrument to gauge its reliability to assess and improve upon the reliability of variables derived from summated scales. Data reliability was measured using Cronbach's alpha coefficient with ranges between 0 and 1. The Cronbach alpha values obtained for all the variables were ensured to be higher than 0.7. This was achieved through rephrasing the questions with low alpha after pilot study or dropping them.

3.6.2 Validity of the Instrument

The content validity of the questionnaire was determined using construct validity method. Construct validity is the degree to which a test measures an intended hypothetical construct (Mugenda, 2008). Using a panel of experts familiar with the construct is a way in which this type of validity were assessed. Amendments to the questionnaire were then done. Data quality control was managed through reliability and validity testing and verification of the data collection instruments.

3.7 Data Analysis

The data was first cleaned so as to avoid any discrepancies before being analysed. The data was then coded and input into the computer. The data were then categorized and thereafter summarized using descriptive measures such as frequencies, percentages, means and inferential statistics. Tables and graphs were used for presentation of findings. Regression model was used to determine the relationship between the

variables. To achieve this, data was coded and analyzed by Statistical Package for Social Science (SPSS Version 20.0) program.

3.7.1 Analytical Model

A multiple regression model was used to determine the relationship between the study variables. The multiple regression model was in the form:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \qquad (Equation\ 3.1)$$

Where:

Y_i = Dependent Variable (Performance measured using a 5 point Likert Scale)

β_0 = Constant

$\beta_1 \ldots \beta_3$ = Coefficient of the independent variable

X_1 = Cargo Scanning (measured using a 5 point Likert Scale)

X_2 = Cargo Tracking System (measured using a 5 point Likert Scale)

X_3 = Customs Intelligence (measured using a 5 point Likert Scale)

X_4 = Integrated System (measured using a 5 point Likert Scale)

ε = error term

3.7.2 Test of Significance

The model significance was tested using the analysis of the variance (ANOVA), t-tests, z-tests and F-tests at 95% confidence. The coefficient of determination showed the extent to which the model explains the changes independent variable.

3.7.3 Operationalization and Measurement of Study Variables

The measurement and operationalization is shown in Table 3.3.

Table 3. 3 Operationalization and Measurement of Study Variables

Variable	Indicator	Measuring of indicators	Scale	Tools of Analysis	Type of Analysis
Dependent	Performance	• Revenue Collection • Data Collection • Trade Facilitation • Society Protection	Ordinal	Percentages Mean score	Descriptive statistics Correlation analysis Regression analysis
Independent	Cargo Scanning	5 Point Likert scale based on: • Physical checks • Mobile scanner • Gantry Systems • Portal Systems (Drive-through)	Ordinal	Percentages Mean score	Descriptive statistics Correlation analysis Regression analysis
Independent	Cargo Tracking	5 Point Likert scale based on: • Real time monitoring • Transit trackers • Data capturing • Reporting violation	Ordinal	Percentages Mean score	Descriptive statistics Correlation analysis Regression analysis
Independent	Customs intelligence	• Data collection database use • On-going monitoring • Metrics-focused • Software reliance	Ordinal	Percentages Mean score	Descriptive statistics Correlation analysis Regression analysis
Independent	Integrated System	• Transparency in the clearance procedures • Well-coordinated submission of information • Proper management of congestions	Ordinal	Percentages Mean score	Descriptive statistics Correlation analysis Regression analysis

3.8 Ethical Considerations

Before commencement of the study, the researcher comprehensively informed the respondents what the research was about, its objectives, scope as well as benefits. Additionally, the respondents were informed of the approaches to take or whom to report to in case they were uncomfortable with the study in any way. Specifically, the study adhered to the ethical guidelines set up by the university regarding academic research. The researcher obtained a research permit from NACOSTI prior to collection of data. The researcher also took time to explain the purpose and objectives of the research to the respondents and explained that participation in the research was voluntary upon their agreeing to participate in the research.

The researcher also assured the respondents that their opinions and views were confidential and that all information collected during the course of the research was strictly confidential and used only for the purpose of the study which was for the researcher to attain the objectives of the study. They were also notified that they would not be identifiable in any reports or publications. No names were written on any of the questionnaires or interviews, instead numbers were used to mark the difference in the scripts.

Any data collected from the questionnaires was stored in a form protected by passwords and other relevant security processes and technologies. Data collected may be shared when need be in an anonymized form to allow reuse by the research team and other third parties. The researcher also ensured that every idea and concept borrowed from another author other than herself acknowledged the originator of the ideas both in the study and references.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATIONS AND DISCUSSIONS

4.1 Introduction

The study sought to establish the effects of risk management strategy on the firm performance taking the case of the customs and border control department in Kenya. This chapter presents the research findings by focusing on; response rate, general information of the respondents and data analysis based on the specific objectives of the study. It also describes the inferential analysis, correlation and regression analysis and finalizes with testing of hypothesis.

