MODERATING EFFECT OF TAXPAYER BEHAVIOR ON INTEGRATED CUSTOMS MANAGEMENT SYSTEM, STANDARDIZED PROCEDURES AND TAX KNOWLEDGE ON CUSTOMS DUTY COMPLIANCE AT MALABA ONE-STOP-BORDER-POST, KENYA

BY

KIPKEMOI ENOCK KIPKOECH

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DECLARATION

Declaration by Student

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

Sign... Date………………………………………

KIPKEMOI ENOCK KIPKOECH

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Declaration by Supervisors

This project has been submitted for examination with our approval as university supervisors

Sign …………………………… Date………………………………….

Prof. RONALD BONUKE

MOI UNIVERSITY

Sign …………………………… Date………………………………….

DR. PETER MAGERO

KENYA SCHOOL OF REVENUE ADMINISTRATION

DEDICATION

I dedicate this research project to my family, friends and colleagues for their ever-growing support in my life especially during the process of my studies at Kenya School of Revenue Administration (KESRA).

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ABSTRACT

The public has for long time complained about the performance of customs and border control department due to its numerous complex procedures for clearance of goods imported to the country. The main objective of this research is to determine the moderating effect of taxpayer behavior on integrated customs management system, standardized procedures and tax knowledge on customs duty compliance at Malaba one-stop-border-post, Kenya. The study was anchored on the following specific objectives; to determine the effect of Integrated Customs Management System, Standardized procedures and tax knowledge on customs duty compliance at Malaba one-stop-border-post, Kenya. The moderating variable was taxpayer behaviour. The following theories were guide to the study; Diffusion of Innovations, Human Capital Theory, Theory of Customs Union and Social rule system theory. The independent variables were Integrated Customs Management System, Standardized procedures and tax knowledge. The dependent variable was customs duty compliance while the moderating variable was taxpayer behavior. A pilot test was conducted with 21 respondents from the Namanga border, who were asked to evaluate the questionnaire on aspects such as clarity, readability, and comprehensiveness. This study employed the explanatory research design that involves the use of structured questionnaires in collecting data from the respondents. The target population was 213 clearing and forwarding officer at Malaba one stop border post. Out of 213 respondents targeted, 166 questionnaires were correctly filled and returned. indicating 77.9% response rate. The study also conducted multiple regression analysis to develop a mathematical model that connects the independent and dependent factors. The study found that Integrated Customs Management System had a positive and significant effect on customs duty compliance $\beta = 0.325$ $p=0.043<0.05$. The study also found that Standardized procedures had a positive and significant effect on customs duty compliance $\beta = 0.464$ $p=0.000<0.05$. Also, tax knowledge positively affects customs duty compliance $\beta = 0.258$ $p=0.040$. The study also found that taxpayer behavior had a positive and significant effect on customs duty compliance $\beta=0.227$ p-value $=0.043<0.05$. The study also further found that tax behavior moderates the relationship between Integrated Customs Management System and customs duty compliance $\beta=0.359$ p-value $=0.000<0.05$. The study also found that tax behavior moderates the relationship between Standardized procedures and customs duty compliance $\beta=0.310$ p-value $=0.000<0.05$. Lastly the study found that tax behavior moderates the relationship between tax knowledge and customs duty compliance $\beta=0.707$ p-value $=0.000<0.05$. For the Kenya Revenue Authority (KRA), the results indicate a need to enhance the deployment and functionality of the ICMS to ensure seamless customs operations and to foster a culture of compliance. KRA should also ensure that standardized procedures are effectively communicated and adhered to at all border points. Furthermore, the Social Rule System Theory is supported, as it illustrates that the social behavior of taxpayer’s adherence to rules and regulations moderates and strengthens the effectiveness of compliance measures. The significant moderation effects revealed that improved taxpayer behavior enhances the effectiveness of ICMS, standardized procedures, and tax knowledge in achieving higher compliance rates. Future research should critically examine specific ICMS components, effective taxpayer education strategies, and long-term behavioral interventions and their effects on customs duty compliance. the study demonstrates that taxpayer behavior significantly moderates the relationships between ICMS, standardized procedures, tax knowledge, and customs duty compliance.

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ABBREVIATIONS

GDP	-	Gross Domestic Product
KRA	-	Kenya Revenue Authority
OECD	-	Organization for Economic Cooperation and Development
TSO:	-	Tax Service Office
VAT:	-	Value Added Tax

OPERATIONAL DEFINITION OF TERMS

Customs duty compliance ensures that businesses operate within the legal framework established by national and international trade agreements, promoting fair trade practices and preventing fraud or evasion World Customs Organization (WCO), (2021)

Integrated Customs Management System: An enhance system that connects KRA’s internal systems with external stakeholders’ systems to achieve faster cargo clearance; with one repository linking various modules. (Kenya Revenue Authority, 2019).

One Stop Border Post: Border facility which is said to combines two different stops for the countrywide border control handling into a single border and consolidating border control roles into a shared space for the existing one nation and entering the other nation (Kieck, 2019).

Standardized procedures: These are procedures in customs perspective which are uniform, simplified and defined on how to carry out certain operations (Chirichenko, 2020).

Tax knowledge: Tax knowledge refers to the level of awareness or understanding that taxpayers possess regarding tax legislation and their responsibilities to comply with tax laws" (Saad, 2022).

Taxpayer behavior: Taxpayer behavior encompasses the range of actions taken by individuals or entities in relation to their tax obligations, including compliance, evasion, avoidance, and planning, influenced by economic, social, psychological, and institutional factors" (Kirchler, 2019).

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter presents the background of the study, the problem statement, the objectives of the study, the research hypotheses, and significance of the study, and the scope of the study.

1.1 Background of the Study

Revenue collection remains a primary function of customs administrations in most developing nations (Babyenda, & Bale, 2021). These nations rely heavily on imports to sustain various aspects of their economies and, to a lesser extent, on the exports of raw and finished goods. The movement of goods and people across their borders places a significant burden on customs administrations (Endres, 2019). This responsibility is further amplified by the challenges of the 21st century, which affect current and future development and necessitate a more proactive and action-oriented approach by customs administrations (Pavlenko, & Triakina, 2020). To enhance revenue collection and facilitate cross-border trade while ensuring societal protection, both global and local initiatives and incentives must be implemented.

Customs compliance refers to the process of conforming to the trade laws and regulations of the countries involved in both exporting and importing activities. This practice entails a comprehensive understanding and adherence to the legal requirements, regulations, and procedures established by national and international trade authorities. Ensuring compliance involves several critical tasks: accurately documenting transactions, measuring and labeling goods correctly, managing the shipping process, paying the appropriate duties and taxes, and providing the necessary customs documentation for goods entering or leaving different countries. Additionally, a thorough grasp of each country's specific regulatory framework for the movement of goods is essential. As highlighted by the OECD (2020), adhering to these standards is crucial for smooth international trade operations.

The traditional system of filing tax returns was fraught with gaps that allowed dishonest taxpayers to under-report their liabilities. The Integrated Tax Management System (ITMS) was introduced to address these issues by requiring taxpayers to register, file returns, and make payments online. This shift to an automated system enhances compliance by streamlining data capture and improving revenue collection for the government. Under ITMS, taxpayers are responsible for fulfilling several tax obligations, including income tax, corporation tax, VAT, withholding tax, and other domestic levies. These obligations were previously prone to non-compliance due to the inefficiencies of the old manual filing system, as noted by Khaguli (2019).

A standardized procedure is to a set of established, uniform steps or methods that are consistently followed to ensure uniformity, accuracy, and efficiency in performing a particular task or process. These procedures are often documented and applied across multiple individuals, departments, or organizations to ensure consistency in results, reduce variability, and maintain quality.

According to Saad (2022), tax knowledge refers to the comprehension and familiarity with the tax system, including the rules, regulations, and processes involved in tax assessment, filing, and payment. It covers an understanding of various tax-related concepts like income tax, corporate tax, deductions, credits, exemptions, and the compliance requirements mandated by tax authorities. Tax knowledge indicates the degree of awareness or understanding taxpayers have about tax laws and their obligations to follow those laws.