4.2 Response Rate

The study's target sample was total of 84 respondents who entailed employees working at the Kenya Revenue Authority who are under the C&BC department and border points at nonstop border posts at Namanga, Busia and Malaba. Out of the 230 questionnaires that were issued out, 188 questionnaires were duly filled and returned, translating to a response rate of 82 percent as shown by Table 4.1. This response rate was considered to be adequate to enable generalization of the study's findings and adequate for the purpose of the study.

Table 4. 1: Response Rate

Status	Frequency	Percent
Responded	188	82 %
Not Responded	42	28%
Total	**230**	**100 percent**

Source: Research Data, (2021)

4.3 Reliability Analysis

Cronbach's alpha was used to determine the internal consistency of the research instruments. This aimed at establishing how sets of variables are related in the group. The results obtained are as shown by Table 4.2.

Table 4. 2: Reliability Analysis

Variable	Cronbach's Alpha	N of Items	Decision	
Cargo Scanning	0.754	7	Cronbach acceptable	Alpha>0.7,
Cargo Tracking	0.776	6	Cronbach acceptable	Alpha>0.7,
Customs intelligence	0.702	4	Cronbach acceptable	Alpha>0.7,
Integrated System	0.706	6	Cronbach acceptable	Alpha>0.7,
Performance	0.704	6	Cronbach acceptable	Alpha>0.7,

Source: Research Data, (2021)

As shown in table 4.2, Cargo Scanning had a Cronbach's alpha of 0.754, Cargo Tracking had a Cronbach's alpha of 0.776, Customs intelligence had a Cronbach's alpha of 0.702, Integrated System had a Cronbach's alpha of 0.706 while Performance had a Cronbach's alpha of 0.704. This implies that all the variables had Cronbach Alpha greater than 0.7 hence implying that the research instruments were reliable in carrying out the study.

4.4 Description of Study Variables

The study independent variables were the various risk management practices including cargo scanning, cargo tracking, custom intelligence and integrated performance while

the dependent variable was performance. The variables were measured by different components of the variables and quantified using a five point liker scale.

4.4.1 Cargo Scanning Technology

The study sought to determine the extent of cargo scanning technology at nonstop border posts at Namanga, Busia and Malaba. The findings obtained are as shown by Table 4.3.

Table 4.3 Cargo Scanning Technology

Statement	Mean	Std. Deviation
Undertaking physical checks on cargo	3.59	1.389
Mobile scanner which are easily portable	3.49	1.256
Gantry Systems used in linear motion	2.79	0.945
Portal Systems (Drive-through)	3.00	1.170
Training of the personnel in using up to date scanning techniques	3.21	1.282
Constant update of the scanning equipment	2.93	1.416
Ability to easily share the scanning information	2.94	1.220
Average Mean Score ($\bar{x}$)	**3.14**	**1.240**

Source: Research Data, (2021)

The findings in table 4.5 a large extent of undertaking physical checks on cargo (mean = 3.59, std dev =1.389). A moderate extent was noted on mobile scanner which are easily portable (mean = 3.49, std dev =1.256), portal systems (drive-through) (mean = 3.00, std dev =1.170) and training of the personnel in using up to date scanning techniques (mean = 3.21, std dev =1.282). Whereas a small extent was stated on gantry systems used in linear motion (mean = 2.79, std dev =0.945), constant update of the scanning equipment (mean = 2.93, std dev =1.416) and ability to easily share the scanning information (mean = 2.94, std dev =1.220). On average, based on the mean

score from the Likert Scale items, cargo scanning technology was adopted only moderately (mean = 3.14, std dev =1.240).

4.4.2 Cargo Tracking System

The study sought to determine the effect of cargo tracking system at nonstop border posts at Namanga, Busia and Malaba. The findings obtained are as shown by Table 4.4.