Globally, in September 2001 terrorist attack in the US, most countries ‘customs border controls have added emphasis on security of goods entering and leaving countries (Cankar, Seljak & PetkovSek, 2019). This is in conflict with globalization, which calls for borders to become increasingly porous (Jagersma, 2021). Preventing the entry of dangerous goods requires profiling of goods based on certain risk criteria and subsequently subjecting such goods to specified intervention or inspection measures based on the risk channels they are placed in. According to the Muqayi and Manyeruke (2020), in Africa 25% of border delays are caused by infrastructure while 75% are caused by poor trade facilitation. These delays and bureaucracy make African transport costs to be on average, three times more expensive than those of South America and five times more expensive than Asian ones: these impacts negatively on the competitiveness of African goods on the international markets

Many countries having realized the benefits of less restriction to cross border trade are pushing for less restrictive borders and have adopted a strategy known as the One Stop Border Post (OSBP) as a mechanism to improve the movement of goods and services across shared international borders. Where implemented, this strategy has been found to have both economic and customs law enforcement benefits. The origins of the OSBP can be traced back to the 1960s mainly within the Western European countries as well as in the Common Market for Southern Cone regional trading bloc. OSBPs had also been established in the USA and Canada. In the European Union, the establishment of Joint Customs Controls between member states has significantly reduced duplicated inspections at borders, minimized unpredictable delays, and reduced the overall cost of trade (Ndunda, 2018).

Regionally, Ugandan Bureau of Statistics and the Bank of Uganda (2019), and exploit the spatial and time variation across custom points of the introduction of One-Stop-Border-Posts (OSBPs) – a border facility which aims to reduce delays and corruption at the customs. Guided by an augmented gravity model, in which I include informal trade, I use a Poisson pseudo-maximum likelihood estimation to examine whether quarterly informal trade-to-total cross-border trade ratios between Uganda and its neighbors at a certain border post change when an OSBP has been introduced, Bhagwati and Srinivasan, (2021).

In Africa, goods are transported through 10 major corridors, namely Northern, North–South, Dar Central, Dar es Salaam, Nacala, Beira, Maputo, Trans Kalahari, Trans Kaprivi, and Trans Cunene. The large number of border post and roadblocks along those corridors and the inefficiency of the procedures are overwhelmingly costly to traders and businesses in the sub-region. For instance, traders/trucks have to negotiate 47 roadblocks and weigh stations between Kigali (Rwanda) and Mombasa (Kenya); and they have to wait about 36 hours at the South Africa–Zimbabwe border post (Beitbridge). In Southern Africa and EAC countries, customs delays cost the two sub-regions about US$ 48 million and US$ 8 million respectively per annum.

Locally, Ndunda (2018) indicates that the Busia border post has been blamed for delays consequently resulting to congestion at the port of Mombasa. These delays have in the past led to strikes and go slows by transporters and clearing agents. Impatient truckers and traders often offer bribes either to jump queues or expedite clearance of their cargo. Border delays and the absence of enforceable means of settling disputes have been blamed for hindering the opening up of trade in East Africa, even after the launch of the EAC Common Market. As a result of these and other challenges, Ndunda (2013), observed that OSBP would harmonize transit clearance procedures by having officers from two bordering countries handle transit documents concurrently, saving on the time and consequently customs clearance thus reducing the cost of doing business in the region.

1.1.1 Malaba One-Stop-Border-Post, Kenya

Malaba is a border post for both road and rail transit between Kenya and Uganda. At Malaba, the two customs areas are just separated by a bridge. A USAID-funded rail OSBP is already operational at this crossing, and the World Bank is working toward upgrading the road crossing to a full-scale OSBP. Traffic is estimated at 200 heavy goods vehicles (HGVs) per direction per day, the highest volume at any crossing in the EAC (East African Community, 2021). Insufficient parking for waiting trucks is a major constraint, and a new two-lane bridge is also needed to improve traffic flow.

The Malaba border post is one of the busiest and main gateways for both imported and exported goods between Kenya and Uganda. The border post receives heavy traffic flow of trucks, buses, small vehicles and is a key point on the northern corridor. There are well established government institutions that oversee the smooth flow of traffic and trade OECD, (2022). The border has river Malaba as a barrier separating the two countries. There is a railway line and road network connecting Uganda and Kenya. Hie other infrastructure available is the telecommunications, Posta and financial institutions. The financial services are provided by Stanbic and Barclays Banks, which are both in Malaba and Tororo towns. There is no forex bureau in Malaba. However, currency conversion is handled through the informal system of money changers who are registered by the local authorities (GoU, 2021)

Malaba border crossing is one of the most important border crossings in the EAC region. It represents one of the main gates for trade via the Northern Corridor from Mombasa to Kampala and beyond. From February 2021 to February 2022, 55% of Ugandan imports and 35% of Ugandan exports passed through the Malaba border crossing, making it the most valuable border crossing for Ugandan external trade (Ugandan Bureau of Statistics, 2022).

Regarding the trade pattern between Uganda and Kenya, the two countries offer an insightful, exemplary case of strong bilateral economic interdependence, regional economic integration, and joint economic development. Uganda and Kenya are heavily economically intertwined with bilateral trade flows of national economic importance. In 2020, in terms of value, Uganda was the main destination of Kenyan exports with 14.4% of all exports while Kenya was the second most valuable destination of Ugandan exports with 6.84% of all exports (OEC, 2022a, 2022c). During the last 25 years, the exports of Kenya to Uganda have increased at an annualized rate of 6.43%, while exports of Uganda to Kenya have increased at an annualized rate of 13.7%. This shows the joint economic development of both countries and indicates the increasing importance of their bilateral trade. Naturally, these figures do not account for bilateral informal trade which continues to play a major role in the East African Community (EAC) (Siu, 2019)

1.2 Statement of Problem

Kenya and Uganda are important trading partners, but formal trade links between them have been constrained by a myriad of factors which have spurred the growth of informal cross-border trade. Interest in cross-border trade has been overwhelming, but knowledge of its magnitude, determinants, and consequences remains inadequate. Further still, the impact of the establishment of the East African Community Customs Union on cross-border trade remains largely unknown.

Malaba border has been criticized for delays of transit good, high cost of doing business and poor infrastructure. One stop border post strategy is a new concept in Kenya that has been implemented in order to address traditional problems which acted as a barrier to international trade. There has been expansion of the border post to cater for more efficient implementation of the project.

This note highlights how revenue agencies have supported government responses to the unprecedented challenges posed by the COVID-19 pandemic. Their efforts involved maintaining the operation of the revenue system, implementing crisis management measures, supporting economic stability and trade, and protecting the health of both officials and the broader public. Despite these measures, revenue collection has continued to fall short of targets. For example, in the fiscal year 2019/2020, the department collected 443.5 billion Kshs, missing the 462 billion Kshs target. In the fiscal year 2021/2022, the target for customs revenue was set at 484.97 billion Kshs, but only 469 billion Kshs was collected, resulting in a shortfall of 15 billion Kshs (KRA, 2023). This ongoing shortfall indicates that customs duty compliance has not met the set revenue targets, suggesting the need for the agency to implement measures to improve compliance and achieve higher revenue outcomes. Despite arrests by security organs, there's tax evasion in some products from the neighboring countries still finds its way to Kenya's.

Various documented studies have focused on different aspects custom in the other sectors of the economy, a few researches have been done on customs duty compliance in Kenya. This study therefore sought to fill the gap by establishing the moderating effect of taxpayer behavior on Integrated Customs Management System, Standardized procedures and tax knowledge on customs duty compliance at Malaba one-stop-border-post, Kenya.

1.3 Objectives of the Study

The study was guided by general objective and specific objectives.

1.3.1 General Objective

The general objective of the study was to determine the moderating effect of taxpayer behavior on the relationship between Integrated Customs Management System, Standardized procedures and tax knowledge on customs duty compliance at Malaba one-stop-border-post, Kenya.

1.3.2 Specific objectives

The study was guided by the following specific objectives:

i. To determine the effect of Integrated Customs Management System on customs duty compliance at Malaba one-stop-border-post, Kenya.
ii. To establish the effect of Standardized procedures on customs duty compliance at Malaba one-stop-border-post, Kenya
iii. To determine the effect of tax knowledge on customs duty compliance at Malaba one-stop-border-post, Kenya.
iv. To determine the moderating effect of taxpayer behavior on the relationship between:

a) Integrated Customs Management System on customs duty compliance at Malaba one-stop-border-post, Kenya.

b) Standardized procedures on customs duty compliance at Malaba one-stop-border-post, Kenya.

c) Tax knowledge on customs duty compliance at Malaba one-stop-border-post, Kenya

1.4 Research Hypotheses

The research hypotheses of this study were:

1. **H_{01}:** Integrated Customs Management System has no significant effect on customs duty compliance at Malaba one-stop-border-post, Kenya.
2. **H_{01}:** Standardized procedures have no significant effect on customs duty compliance at Malaba one-stop-border-post, Kenya.
3. **H_{01}:** Tax knowledge has no significant effect on customs duty compliance at Malaba one-stop-border-post, Kenya.
4. **H_{04}**: Taxpayer behavior have no significant moderating effect of on the relationship between:

    4a. Integrated Customs Management System on customs duty compliance at Malaba one-stop-border-post, Kenya.