Table 4. 4 Cargo Tracking System

Statement	Mean	Std. Deviation
Cargo tracking system helped the department clear more cargo and track the vehicles at a much faster rate and cheaper at the border posts	3.44	1.433
Cargo tracking has enhanced data sharing in real time basis	4.37	0.826
Real time data helped gain more revenue, prevent illicit or illegal goods from crossing the border	3.35	1.276
Cargo tracking has lessened dumping and tax evasion, and helped decrease cargo theft operations	3.56	1.175
Cargo tracking gives a channel where data can be reviewed accurately and therefore C&BC generates recommended knowledge into its operational performance	3.04	1.478
Use of technology has enhanced quality service and reduced cost of control	3.20	1.328
Average Mean Score ($\bar{x}$)	**3.49**	**1.253**

Source: Research Data, (2021)

From the findings, the respondents stated a very large extent on cargo tracking has enhanced data sharing in real time basis (mean = 4.37, std dev =0.826). A large extent was also noted on cargo tracking has lessened dumping and tax evasion, and helped decrease cargo theft operations (mean = 3.56, std dev =1.175). However, a moderate extent was indicated on cargo tracking system helped the department clear more cargo and track the vehicles at a much faster rate and cheaper at the border posts (mean =

3.44, std dev =1.433), real time data helped gain more revenue, prevent illicit or illegal goods from crossing the border (mean = 3.35, std dev =1.276), cargo tracking gives a channel where data can be reviewed accurately and therefore C&BC generates recommended knowledge into its operational performance (mean = 3.04, std dev =1.478) and use of technology has enhanced quality service and reduced cost of control (mean = 3.20, std dev =1.328). Overall, based on the mean score from the Likert Scale items, cargo tracking system was adopted only moderately (mean = 3.49, std dev =1.253).

4.4.3 Custom Intelligence

The study sought to determine the effect of custom intelligence at nonstop border posts at Namanga, Busia and Malaba. The findings obtained are as shown by Table 4.5.

Table 4. 5 Custom Intelligence

Statement	Mean	Std. Deviation
Data collection database use	3.73	1.269
On-going monitoring of cargo	3.52	1.298
Metrics-focused customs	2.53	1.326
Software reliance	3.48	1.011
Average Mean Score ($\bar{x}$)	**3.32**	**1.226**

Source: Research Data, (2021)

The study found out to a large extent data collection database use (mean = 3.73, std dev =1.269) and on-going monitoring of cargo (mean = 3.52, std dev =1.298). On the contrary, a moderate extent was established on software reliance (mean = 3.48 std dev =1.011) while a large extent was noted on metrics-focused customs (mean = 2.53, std dev =1.326). On average, based on the mean score from the Likert Scale items, custom intelligence was adopted only moderately (mean = 3.32, std dev =1.226).

4.4.4 Integrated System

The study sought to determine the effect of integrated system at nonstop border posts

at Namanga, Busia and Malaba. The findings obtained are as shown by Table 4.6.

Table 4. 6 Integrated System

Statement	Mean	Std. Dev
Regulatory transparency have reduced greatly the trade barriers and delays in clearance	3.84	0.887
Harmonization in trade has been enhanced due to streamlined submission	3.40	1.328
There has been information sharing of trade procedures due to the current reforms.	3.99	1.283
Customs Electronic Procedures are user friendly	3.47	1.308
There are streamlined checks and clearance	2.83	1.259
The revenue obtained has been maximized as a result of coordinated flow of information	2.94	1.296
Average Mean Score (x̄)	**3.41**	**1.227**

Source: Research Data, (2021)

The study found out that the respondents agreed to a large extent on regulatory

transparency have reduced greatly the trade barriers and delays in clearance (mean =

3.84, std dev =0.887) and there has been information sharing of trade procedures due

to the current reforms (mean = 3.99, std dev =1.283). A moderate extent was stated on

harmonization in trade has been enhanced due to streamlined submission (mean = 3.40,

std dev =1.328) and customs electronic procedures are user friendly (mean = 3.47, std

dev =1.308). Whereas a small extent was noted on there are streamlined checks and

clearance (mean = 2.83, std dev =1.259) and the revenue obtained has been maximized

as a result of coordinated flow of information (mean = 2.94, std dev =1.296). On

average, based on the mean score from the Likert Scale items, integrated system was adopted only moderately (mean = 3.41, std dev =1.227).

4.4.5 Performance of the customs and border department in Kenya

The study sought to establish the level of performance at the customs and border department in Kenya based on various measures of performance over the past five years (2016-2020). The findings obtained are as shown by Table 4.7.

Table 4. 7: Performance of the customs and border department in Kenya

Statement	Mean	Std. Deviation
Revenue Collection Amount	3.87	1.450
Data Collection	3.87	1.155
Trade Facilitation Level	3.28	1.218
Society Protection	3.89	0.950
Revenue accrued	3.24	1.738
Profits/Losses accrued	3.15	1.254
Average Mean Score ($\bar{x}$)	**3.55**	**1.294**

Source: Research Data, (2021)

On the performance of customs department metrics, a large extent was noted on revenue collection amount (mean = 3.87, std dev =1.450), data collection (mean = 3.87, std dev =1.155) and society protection (mean =3.89, std dev =0.950). However, a moderate extent was revealed on trade facilitation level (mean = 3.28, std dev =1.218), revenue accrued (mean = 3.24, std dev =1.738) and profits/losses accrued (mean = 3.15, std dev =1.254). On average, based on the mean score from the Likert Scale items, cargo scanning technology was adopted only moderately (mean = 3.55, std dev =1.294).