    4b. Standardized procedures on customs duty compliance at Malaba one-stop-border-post, Kenya.

    4c. Tax knowledge on customs duty compliance at Malaba one-stop-border-post, Kenya.

1.5 Significance of the Study

The study is expected to provide insights to KRA on customs duty compliance at Malaba one-stop-border-post, Kenya. This highlighted areas that needed priority attention to ensure revenue targets are met while facilitating trade. It enabled the Kenya Revenue Authority (KRA) to develop improved policies for the One-Stop Border Posts (OSBPs) and enhance their operations at these locations. The findings of the research were valuable as they offered insights through respondents' opinions and the researcher's recommendations, providing clear guidance on addressing issues related to the Integrated Customs Management System, standardized procedures, and customs duty compliance knowledge.

Business traders gained a clearer understanding of the techniques required to meet the customs duty requirements enforced by the state. This information helped traders comprehend the reasons behind the need for voluntary tax compliance. Additionally, the OSBPs contributed to building trust between bordering governments and their neighboring countries. This collaboration enhanced the competitiveness of the trading block, making it a more attractive destination for business. These findings of the study were considered useful by other researchers to understand the approach to undertaking varied research studies. The study findings acted as reference material for future research in relation to Integrated Customs Management System, Standardized procedures and tax knowledge on customs duty compliance.

1.6 Scope of the study

The main focus of this study was to determine the moderating effect of taxpayer behaviour on Integrated Customs Management System, Standardized procedures and tax knowledge on customs duty compliance at Malaba one-stop-border-post, Kenya.

The design was explanatory research design and the target population was 213 customs revenue officers at Malaba one-stop-border-post, Kenya KRA (2022). Malaba OSBP is one of the busiest border points between Kenya and Uganda, handling a significant volume of regional trade within the East African Community (EAC). Malaba OSBP offers critical insights into the flow of goods, services, and customs processes that impact cross-border trade, regional integration, and economic growth. The study use censused survey and primary data was collected by use of questionnaire. The study focused on financial year 2022/2023

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This section discusses the review of concepts, theoretical review, and empirical review on study objectives Integrated Customs Management System, Standardized procedures and tax knowledge on customs duty compliance, Further, the chapter discussed conceptual frameworks and lastly research gap.

2.1 Concepts Review

This section is a review of concepts of independent, dependent and moderating variables

2.1.1 Concept of Customs duty compliance

Customs compliance is a fundamental aspect of international trade and freight forwarding. It ensures that goods are imported, exported, and processed in accordance with legal requirements. This regulatory function helps prevent the entry of illegal or unsafe goods into a country. The frameworks governing customs compliance aim to promote fair trade practices and safeguard the interests of both exporting and importing countries (Doyle, 2020). Since trade and customs regulations vary significantly from one country to another, navigating these differences can be complex for international freight forwarders. Each country has its own set of trade restrictions, laws, regulations governing specific shipments, and applicable taxes and duties. Ensuring compliance is essential not only to avoid fines and damage to reputation but also to prevent unfair trade practices (Khaguli, 2019).

Customs compliance, while challenging, also offers numerous advantages for freight forwarders and their clients. Firstly, having accurate documentation and adhering to customs regulations minimizes delays, leading to higher customer satisfaction and smoother supply chains (Kwaramba, 2021). Additionally, compliance reduces the risk of substantial fines, thereby protecting financial and reputational assets. Effective customs management can also enhance supply chain efficiency, allowing freight forwarders to fulfill their intermediary role between businesses and customs authorities more effectively. By improving the speed and efficiency of border clearances, freight forwarders can maintain strong relationships with stakeholders and end consumers (Tyson, 2020).

2.1.2 Concept of Integrated Customs Management System

The Kenya Revenue Authority (KRA) announced the rollout of the new Integrated Customs Management System (ICMS) at key locations including the Port of Mombasa, the Inland Container Depot Nairobi (ICDN), and various land border customs offices across the country. This advanced system is anticipated to reduce import and export clearance times by up to 60 percent. It aims to streamline operations by eliminating bureaucratic hurdles at ports and land borders, automating previously manual or semi-manual processes, and minimizing system breakdowns. Additionally, the ICMS is expected to reduce paperwork, offering significant cost savings for businesses (KRA, 2022).

The ICMS consolidates all existing customs systems into a single, modern, and efficient platform that leverages the latest technology. This system is designed to seamlessly interface with both internal and external systems, enhancing customs processing and aligning operations with international best practices. Its implementation is expected to improve the ease of doing business not only in Kenya but also throughout the East African Community (EAC) region (KRA, 2023).

In accordance with the World Trade Organization's (2022) requirements for simplifying and harmonizing international trade procedures, the ICMS is set to optimize customs processes further. The new system replaces the outdated Simba 2005/2014, which relied on multiple sub-systems and required several authentication steps, often leading to delays. With the ICMS, clearance times for imports and exports are projected to decrease by at least 60 percent (OECD, 2023).

Historically, all EAC member states, except Kenya, have utilized the Automated System for Customs Data (Asycuda). The ICMS now has the capability to exchange customs declaration information with Asycuda, benefiting countries that depend on the Mombasa port, including Rwanda, Uganda, South Sudan, Burundi, and the Democratic Republic of Congo (KRA, 2022). The new system will enable these countries to better track the movement of their cargo. According to the WTO (2022), issues such as the diversion of transit goods into local markets or the disappearance of containers will be significantly reduced. Furthermore, the ICMS introduces features such as auto-uploading of cargo import data from shipping manifests to prevent falsification, automatic information exchange with iTax to address non-compliant traders, and a virtual electronic auction platform to enhance the accessibility of customs cargo auctions.

2.1.3 Concept of Standardized procedures

The concept of standardized procedures in taxation refers to the consistent application of tax rules and regulations across different taxpayers and jurisdictions to ensure fairness, efficiency, and compliance. These procedures include the methods and protocols set by tax authorities for the administration, collection, and enforcement of taxes. The importance of standardized procedures in taxation is the Organization for

Economic Co-operation and Development (OECD). According to the OECD, "Standardized tax procedures are essential for ensuring fairness, improving compliance, and enhancing the efficiency of tax administration" (OECD, 2019).

At many border points, customs procedures are outdated, relying heavily on extensive paperwork, which makes them very complex and cumbersome. To address the rising costs faced by traders moving goods across borders, many countries have implemented new policies. These policies often align with international best practices and conventions, such as the Revised Kyoto Convention. Consequently, customs procedures have been modernized and standardized through the adoption of a Single Window system, which integrates various processes into one platform.

This modernization includes the adoption of harmonized customs procedure codes, improved infrastructure, and enhanced information sharing. It also involves joint patrols, inter-agency cooperation, and risk management practices. Efficient service level agreements (SLAs) are now part of the framework, aiming to improve customs performance and revenue compliance. The shift towards simplified procedures reflects a broader trend of adopting advanced technological solutions and risk management measures to streamline customs operations and reduce complexity.

2.1.4 Concept of tax knowledge

Tax knowledge refers to the comprehension and awareness of tax laws, regulations, policies, and procedures by both individuals and tax professionals. It includes a variety of skills, such as the capability to correctly interpret and implement tax regulations, identify tax responsibilities, and appropriately take advantage of tax benefits. This knowledge is essential for ensuring effective tax compliance and strategic tax planning (Kasipillai, 2020).

Harris (2021) categorized tax knowledge into two distinct aspects: knowledge gained through common or formal education and knowledge aimed at discovering opportunities for tax evasion. In the first aspect, the education level attained by taxpayers significantly influences their overall understanding of taxation, particularly concerning tax laws and regulations (Eriksen, 2022). Research has shown that a strong foundation in general tax knowledge closely correlates with taxpayers' ability to grasp and adhere to tax laws and regulations (Harris, 2021). Given this connection between tax knowledge and taxpayer understanding, a pertinent question raised by researchers is whether enhancing tax knowledge will lead to increased tax compliance (Singh, 2020).

Knowledge of tax law is believed to play a crucial role in shaping preferences and attitudes toward taxation. However, there is limited research explicitly exploring how specific knowledge of tax regulations influences attitudes toward taxation (Eriksen and Fallan, 2019). Eriksen and Fallan's research highlighted the importance of tax knowledge within a tax system, particularly in a Self-Assessment System (SAS). They suggested that fiscal knowledge is linked to attitudes toward taxation and that a better understanding of tax laws can improve tax behavior. A recent study by Kirchler et al. (2018) also underscores that tax knowledge among individual taxpayers is positively related to tax compliance, consistent with earlier findings by Wahlund and Eriksen (1992).