4.5 Diagnostic Tests

4.5.1 Test for Multicollinearity

Multicollinearity tests was conducted on the regression model so that incorrect conclusions about the relationship between dependent variable and predictor variables to be avoided. Variance Inflation Factor (VIF) and tolerance degree was used to indicate presence of multicollinearity test. The findings obtained are presented by Table 4.8.

Table 4. 8 Multicollinearity Test

Variable	Tolerance	VIF
Cargo Scanning	0.9655	1.035
Cargo Tracking System	0.9688	1.0313
Customs Intelligence	0.9787	1.0202
Integrated System	0.982	1.0165

Source: Research Data, (2021)

Multicollinearity occurs where tolerance is less than 0.1 and VIF greater than 10. However, for all the variables as shown by Table 4.10, the measures were within acceptable range and therefore the problem of multicollinearity did not exist.

4.5.2 Test for Normality

Multiple regression analysis requires that the study variables are normally distributed. The findings on Normality Test obtained are presented by Table 4.9.

Table 4. 9 Normality Test

Variable	Skewness	Kurtosis
Cargo Scanning	-0.8965	0.8029
Cargo Tracking System	-0.7259	0.6468
Customs Intelligence	-0.65662	0.66638
Integrated System	-0.58734	0.68596
Performance	-0.9792	1.086

Source: Research Data, (2021)

As shown, all the variables were acceptable since their Skewness statistics were falling between +/-2 to +/-2. Also, the kurtosis values were all close to 0, +2 or -2 indicating that the data was distributed towards respective means and hence normal. This implied that the data was appropriate for analysis using regression and correlation analysis.

4.5.3 Heteroscedasticity Test

Heteroscedasticity occurs when the variance of the errors varies across the observations. This study used Breusch-Pagan/ Cook-Weisberg to test for Heteroscedasticity. The findings obtained are presented by Table 4.10.

Table 4. 10 Heteroscedasticity Test

H0	Chi2 (4)	Prop>Chi2
Constant variance	0.322	0.782

The study obtained a chi square of 0.322 and p-value of 0.782>0.05. This indicated that at 95 percent confidence, the null hypothesis of homoscedasticity was accepted. Hence, Heteroscedasticity was not a problem and therefore the data was appropriate for analysis.

4.6 Factor Analysis

To confirm whether the data from the measurements was sufficient for factor analysis (test the validity), the Kaiser-Meyer-Olkin (KMO) test and the Bartlett's sphericity test were performed. In the KMO test, as the values of the test vary from 0 to 1, values above 0.7 are recommended as being desirable for applying EFA and a statistically significant Bartlett test ($p < 0.05$) indicates that sufficient correlations exist between the variables to continue with the analysis. The results obtained as per Table 4.11 indicate that the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.726 which was above 0.7 (Kaiser, 1974) threshold. This meant that the sample was adequate for factor analysis. The Chi-Square value for Bartlett's Test of Sphericity was 36.121 with degrees 10 of freedom and p-value less than 0.05 indicating suitability of data for structure detection (Bartlett, 1954). This confirms that the data collected was valid for further analysis.

Table 4. 11 KMO and Bartlett's Test

Statistic		Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.726
Bartlett's Test of Sphericity	Approx. Chi-Square	36.121
	df	10
	Sig.	.000

The extraction communalities for the retained items as shown on Table 4.12 were all greater than 0.5 indicating that the retained items fitted well with other items.

Table 4. 12 Communalities

	Initial	Extraction
Performance	1.000	.787
Cargo Scanning	1.000	.581
Cargo Tracking System	1.000	.516
Customs Intelligence	1.000	.528
Integrated System	1.000	.543

Extraction Method: Principal Component Analysis.

On the total variance, only two factors imputed attained eigenvalues in the initial solution greater or equal to 1.0 as shown by Table 4.13.

Table 4. 13 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.699	33.979	33.979	1.699	33.979	33.979
2	1.256	25.125	59.103	1.256	25.125	59.103
3	.916	18.318	77.421			
4	.771	15.424	92.845			
5	.358	7.155	100.000			

Extraction Method: Principal Component Analysis.

The pattern matrix showed two components were extracted comprising five items as shown in Table 4.14.

Table 4. 14 Component Matrix

	Component	
	1	**2**
Performance	.876	.138
Integrated System	.737	
Cargo Scanning	.550	-.528
Cargo Tracking System		.718
Customs Intelligence	.291	.666

Extraction Method: Principal Component Analysis.

4.7 Inferential Analysis

The study sought to establish the underlying relationships between variables and the extent to which the independent variables influenced the dependent variables. Correlation analysis and multiple regression analysis were used to accomplish this purpose.

4.7.1 Correlation Analysis

Correlation analysis is used to find the relationship between two or more sets of variables. Table 4.15 gives the relationship between different sets of variables that was obtained.

Table 4. 15 Correlation Analysis

		Performance	Cargo Scanning	Cargo Tracking System	Customs Intelligence	Integrated System
Cargo Scanning	Pearson Correlation	.323**	1.00			
	Sig. (2-tailed)	0.00				
Cargo Tracking System	Pearson Correlation	.200**	-0.14	1.00		
	Sig. (2-tailed)	0.01	0.06			
Customs Intelligence	Pearson Correlation	0.14	-.206**	.231**	1.00	
	Sig. (2-tailed)	0.05	0.00	0.00		
Integrated System	Pearson Correlation	.438**	0.07	-.192**	-0.05	1.00
	Sig. (2-tailed)	0.00	0.37	0.01	0.47	
	N	188	188	188	188	188

Source: Research Data, (2021)

Correlation Analysis results obtained on table 4.14 indicated that Cargo Scanning had a Pearson Correlation of 0.323 and a p-value of 0.000, Cargo Tracking System had a Pearson Correlation of 0.200 and a p-value of 0.001, Customs Intelligence had a Pearson Correlation of 0.14 and a p-value of 0.05 and Integrated System had a Pearson Correlation of 0.438 and a p-value of 0.000. The positive coefficient indicated by the variables imply that they have a positive effect on the performance of the customs department of KRA. The p-value<0.05 indicated that the positive effect was significant for all the variables except custom intelligence at 95% confidence level.

4.7.2 Multiple Regression Analysis

The study sought to establish the influence of risk management practices on performance of the customs and border control department of KRA. The Regression model summary is presented in Table 4.16.

Table 4. 16: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.644a	0.415	0.402	0.817

a. Predictors: (Constant), Cargo Scanning, Cargo Tracking System, Customs Intelligence, Integrated System

Source: Research Data, (2021)

From Table 4.16, the coefficient of correlation was 0.644 indicating that risk management practices have a positive effect on performance. Thus, incorporating these measures would improve the performance of KRA. The coefficient of determination (Adjusted R^2) was 0.415 implying that that the regression could explain up to 41.5 percent of the variation in the performance. The remaining percent of the variation could be due to other predictors not in the model.

The model test of fitness results are presented in Table 4.17 indicating the reliability of the model in predicting performance.

Table 4.17: ANOVA Analysis

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	98.391	4	24.598	32.421	.000[b]
Residual	138.843	183	.759		
Total	237.234	187			

a. Predictors: (Constant), Cargo Scanning, Cargo Tracking System, Customs Intelligence, Integrated System
b. Dependent Variable: C&BC Performance

Source: Research Data, (2021)

The model result of model fitness indicates an F-statistic of 32.421>0.759 and a p-value of 0.000<0.05. This indicates that the model is fit for prediction at 95 percent confidence level. Thus, risk management has significant effect on the performance.

The study multiple regression model coefficients obtained which could be used for prediction are presented in table 4.18.

Table 4. 18 Model Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.125	.351		.357	.721
Cargo Scanning	.287	.045	.369	6.351	.000
Cargo Tracking System	.273	.053	.304	5.113	.000
Customs Intelligence	.135	.046	.173	2.930	.004
Integrated System	.444	.053	.481	8.337	.000

a. Dependent Variable: Performance

Source: Research Data, (2021)

As per Table 4.18, the findings obtained show that Cargo Scanning had a coefficient of 0.369, Cargo Tracking System had a coefficient of 0.304, Customs Intelligence had a

coefficient of 0.173 while Integrated System had a coefficient of 0.481. The positive coefficient imply that these variables have a positive impact on the performance of the customs department of KRA. All the variables had a p-values less than 0.05 implying the effect was significant at the 95 percent confidence level.

This implies that all the risk management variables namely; cargo scanning, cargo tracking system, customs intelligence and integrated system have a positive impact on the performance of the customs department. Therefore, an unit increase in these independent variables will result in a unit increase in the performance. From the model coefficients table, the following regression model was fitted.

$$Y_i = 0.125 + 0.369\,X_1 + 0.304X_2 + 0.173X_3 + 0.481X_4$$

Whereby; Y_i refers to performance, X_1 is Cargo Scanning, X_2 is Cargo Tracking System, X_3 is Customs Intelligence and X_4 is Integrated System.