2.1.5 Concept of taxpayer behaviour

Tax compliance, the adherence to tax laws and regulations by individuals and businesses, is influenced by a variety of taxpayer behavior. These factors can significantly impact whether taxpayers choose to comply with their tax obligations voluntarily or engage in evasion or avoidance. Understanding these factors allows tax authorities to design policies and interventions that promote voluntary compliance, reduce evasion, and enhance overall tax revenue. Tailored approaches that consider the diverse motivations and behaviors of taxpayers are essential for effective tax administration and compliance strategies, Lander (2020).

According to Lim (2019), taxpayer behavior encompasses the attitudes, decisions, and actions of individuals regarding tax compliance and evasion. This behavior is shaped by various factors, such as their understanding of tax regulations, their perception of the fairness of the tax system, the perceived costs associated with compliance, their attitudes towards compliance, subjective norms, perceived behavioral control, and a sense of moral obligation (Rentalangi and Majid, 2018)

Ngugi (2018) observed that taxpayers in Kenya typically adhere to tax obligations primarily due to the fear of repercussions for non-compliance. This finding is supported by Kiarie (2020), who highlighted that government initiatives to enhance tax compliance have heightened taxpayers' awareness of their responsibilities, leading to a greater willingness to pay taxes. Furthermore, several factors affect taxpayer behavior in Kenya, including socio-economic aspects such as income, education, and gender (Kibet, 2019).

2.2 Theoretical Review

The following theories guided the study; Diffusion of Innovations, Theory of Customs Union and Social rule system theory

2.2.1 Diffusion of Innovation Theory

The theory of Diffusion of Innovations as described by Rogers (1995) is well known. Rogers describes diffusion of innovations as: “the process by which an innovation is communicated through certain channels over time among the members of social systems. It is a special type of communication, in that the messages are concerned with new ideas" (Rogers, 1995). Technology diffusion is a crucial and indispensable process that transforms the technological potential of innovative activities into tangible productivity gains. The speed at which technology diffuses can be influenced by various characteristics of the economic environment in which it occurs, and conversely, the diffusion process itself can also impact and shape the environment. A decision to reject an innovation reflects a refusal to accept and adopt the new idea or technology, highlighting the complexity of the decision-making process involved.

To explain the rate at which innovations are adopted, Rogers (1995) identified several key perceived characteristics: relative advantage, compatibility, complexity, trialability, and observability. According to Rogers, these five characteristics significantly influence the adoption rate of innovations and can help explain the varying rates at which technology spreads across different contexts and settings.

Cheung et al. (2000) described complexity as the degree to which an innovation is perceived as difficult to understand and use effectively. Their research found that higher complexity negatively affects the adoption of internet usage among users. Complexity is the inverse of ease of use, which refers to how straightforward it is to understand and operate a technology. Lin (2011) highlighted that the perceived ease of use of new technology strongly impacts its adoption. For instance, user-friendly interfaces in banking services make them easier to use, leading users to develop more positive attitudes and increased acceptance toward these services (Lin, 2011).

Observability pertains to how visible an innovation is within a social system and how easily its benefits can be observed, communicated, and shared with others (Rogers, 2003). Moore and Benbasat (1991) refined this concept into two distinct components: visibility and result demonstrability. In the banking sector, observability means being able to access services at any time and from any location without delays or queues, observing the immediate effects of transactions, and effectively communicating these accessibility benefits to others.

The Diffusion of Innovation (DOI) Theory is one of the earliest and foundational social science theories. It originated in communication studies to explain how an idea or product gains momentum and spreads through a population or social system over time. The result of this diffusion process is that individuals within the social system adopt new ideas, behaviors, or products. Adoption occurs when individuals change their behavior, such as purchasing or using a new product or adopting a new practice or behavior. The key to adoption is the perception of the idea or product as new or innovative, which facilitates and enables the diffusion process to take place.

The adoption of innovations, such as mobile-led financial services, does not happen uniformly across a social system. Instead, it is a gradual and segmented process where some individuals are quicker to adopt than others. Research indicates that early adopters of innovations tend to possess different characteristics compared to those who adopt later, reflecting varying levels of openness and readiness for change (Rogers, 1995).

2.2.2 Theory of Planned Behaviour (TPB)

The theory of planned behaviour developed by Icek Ajzen, attempts to make predictions about how people will act based on the premise that behaviour is usually deliberate. (Ajzen, 1991). This theory was sought to clarify and extend the theory of reasoned action and multi-attribute attitude. Ajzen & Fishbein(1974), states that behavioural decision-making process of human beings is aimed at understanding and predicting the behaviour of the individual and advocating that the successful completion of human behaviour is controlled by the individuals will.

LaMorte (2022) states that human behaviour is governed by three elements: attitudes, subjective norms, and perceived behavioural control. According to Zhang (2018), attitude and subjective norm, in which are influenced by societal views and attitude, which can be either positive or negative are the two elements that govern people's behaviour and intention. Ajzen (1985), also highlights that human behaviour is more often affected by factors of external and objective circumstances rather than completely controlled by the individuals will. The concept aimed that improving the prediction power by including perceived behaviour controls besides subjective norms and attitudes. He continuous to state that the behaviour of individuals within the society is influenced by defined factors, which emanate from certain emerged planned ways. The ability to perform a particular behaviour intention depend on the three attributes.

According to Maelo (2018), subjective norms are view as a mix of presumptive beliefs of the important person and/or group composed with the purpose of adhering to such beliefs. The theory of reasoned action was adapted to Theory of Planed Behaviour (TPB) by introducing theoretical behaviour controls to gear of non-volitional behaviour in predicting intentions as well as authentic behaviours (Nurwanah et al., 2018). According to Schmidt and Bosnjak (2020), three main factors that include behavioural beliefs, normative vies and controlled behaviour have an impact on human behaviour. normative views lead to perceived social pressures or subjective norm, control or self-efficacy and behavioural beliefs provide a positive or negative attitude towards the behaviour in their respective aggregates. The effects of attitude toward the behaviour and subjective norm on intention are moderated by perception of behavioural control. The theory of planned behaviour is a principal theory in various research studies such as alcohol drinking (Reynolds & Klik, 2020), saving behaviour (Satsios & Hadjidakis, 2018) additionally, an individual may also be more likely to conform to the norms and values of a group in order to gain approval or to avoid rejection. Social influence theory assumes that specific individual behavior in taxation, like other forms of behaviours, is fundamentally influenced by social interaction (Bello & Danjuma, 2014)

The focus of this theory is the attitudes and perception of the taxpayer's behaviour that can be influenced through vigorous decision-making process and planning. It also emphasises that the solution to tax compliance to improve tax performance is rooted in changing the attitudes and perception of property owners towards the tax system and the tax administration as whole. To change the individual behaviour of taxpayers, taxpayer awareness programs and tax education need to be embarked on. Sensitizing the taxpayers leads to understanding of their tax obligation and notable milestones can be achieved through taxpayer awareness.

2.2.3 Social rule system theory

Social rule system theory seeks to provide an explanation for the behavior of humans, where the proponents of this theory attribute human behavior to being controlled by a system of rules that exist within and emanate from the social groups they are a part of (Burns et al., 1985). The proponents of the theory indicated that there are important sources of power within a social setting, including selective environmental actions, organizational constraints and facilitators, as well as available technology, resources, human participants, and the influence of both creative and destructive human agency (Powell, 1999).

Social rule system theory suggests that most human social activities are organized and regulated through systems of socially produced and reproduced rules. These rules manifest tangibly in societies through language, customs, codes of conduct, societal norms, and laws, as well as in social institutions like the family, community, market, business enterprises, and government agencies. The theory posits that the creation, interpretation, and enforcement of these social rules are universal in every society, as is their periodic reformulation and transformation (Lotman, 1975).

Human agents, such as individuals, groups, organizations, and communities, are responsible for producing, carrying out, and reforming these systems of social rules, often in ways they neither foresee nor intentionally plan. This does not mean that social rule systems remain static. They can and do change, both from within the society and from external influences. The implementation of rules and the maintenance of order always require cumulative experience, adaptation, and ongoing adjustments. In such ways, innovation, both normative and institutional, is constantly generated. There is an ongoing interplay (a kind of dialectic) between the regulated and the unregulated (Harré, 1979).

The methodology of social rule systems is often regarded as an integrated approach, grounded on social rule system theory. For any system to function effectively, it requires the linkage of various sub-systems, just as a functioning society depends on its own interconnected parts. Several factors can both support and hinder the operation of a system, including technology, available resources, human participants, and the role of creative or destructive human agency (Weru, Kamaara, & Weru, 2013). This theory provides a foundation for understanding interactions between customs officers, customs agents, and taxpayers, explaining how rules emerge from these interactions and evolve into structured procedures.

2.3 Empirical Literature Review

The review of empirical studies focused mainly from the research objectives.

2.3.1 Integrated Customs Management System and Customs Duty compliance

Kollie and Roosevelt (2021) analyzed the effects of the Automated System for Customs Data (ASYCUDA) on customs revenue performance at the Liberia Revenue Authority by utilizing monthly data from the Liberia Revenue Authority (LRA), the Central Bank of Liberia, and other Harmonized Tariff of Liberia series. This data covered a period of four years, from January 2015 to December 2018. The study's findings demonstrated that both ASYCUDA and the total trade of goods and services tax had a beneficial influence on customs revenue performance in both the long and short term. The report further recommended that to enhance customs revenue collection, the Customs and Revenue Authorities should fully implement trade facilitation mandates, capacity building, importers and exporters data, and required trade facilitation techniques, which would increase overall efficiency.

According to Sani (2019), automation systems improve revenue collection by incorporating electronic payment systems like toll revenue collection, automatic fare collection, bus revenue systems, and parking systems. These systems provide service providers with a better audit trail since all transactions are recorded in detail, capturing the time, personnel involved, and location. This significantly prevents revenue loss through misuse, as every move is electronically tracked and verified. Furthermore, automation enables the efficient handling of large transactions, which ensures streamlined operations and greater accuracy in revenue collection.

Gidisu (2019) emphasized that information technology plays a crucial role in reducing the need for human involvement in the production of goods and services. When used properly, IT ensures complex operational tasks are completed efficiently and accurately. The independent variables of Gidisu's study were customs and tax systems like the Integrated Customs Management System (ICMS), ASYCUDA, and automated systems for customs data management, which included electronic scanning and tracking of commodities, Simba system technology, and the automation of customs documentation. Scanners, as non-intrusive cargo verification equipment, were also employed during cargo passage scanning at ports of entry, further enhancing customs processes.

Omosa (2020) assessed the impact of information technology on Kenya's customs revenue performance, with a specific focus on scanner technology, the Cargo Tracking System, and Integrated Customs Management (ICMS). The study divided information technology into three categories: scanner technology (used in transit, export, and import scanning), the cargo tracking system (for containerized cargo transit management), and ICMS (for verification, valuation, and declaration of goods). The evaluation metrics for customs revenue performance included trade facilitation, border security, and revenue collection, which all showed improvements through the use of these technologies.

Kelvin (2021) studied the effects of system automation on revenue collection at the Kenya Revenue Authority (KRA), specifically focusing on the SIMBA system. The study found that KRA had made substantial progress toward automating various departmental processes, with significant strides in internal audit and legal departments. High levels of automation were found in departments like ICT (59%), Finance (71%), Investigations and Enforcement (78%), Traffic Revenue (78%), Marketing and Communication (75%), and Domestic Taxes (95%). The study also linked automation systems such as the air passenger service charge, the Kenya Revenue Authority Valuation System, and the Customs Oil Stocks Information System to the automation of Customs and Border Control operations. Ultimately, the study concluded that the Simba system had a positive impact, resulting in a progressive increase in custom revenues. However, one limitation of the study was its reliance on secondary data, which may have introduced a research bias element.

2.3.2 Standardized procedures and Customs Duty compliance

Montagnat-Rentier and Parent (2022) conducted a detailed study on the standardized procedures within the customs administrations of Francophone Sub-Saharan Africa. Utilizing time series analysis, the study found that in order to accelerate the implementation of standardized customs procedures in the region, significant organizational and management reforms would be required. Additionally, the study highlighted the need for increased technical assistance, enhanced project management, and the adoption of modern customs standards across the board. However, it was noted that the current pace and scope of standardization remain insufficient, particularly in areas such as improving operational management, increasing available resources, and enhancing customs control and enforcement capabilities in the long term.

Ndenga and Ayuma (2018) examined the effects of customs procedures and practices on tax collection at the Customs Service Department in Mombasa County. The study focused on variables such as customs pre-arrival clearance, customs audit visits, and post-clearance audit standards to conceptualize the PCA variable. A total of 110 respondents were selected from a target population of 366, consisting of heads of clearing and forwarding enterprises and Customs Services Department employees. Using a descriptive research design and a stratified random sampling approach, the study analyzed quantitative data through descriptive and inferential statistics, while qualitative data were assessed through content analysis. The results revealed that customs audit visits, pre-arrival clearance, and post-clearance audit standards had the most significant impact on revenue collection at the customs services department, improving efficiency overall.

Standardized procedures for customs clearance have been aligned with international conventions and best practices to balance trade facilitation and customs control more effectively. In the East African Community (EAC), through the Single Customs Territory, harmonization is underway to ensure that goods crossing borders require minimal inspection, thereby reducing both time and costs for traders significantly (Mwai, 2020). The EAC has adopted the One-Stop Border Post (OSBP) system to tackle challenges faced by both customs authorities and traders at border points. OSBPs have demonstrated both economic and enforcement advantages in the region. By standardizing procedures, the system reduces delays at borders, facilitating faster verification by customs administrations and ultimately lowering both the time and costs involved in customs clearance (Odessa, 2021), improving the entire process.

2.3.3 Tax Knowledge and Customs Duty compliance

Research on tax compliance has been conducted extensively (Fahmi & Linda, 2014), but the impact of tax knowledge on compliance varies across different studies. For example, the findings of Fitria and Supriyono (2019) indicate that knowledge and understanding of tax regulations have a positive effect on taxpayer compliance. However, Handayani's (2012) research presents a different conclusion, showing that knowledge and understanding of tax regulations influence taxpayers' willingness to pay rather than their actual compliance. Additionally, research by Tiraada (2013) in

Minahasa District found that tax sanctions significantly impact tax compliance. This is consistent with the findings of Muliari and Setiawan (2011) in East Denpasar, who also noted the influence of tax sanctions on compliance. However, contrary results were reported by Anam, Andini, and Hartono (2019), who found that tax sanctions do not directly affect tax compliance behavior, indicating that the influence of tax sanctions on compliance remains debatable.

Fitria (2019) asserts that tax knowledge significantly affects taxpayers' ability to meet their tax obligations. This is particularly relevant for Micro, Small, and Medium Enterprises (MSMEs), as these businesses often lack specialized human resources in taxation (Prajogo & Widuri, 2020). Consequently, a greater understanding of tax regulations can increase compliance among MSME taxpayers. Susanti (2021) defines tax knowledge as the taxpayer’s familiarity with tax laws and regulations. This level of knowledge is shaped by various factors, including understanding issues related to tax rebates, relief, returns, and deductions, especially for different taxpayer categories like joint assessment filers, businesses, and self-employed individuals, which ultimately enhances their compliance.

According to Alabede, Zainol Ariffin, and Idris (2021), taxpayer knowledge can be developed and improved through education, although it does not necessarily correlate with one's general educational background. Fischer’s model and other studies suggest that a taxpayer's education level is just one of several demographic factors linked to tax knowledge, moral reasoning, opportunities for non-compliance, and overall attitude toward taxation. Despite this, education does not always have a direct effect on tax compliance behavior, highlighting the nuanced relationship between education and tax knowledge in fostering compliance.

Loo, McKerchar, and Hansford (2019) supported the Canada Revenue Authority's (2019) findings, showing that increased tax knowledge significantly improved Malaysian taxpayers' compliance levels, particularly after the self-assessment system was introduced. Their research revealed that taxpayers' ability to comply by reporting taxable income, claiming relief, applying for rebates, and accurately calculating tax liabilities depends on their understanding of tax policies. This emphasizes the crucial role of well-informed taxpayers in enhancing compliance with tax regulations.

The findings of Nzioki and Peter (2021) demonstrate that tax knowledge and education have a strong positive effect on tax compliance in the Real Estate Sector. They argue that raising taxpayers' tax knowledge levels can lead to higher compliance rates. Additionally, they suggest that improving taxpayer awareness of their tax obligations can be more effectively achieved through enhanced tax education services, rather than simply providing basic guidelines for filing returns. This points to the need for more robust educational initiatives to ensure taxpayers fully understand their responsibilities.