4.8 Hypothesis Testing

The hypotheses were tested using the multiple regression results.

4.8.1 Test of Hypothesis One

H_{01}: Cargo scanning has no significant effect on performance at the customs department in Kenya. The regression results indicated a p value of 0.000, which was less than 0.05 at 5% level of significance. The hypothesis was rejected since the p value was less than 0.05. This implied that cargo scanning had a significant effect on performance of customs department in Kenya.

4.8.2 Test of Hypothesis Two

H_{02}: Cargo tracking have no significant effect on Kenya's Customs department in Kenya. The regression results indicated a p value of 0.000, which was less than 0.05 at 5% level of significance. The hypothesis was rejected since the p value was less than

0.05. This implied that cargo tracking had a significant effect on performance of customs department in Kenya.

4.8.3 Test of Hypothesis Three

H_{03}: Customs intelligence has no significant effect on performance of customs department in Kenya. The regression results showed a p value of 0.004, which was less than 0.05 at 5% level of significance. The hypothesis was rejected since the p value was less than 0.05. This implied that customs intelligence had a significant effect on performance of customs department in Kenya.

4.8.4 Test of Hypothesis Four

H_{04}: Integrated system has no significant effect on performance of customs department in Kenya. The regression results showed a p value of 0.000, which was less than 0.05 at 5% level of significance. The hypothesis was rejected since the p value was less than 0.05. This implied that integrated system had a significant effect on performance of customs department in Kenya.

The summary of the study hypothesis that were tested is presented by Table 4.19.

Table 4. 19 Hypothesis Testing Results

Hypothesis	Criteria	Findings	Conclusion
H_{01}: Cargo scanning has no significant effect on performance at the customs department in Kenya.	P-values (P<0.05)	(P= 0.000, <0.05).	Reject the hypothesis
H_{02}: Cargo tracking have no significant effect on Kenya's Customs department in Kenya	P-values (P<0.05)	(P= 0.000, <0.05).	Reject the hypothesis
H_{03}: Customs intelligence has no significant effect on performance of customs department in Kenya.	P-values (P<0.05)	(P=0.004, <0.05).	Reject the hypothesis
H_{04}: Integrated system has no significant effect on performance of customs department in Kenya.	P-values (P<0.05)	(P=0.000, <0.05).	Reject the hypothesis

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings in chapter four, presents the conclusions and recommendations drawn. The chapter also suggestions for further study in the quest of addressing the research question or achieving the research objective.

5.2 Summary of Key Findings and Conclusion

The study focus was on customs risk management strategy on the firm performance taking the case of C&BC department with the dependent variables being the various risk management practices including cargo scanning, cargo tracking, integrated system and customs intelligence whereas the dependent variable will be performance. The population of the study entailed employees working at the C& BC department at the border points. Data was collected using both primary means and analyzed using descriptive and inferential analysis. A summary of the key findings and conclusions reached thereafter is presented below as per the research objectives.

5.2.1 Specific Objective One: To determine the effectiveness of cargo scanning on performance at the customs department in Kenya.

The first objective of the study was to determine the effectiveness of cargo scanning on performance at the customs department in Kenya. From the descriptive statistics, the average mean score of cargo scanning based on the Likert Scale was 3.14 implying that the practice was adopted only moderately. The correlation analysis showed that Cargo Scanning had a Pearson Correlation of 0.323 and a p-value of 0.000 implying a significant positive effect on the performance. The regression results further indicated

a p value of 0.000, which was less than 0.05 at 5% level of significance. This findings compare to those of Ates, Cocca, and Bititci, (2013) who concluded that modern technology supports Customs administrations to be more efficient and effective together with the application of modern procedures and practices laid down in the Revised Kyoto Convention (RKC). Musyoki, (2017) also found out that scanners have helped to prevent dumping of cheap, substandard and harmful products in the local market. The study thus concludes that cargo scanning has a significant effect on performance of customs department in Kenya.

5.2.2 Specific Objective Two: To find out the effectiveness of cargo tracking on the performance of customs department in Kenya.

The second objective of the study was on effectiveness of cargo tracking on the performance of customs department in Kenya. The descriptive results showed that on average, the mean score of cargo tracking from the Likert Scale items, was 3.49 showing that it was adopted moderately. The correlation analysis results showed that Cargo Tracking System had a Pearson Correlation of 0.200 and a p-value of 0.00 indicating that a positive effect on the performance of the customs department of KRA. Similarly, the regression results further indicated a p value of 0.000, which was less than 0.05 at 5% level of significance. A similar positive effect was obtained by Naidoo (2012) who proposed that for productive C&BC operations, the department should rely on ECTs than the existing patterns. Jordan and Alfitiani (2010), observed that ECTs has enhanced transit traffic has also led to less smuggling operations and transport time journey has curtailed by at least 60%. Thus, transit time actually declines when ECTs are applied. The study thus concludes that cargo tracking had a significant effect on performance of customs department in Kenya.