Mukasa (2021) agrees that tax knowledge has a significant positive relationship with tax compliance behavior. Their research shows that higher tax knowledge leads to greater compliance, while lower tax knowledge results in lower compliance. The study, which surveyed small and medium registered taxpayers in Kampala’s central division, found that a lack of tax knowledge is one of the main factors contributing to non-compliance. This was attributed to the absence of easy-to-understand taxation materials, which can lead to unintentional non-compliance. The research highlights the importance of providing accessible tax information to improve compliance.

2.3.4 Taxpayer behavior as a Moderator

Taxpayer behavior as a moderator refers to the role that individual attitudes, perceptions, and actions play in influencing the relationship between tax-related factors (such as tax laws, penalties, or incentives) and compliance outcomes. In this context, taxpayer behavior can either strengthen or weaken compliance depending on various factors, such as personal beliefs, ethical considerations, trust in government, or perceived fairness of the tax system, Hansford (2019)

Damayanti et al. (2021) conducted a study investigating the influence of various factors on tax compliance intentions, particularly focusing on attitudes toward tax compliance, descriptive norms, injunctive norms, subjective norms, and personal norms. The research was grounded in the theory of planned behavior and social norms to analyze how these factors shape the tax compliance behavior of individuals. The findings revealed that attitudes towards tax compliance, along with injunctive norms, subjective norms, and personal norms, had a positive and significant impact on the tax compliance intentions of SME owners.

Taxpayer behaviour and residential income tax performance are important factors to consider when evaluating the overall effectiveness of tax systems (Gruber & Saez, 2019). Prior studies have shown that taxpayers are responsive to changes in the tax code, particularly when it comes to residential income taxes (Kleven, Knudsen, Saez, & Schultz, 2020). This responsiveness can take the form of changes in the timing of income and deductions, as well as changes in the composition and level of reported income (Alm & McKee, 2019). The ability of taxpayers to adjust their behaviour in response to tax policies has implications for the effectiveness of the tax system.

On the one hand, if taxpayers are able to reduce their liabilities by changing their behaviour, then the system may be seen as less effective in collecting the desired revenue. On the other hand, if taxpayers are responsive to the incentives created by the tax code, then the system may be seen as more effective in achieving its goals (Feld & Frey, 2020). Previous studies of taxpayer behaviour have identified several factors that affect the responsiveness of taxpayers to changes in the tax code (Friedland & Johnson, 2018). These factors include the complexity of the tax code and the availability of information on the tax system, as well as the relative economic incentives associated with different types of behaviour (Bertrand & Duflo, 2017).

Taxpayer behaviour in Kenya has been shaped by a number of socio-economic and political factors. For instance, Momanyi and Okello (2017), indicates that the Kenyan tax system has struggled due to low compliance levels and weak enforcement mechanisms. This has been ascribed to the lack of taxpayer education and awareness campaign, as well as the prevalence informal settlement for example extensive slums. Furthermore, the study found that the Kenyan government has been unable to adequately enforce tax legislation, and has instead focused more on revenue collection for easily accessible tax heads such as PAYE, Income tax and Value added tax. As a result, property owners have become reluctant to comply with their tax obligations.

2.4 Summary of the Literature and Research Gaps

Montagnat-Rentier and Parent (2022) conducted a study on the standardized procedures in the customs administration of Francophone Sub-Saharan Africa, employing time series analysis as their methodological approach. Their findings indicated that to accelerate the implementation of standardized customs procedures in this region, significant organizational and management reforms are required. Additionally, they emphasized the need for adequate technical assistance, robust project management, and the effective adoption of modern customs standards. Despite these insights, the use of time series analysis reveals a methodological gap, suggesting that alternative analytical approaches might offer further insights.

Loo, Mckerchar, and Hansford (2019) corroborated the findings of the Canada Revenue Authority (2019), revealing that acquiring tax knowledge significantly impacts compliance levels in Malaysia, especially following the introduction of a self-assessment system. Their research indicated that taxpayers' ability to comply with tax regulations (such as reporting taxable income, claiming reliefs, and calculating tax liabilities) depends heavily on their level of tax knowledge. However, as the study was conducted in Malaysia, it presents a contextual gap, which implies that results might vary in different regions or under different tax systems.

According to Sani (2019), system automation plays a crucial role in enhancing revenue collection efficiency. This improvement is largely attributed to the electronic payment systems used in applications such as toll revenue collection, automatic fare collection, bus revenue systems, and parking systems. The study highlights that automation provides a detailed audit trail, capturing all transaction details by time, identity, and location, which helps prevent revenue loss through fraudulent activities. Moreover, automation enables the efficient handling of large transactions, contributing to overall revenue enhancement. Revenue collection was used while this study will use custom duty compliance hence conceptual gap

2.5 Conceptual Framework

Conceptual framework is a set of broad ideas and principles that are taken from relevant fields of enquiry to be used to structure a subsequent presentation (Kombo & Tromp, 2009). The independent variables were Integrated Customs Management System, Standardized procedures and tax knowledge. The dependent variable was customs duty compliance while the moderating variable was taxpayer behavior as shown in figure 2.1.

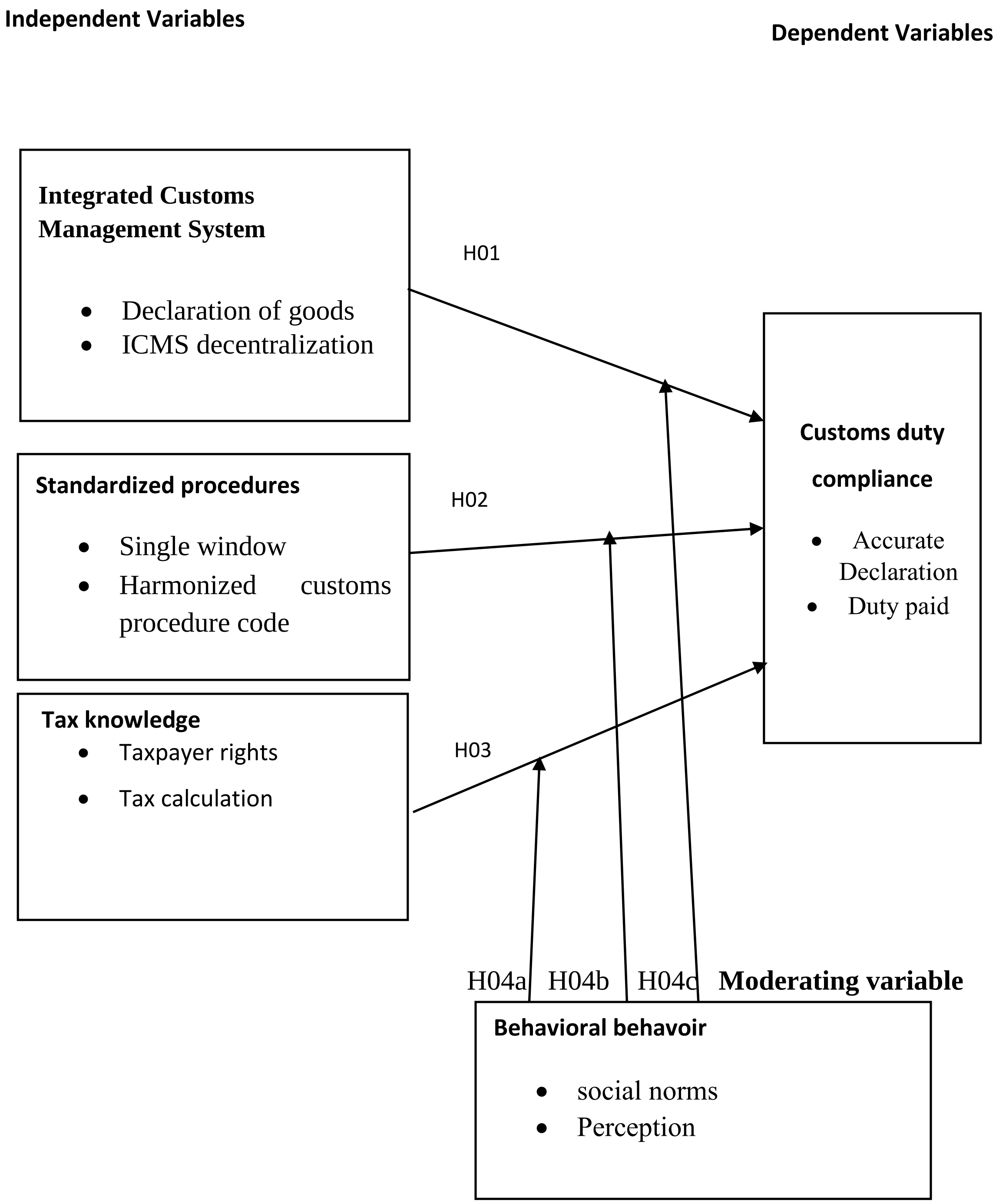

Figure 2.1: Conceptual Framework

Source: -Author (2024)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presented research design, target population, data collection tools and methods and data analysis and presentation of results.