5.2.3 Specific Objective Three: To examine the effectiveness of customs intelligence on performance of customs department in Kenya.

The third objective of the study sought to determine the effectiveness of customs intelligence on performance of customs department in Kenya. The descriptive results showed that customs intelligence practice was adopted to a moderate extent having an average mean score of 3.32. From the correlation analysis results, Customs Intelligence had a Pearson Correlation of 0.14 and a p-value of 0.05. The positive coefficient indicated by the variable imply have a positive effect on the performance of the customs department of KRA. Additionally, the regression results showed a p value of 0.001, which was less than 0.05 at 5% level of significance. This coincides with Komarov, (2016) who examined the basic principles and requirements of international standards for the customs risk management. However, Al-Shbail, (2020) who accessed the impact of risk management on revenue protection: an empirical evidence from Jordan customs revealed that it is an effective tool to prevent traders with fraud and offenses history from a prediction of targeting patterns and to assess the traders' compliance and make sure their declarations are free from fraud or offenses. The study comes to the conclusion that customs intelligence had no significant effect on performance of customs department in Kenya.

5.2.4 Specific Objective Four: To examine the effectiveness of integrated system on performance of customs department in Kenya.

The last objective of the study was on the effectiveness of integrated system on performance of customs department in Kenya. Based on the findings of the descriptive analysis, integrated system had a moderate extent of adoption having an average mean score of 3.41. From the findings of the correlation analysis, Integrated System had a

Pearson Correlation of 0.438 and a p-value of 0.000. The positive coefficient indicate that integrated system significantly affect the performance of the customs Department of KRA. The regression results also indicated a p value of 0.000, which was less than 0.05 at 5% level of significance. This concur with Hsu et al, (2015) who looked at import cargo processing in an air cargo terminal and concluded that flow network lead to the sub-division of the network into several operational units and a customs clearing team would work on separate units. Kabui, and Mwaura, (2019) investigated the Effect of Single Window System on cargo clearance efficiency at the port of Mombasa also found that Single Window concept has positive effect on Shipping procedures (p-value 0.952), Pre-clearance permits (p-value 0.861), Customs goods declaration procedures (pvalue 0.950) and hence improved cargo clearance efficiency at the port of Mombasa. The study concludes that integrated system had a significant effect on performance of customs department in Kenya.

5.2.5 General Objective: To determine the effects of customs risk management strategy on the performance of the customs department in Kenya.

The purpose of the study was to determine the effects of customs risk management strategy on the performance of the customs department in Kenya. From the regression analysis results, the coefficient of correlation was 0.644 indicating that risk management practices have a positive effect on performance. Thus, incorporating these measures would improve the performance of KRA. The coefficient of determination (Adjusted R^2) was 0.415 implying that that the regression could explain up to 41.5 percent of the variation in the performance. The remaining percent of the variation could be due to other predictors not in the model. The model result of model fitness also indicated a p-value of $0.000 < 0.05$ which indicates that the model is fit for prediction at 95 percent confidence level. Comparably, studies conducted have

established a positive effect between custom risk management strategies and performance such as Nwankwo, and Olayinka, (2019) who analyzed the design and implementation of a cost-effective solution for managing the secure transmission and processing of acquired cargo images across different locations. Mugambi, (2017) who did a study on the effect of cargo tracking system on cross-border trade between Kenya and Uganda found that the risk management practices 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.On the contrary, Komarov (2016) argues that it is not appropriate to rely solely and exclusively rely on the application of an automated system of risk management. The study therefore concludes that custom risk management has significant effect on the performance of the customs department in Kenya.

5.3 Recommendations for Practice

The recommends that the KRA management should highly prioritize custom risk management practices among their key strategies. From the study, we find that risk management practices have a positive effect on performance. This was indicated by the regression analysis results where, the coefficient of correlation was 0.644. These measures includes; having proper allocation of budget control and having ceilings on overheads and financial reporting. The revenue collection agency should also map customs and other administrations' needs on changes of their current control procedures and IT equipment, in view of implementing a common risk management system.

As a complement to risk-based management, the study recommends that the customs department should select on a random basis, consignment for Customs control. Random

controls help avoid non-compliance by companies that are aware of Customs risk assessment methods. Because of these unexpected controls, Customs authorities remain alert and updated as risk continually evolves over time. The custom department is also recommended to set the broadest scope and the greatest content for risk management systems as far as their national resources allow.