3.2 Research Design

According to Kothari (2011), research design constitutes the framework, strategy, and plan employed by researchers to address research questions. It serves as a comprehensive roadmap, outlining the techniques and methods that direct the research process. Essentially, a research design is a detailed plan or structure that provides solutions to research problems by offering answers to the research questions (Cooper & Schindler, 2006). In this study, an explanatory research design was utilized, which facilitated a deeper understanding of the phenomena by exploring and quantifying the causal relationships between various variables.

3.3 Target Population

Population refers to the entire group of individuals or items that a researcher intends to study or assess (Creswell & Daly, 2015).The target population was 213 clearing and forwarding officer at Malaba one stop border post, KRA, (2023) Census survey was used therefore no sampling in this study.

3.4 Data Collection

The study utilized primary data collected through self-administered questionnaires designed to align with the research objectives, hypotheses, and relevant literature. A closed-ended structured questionnaire was employed to gather this data. These closed-ended questions offered respondents a range of predefined answer options, which facilitated uniformity in responses, making the data easier to code and analyze systematically.

3.5 Data Collection Procedure

A permit from the National Commission for Science, Technology, and Innovation (NACOSTI) and an introductory letter from Moi University clarified that the research was conducted solely for academic purposes. This documentation was used to assure respondents of confidentiality and to encourage them to provide objective responses. Additionally, a drop-and-pick method was employed, allowing respondents ample time to complete the questionnaire at their convenience. Questionnaires were dropped off at the respondents' locations and picked up after a specified period. The exact duration for the drop and pick process varied depending on the respondents' availability and location. On average, the questionnaires were picked up after approximately one week to ensure respondents had ample time to provide thoughtful answers. Due to the extensive distribution of the sample, two research assistants were trained to assist in data collection. The training primarily focused on personal presentation skills, proper etiquette, and ethical considerations to ensure that data collection was conducted professionally and respectfully.

3.6 Pilot Testing

According to Kothari (2006), pilot-testing is a crucial step in the research process as it helps identify ambiguous questions and unclear instructions in the research instruments. The pilot study aimed to determine whether the questionnaire was reliable and valid for collecting the necessary data before the main research commenced. A pilot test was conducted with 21 respondents from the Namanga border, who were asked to evaluate the questionnaire on aspects such as clarity, readability, and comprehensiveness. The respondents involved in the pilot test were not included in the final research sample.

3.6.1 Reliability of Research Instruments

The study employed Cronbach's Alpha to assess the reliability of the questionnaire and ensure internal consistency among the items. According to Cooper and Schindler (2013), Cronbach's Alpha measures reliability on a scale from 0 to 1. A Cronbach's Alpha score ranging between 0 and 0.6 indicates low reliability of the instrument, while a score of 0.7 or higher reflects a high level of internal consistency and reliability. This method was used to confirm that the questionnaire was both reliable and consistent for collecting accurate data.

3.6.2 Validity of Research Instruments

According to Mugenda and Mugenda (2008), validity refers to the extent to which the results obtained from analysing primary data accurately represent the phenomenon being studied. Veal and Darcy (2017) similarly describe validity as the degree to which the information collected by the researcher reflects the true nature of the phenomenon under investigation. Cook and Lawless (2006) highlight that face validity, which is based on subjective judgment rather than empirical testing, is considered the weakest form of validity (Robertson & Kandola, 1982). In contrast, Anastasi and Urbina (1997) define construct validity as the extent to which a test measures a theoretical construct. This type of validity is assessed by comparing the test with other instruments that measure similar constructs to determine how closely correlated the results are. Criterion-related validity involves correlating test results with another relevant criterion of interest (Pallant, 2011). Creswell (2013) defines content validity as the degree to which the items on the instrument and their scores cover all possible aspects of the content being measured. This study employed content validity, and factor analysis was conducted using the Kaiser-Meyer-Olkin (KMO) measure to assess sampling adequacy. According to Neuman (2014), a KMO index of 0.5 or above is considered acceptable for factor analysis.

3.7 Diagnostic Tests

In scientific research, diagnostic tests are essential for empirically assessing the impact of potential study design flaws and evaluating the accuracy of diagnostic measures (Lijmer et al., 1999). For this study, four key diagnostic tests were conducted prior to data analysis to validate the research findings. These included tests for multicollinearity to ensure independent variables were not excessively correlated, normality to verify that the data followed a normal distribution, linearity to confirm that relationships between variables were linear, and homoscedasticity to check for consistent variance in residuals across levels of the independent variables.

3.7.1 Multicollinearity Test

Multicollinearity occurs when there is a high correlation among independent variables, which can obscure the true relationships between variables in a regression analysis (Keith, 2006). When multicollinearity is low, researchers can interpret regression coefficients as the direct effects of the independent variables on the dependent variable. To test for multicollinearity, the Variance Inflation Factor (VIF) will be computed using statistical software such as SPSS. High multicollinearity inflates the standard errors of the coefficients, which can render some variables statistically insignificant despite their true significance (Osborne & Waters, 2014). The VIF measures the correlation level between predictor variables and estimates the extent to which variance is inflated due to linear dependence with other explanatory variables. The assessment will include computing both the VIF and its reciprocal, tolerance. A VIF value less than 10 is considered acceptable, indicating that multicollinearity is not a significant issue.

3.7.2 Normality test

The normality test assesses whether a dataset follows a normal distribution, which is crucial for many statistical analyses (Doornik & Hansen, 2008). In this study, normality was evaluated using the Shapiro-Wilk test, which is effective for small to moderate sample sizes. Additionally, the Jarque-Bera test was employed; originally designed for models with constant conditional variance and without functional dependence between mean and variance parameters, it provides a measure of the deviation from normality by comparing skewness and kurtosis. These tests help ensure that the data's distribution aligns with the assumptions required for accurate statistical analysis.

3.7.3 Homoscedasticity test

Homoscedasticity refers to the consistency of the variance or spread of errors around the regression line (Lani, 2011). In regression analysis, this means that the variance of the residuals, or the deviations of data points from the regression line, should be constant across all levels of the independent variable. If this assumption is violated, the statistical results could be compromised due to biased estimates of the coefficients. To test for homoscedasticity in this study, the Probability of Chi-square test was utilized. A p-value greater than 0.05 indicates that the assumption of homoscedasticity is upheld, suggesting that the residuals have a constant spread across the regression line.

3.7.4 Linearity Test

Linearity tests evaluate whether the relationship between the dependent variable and the independent variable(s) in a regression model adheres to a linear pattern. If this assumption is violated, it can result in biased coefficient estimates and inaccurate predictions. In this study, the deviation from linearity was assessed at a 95% confidence level. A p-value greater than 0.05 indicates that the assumption of linearity is not violated, while a p-value less than 0.05 suggests that the linearity assumption has been breached.

3.8 Data Analysis

Data analysis involves the process of condensing and organizing collected data into manageable groups and tabulating it for clearer interpretation (Kothari, 2011). This process enables researchers to categorize data into meaningful and relevant groups. In this study, quantitative data were coded and entered into the computer for analysis. The data were then summarized, with results presented through tables, charts, and graphs. Descriptive statistics, which include measures of central tendency and measures of dispersion, were displayed in tables to provide a clear overview. Additionally, inferential statistics, such as correlation and regression analyses, were also presented in tables to explore relationships between variables and assess the strength and direction of these relationships. The study's linear regression model was adopted;

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

Where;

Y = Customs duty compliance

β_0 = Constant (Coefficient of intercept)

X_1 = Integrated Customs Management System

X_2 = Standardized procedures

X_3 = tax knowledge

$\boldsymbol{\varepsilon}$ = Error Term

β_1, β_2 and β_3 = Regression coefficient

M = Taxpayer behavior

X_1 M= Integrated Customs Management System * Taxpayer behavior

X_2 M= Standardized procedures * Taxpayer behavior

X_3 M= Tax knowledge * Taxpayer behavior

Equation (ii)

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

Equation (iii)

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + M + M*X_1 + \varepsilon$

Equation (iv)

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + M + M*X_1 + M*X_2 + \varepsilon$

Equation (v)

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + M + M*X_1 + M*X_2 + M*X_3 + \varepsilon$

3.9 Measurement of Study Variables

The following table gives an outline of the dependent and independent variables and how they was measured on moderating effect of taxpayer behavior on Integrated Customs Management System, Standardized procedures and tax knowledge were operationalized using on customs duty compliance.