For the customs department to be able to implement the risk management strategies the study recommends the sector to be equipped with high performing information systems capable to capture huge volumes of data provided by economic operators with different roles in the supply chain. In addition, customs need to be equipped with sophisticated electronic systems to evaluate, analyse, identify and mitigate the entire range of risks.

5.4 Recommendations for Policy

The study recommends that the government to formulate minimum risk management standards to be met by the customs department of KRA. The regulators should monitor adherence to these practices. The study further recommends that policy and practice for these practices to be carefully evaluated by the customs management and the results of that evaluation feedback used to improve risk management mechanisms.

The study also recommends that the government and relevant stakeholders to put in place a national implementation framework, including legislation, administrative instructions, regulations and procedures to apply risk management to import, export and transit goods for Customs control purposes. Ensuring that there is nothing in Customs regulation that requires examination of all consignments, a fixed number or a minimum percentage.

5.5 Recommendations for Further Research

This study investigated the effects of customs risk management strategy on the performance of the customs department in Kenya. The study recommends that further research should be done on focusing on other departments of KRA. This will confirm the findings and enable generalization of the findings. Further study should also be done on other customs risk management strategies other than those covered. In addition, a comparative study should be done on the challenges faced in implementation of these custom risk management strategies and how they may be addressed.

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APPENDICES

Appendix I: Questionnaire

This research instrument is designed to collect data on the influence of risk management strategy on firm performance taking the case of the customs and border control department in Kenya. The data acquired from this questionnaire will be used exclusively for academic reasons. In this respect, you are humbly requested to contribute by giving responses to support the researcher in fulfilling the research objective.

Please respond by filling in the spaces provided.

PART ONE: CARGO SCANNING TECHNOLOGY AND PERFORMANCE

1. This section aims to investigate the effect of cargo scanning technology on performance. Please rate the extent the following affect performance using a scale of 1 to 5 where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent.

Statement	1	2	3	4	5
Undertaking physical checks on cargo					
Mobile scanner which are easily portable					
Gantry Systems used in linear motion					
Portal Systems (Drive-through)					
Training of the personnel in using up to date scanning techniques					
Constant update of the scanning equipment					
Ability to easily share the scanning information					

PART TWO: CARGO TRACKING SYSTEM AND PERFORMANCE

2. This section aims to investigate the effects of cargo tracking system on performance. Please rate the extent the following affect performance using a scale of 1 to 5 where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent.

Statement	1	2	3	4	5
Cargo tracking system helped the department clear more cargo and track the vehicles at a much faster rate and cheaper at the border posts					
Cargo tracking has enhanced data sharing in real time basis					
Real time data helped gain more revenue, prevent illicit or illegal goods from crossing the border					
Cargo tracking has lessened dumping and tax evasion, and helped decrease cargo theft operations					
Cargo tracking gives a channel where data can be reviewed accurately and therefore C&BC generates recommended knowledge into its operational performance					
Use of technology has enhanced quality service and reduced cost of control					

PART THREE: CUSTOM INTELLIGENCE AND PERFORMANCE

3. This section seeks to establish the effects of custom intelligence on performance. Please rate the extent the following measures affect performance using a scale of 1 to 5 where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent.

Statement	1	2	3	4	5
Data collection database use					
On-going monitoring of cargo					
Metrics-focused customs					
Software reliance					

PART FOUR: INTERGRATED SYSTEM AND PERFORMANCE

4. This section seeks to establish the effects of integrated system on performance. Please rate the extent the following measures affect performance using a scale of 1 to 5 where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent.

Statement	1	2	3	4	5
Regulatory transparency have reduced greatly the trade barriers and delays in clearance					
Harmonization in trade has been enhanced due to streamlined submission					
There has been information sharing of trade procedures due to the current reforms.					
Customs Electronic Procedures are user friendly					
There are streamlined checks and clearance					
The revenue obtained has been maximized as a result of coordinated flow of information					

PART FIVE: PERFORMANCE OF THE CUSTOMS AND BORDER DEPARTMENT OF KENYA

5. This section aims to determine the level of performance at the customs and border department in Kenya. Please rate the following measures of performance over the past five years (2016-2020) using a scale of 1 to 5 where 1 is very small extent, 2 is small extent, 3 is moderate extent, 4 is large extent and 5 is to a very large extent.

Statement	1	2	3	4	5
Revenue Collection Amount					
Data Collection					
Trade Facilitation Level					
Society Protection					
Revenue accrued					
Profits/Losses accrued					

End

Thank you for your time

Appendix II: NACOSTI Research License

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