Table 3.1: Operationalization of Study Variables

Variables	Source/Authors	Data collection instrument	Measurement scale	Types of Analysis
Independent variable				
Integrated Customs Management System	Kollie and Roosevelt (2021)	Questionnaire	5-point Likert scale	Multiple regression analysis
	Montagnat-Rentier and Parent (2022)	Questionnaire	5-point Likert scale	Multiple regression analysis
Standardized procedures	Kasipillai, 2020).	Questionnaire	5-point Likert scale	Multiple regression analysis
Tax knowledge	Gruber & Saez, 2019).	Questionnaire	5-point Likert scale	Multiple regression analysis
Moderating Variable				
Taxpayer behavior	(KRA, 2023).	Questionnaire		Multiple regression analysis
Dependent Variable				
Customs duty compliance				

(Source: Research 2024)

3.10 Ethical Issues

A permit from the National Commission for Science, Technology, and Innovation (NACOSTI) and an introductory letter from Moi University were provided to clarify that the research was conducted solely for academic purposes. This was intended to assure respondents of the confidentiality of their responses and to encourage honest and objective participation. All data collected were kept confidential and anonymized to safeguard respondents' privacy. Each respondent was assigned a unique identifier rather than using personal names. Participation was voluntary, with the option to withdraw at any stage without prior notice. The collected data were secured through password protection, ensuring that only authorized personnel could access the sensitive information.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION OF FINDINGS

4.1 Introduction

This chapter presents a detailed analysis and interpretation of the questionnaire data gathered in line with the study's objectives. It offers insights into how taxpayer behavior moderates the relationship between the Integrated Customs Management System, standardized procedures, and tax knowledge on customs duty compliance at the Malaba one-stop border post in Kenya.

4.2 Pilot Test

The pilot test aimed to verify the data's accuracy and the honesty of the questionnaire responses. A sample size of 10%, consisting of 21 respondents, was analysed for this purpose. The pilot test results indicate that the data is valid.

4.3 Reliability Test

The study employed Cronbach's Alpha to conduct a reliability test, aiming to confirm the internal consistency of the items. As noted by Cooper and Schindler (2013), Cronbach's Alpha provides a value between 0 and 1. A score between 0 and 0.6 suggests low instrument reliability, while a score of 0.7 or higher indicates high and reliable internal consistency. Customs duty compliance has Cronbach’s Alpha of 0.962>0.7. The Integrated Customs Management System has Cronbach’s Alpha of 0.986>0.7. Standardized procedures have a Cronbach’s alpha of 0.979>0.7, tax knowledge has a Cronbach’s alpha of 0.951>0.7. Lastly tax behaviour has a Cronbach’s alpha of 0.960>0.7. This implied that the responses are reliable.

Table 4.1: Reliability Tests

Variable	**Cronbach's Alpha**	**N of Items**
Customs Duty Compliance	0.962	5
Integrated Customs Management System	0.986	5
Standardized Procedures	0.979	4
Tax Knowledge	0.951	5
Taxpayer Behavior	0.960	4

(Source: Research 2024)

4.4 Response Rate

The response rate in research indicates the degree of participation and the reliability of the collected data. It is calculated by dividing the number of completed survey responses by the total number of individuals invited to take part in the survey. A higher response rate enhances the study's accuracy and real-world applicability. A response rate of 60% or more is usually respectable enough to get reliable results. Out of 213 respondents targeted, 166 questionnaires were correctly filled and returned. indicating 77.9% response rate. Table 4.2 presents summary of respondent details.

Table 4.2: Response Rate Analysis

Response Rate	Frequency	Percentage (%)
Response	166	77.9%
No Response	47	22.1%

(Source: Research 2024)

4.5 Demographics Analysis

Demographic analysis is crucial for understanding the composition and dynamics of populations, which can inform a wide range of decisions and policies. Table 4.3, reveals a balanced gender distribution among respondents, with 48.8% identifying as female (81) and 51.2% as male (85). Age-wise, the distribution is notably even across three age categories: 18 to 30 years, 31 to 43 years, and 56 years and above, each comprising 26.5% of the sample (44), while respondents aged 44 to 55 years make up 20.5% (34). Regarding educational attainment, respondents with a Doctorate level education constitute the largest group at 6.6% (11), followed by those at the Postgraduate level at 21.1% (35), Secondary school at 20.5% (34), Undergraduate level at 36.7% (61), and Primary school at 15.1% (25). This diverse demographic profile provides a comprehensive representation of the population under study.

Table 4.3: Demographics Analysis

		Count	Percent %
Gender	Female	81	48.8%
	Male	85	51.2%
Age	18 to 30 years	44	26.5%
	31 to 43 years	44	26.5%
	44 to 55 years	34	20.5%
	56 years and above	44	26.5%
Education	Doctorate Level	11	6.6%
	Postgraduate Level	35	21.1%
	Primary School	25	15.1%
	Secondary school	34	20.5%
	Undergraduate Level	61	36.7%

(Source: Research 2024)

4.6 Descriptive Statistics

The study shows the research finding on the descriptive statistic in the data collected so as to establish the standard deviations, skewness, mean and kurtosis of the variables.

4.6.1 Descriptive Statistics for Integrated Customs Management System

The descriptive statistics of Table 4.4 presents the descriptive statistics for the questionnaire items regarding the Integrated Customs Management System (ICMS). The statement "Traders have benefitted immensely from this system since it facilitates real time responses from the customs department" received a mean score of 3.95 (standard deviation = .805), indicating that respondents generally agree with this statement. The skewness of -.060 suggests a slight leftward skew, while the kurtosis of -1.279 indicates a relatively flat distribution compared to a normal distribution. For the statement "The system is supported by rapid response units strategically along the transit route," the mean score is 3.98 (standard deviation = .827). This reflects a general agreement among respondents. The skewness of -.009 shows an almost symmetrical distribution, and the kurtosis of -1.385 suggests a flatter distribution. The item "Using ICMS decentralizes customs operations affecting time costs" has a mean score of 4.11 (standard deviation = .824), indicating that respondents agree with this assertion. The skewness of .000 indicates a perfectly symmetrical distribution, and the kurtosis of -1.528 implies a flatter than normal distribution. Regarding the statement "ICMS is critical in streamlining customs procedures," the mean is 4.15 (standard deviation = .820), showing agreement among the respondents. The skewness of -.034 points to a near-symmetrical distribution, and the kurtosis of -1.512 suggests a flatter distribution. Finally, the statement "The introduction of online monitoring of cargo by use of the Electronic Cargo Tracking System helps track and monitor cargo" has a mean of 4.01 (standard deviation = .798), indicating general agreement. The skewness of -.011 suggests a nearly symmetrical distribution, and the kurtosis of -1.426 indicates a flatter distribution. The aggregate mean of 4.04 indicated that there was a general agreement with the statements

Table 4.4: Descriptive statistics Integrated Customs Management System

	N	Mean	Std. Deviation	Skewness	Kurtosis
Traders have benefitted immensely from this system since it facilitates real time responses from the customs department	166	3.95	.805	-.060	-1.279
The system is supported by rapid response units strategically along the transit route		3.98	.827	-.009	-1.385
Using ICMS decentralizes customs operations affecting time costs.		4.11	.824	.000	-1.528
ICMS is critical in streamlining customs procedures.		4.15	.820	-.034	-1.512
The introduction of online monitoring of cargo by use of the Electronic Cargo Tracking System helps tracks and monitors cargo		4.01	.798	-.011	-1.426
Mean		4.04			

(Source: Research 2024)

4.6.2 Descriptive Statistics for Standardized Procedures

The table 4.5 shows that the statement "Standardized clearance procedures at the OSBP prevent duplication" received a mean score of 4.04 (standard deviation = 0.835), indicating a high level of agreement among respondents, with a skewness of -0.097 and kurtosis of -1.405. These values suggest that responses are fairly symmetrically distributed around the mean but are more platykurtic, indicating a wider spread of scores with fewer extreme outliers. The efficiency of the "Single window system in reducing costs" was rated with a mean of 3.77 (standard deviation = 0.842). The skewness of -0.089 and kurtosis of -1.302 imply that responses are slightly negatively skewed and also platykurtic, suggesting that most respondents agree or strongly agree, with few responses at the extremes. For the statement "Standardized customs procedure codes reduce clearance time," the mean was 4.06 (standard deviation = 0.809). A skewness of 0.000 indicates a perfectly symmetrical distribution, and a kurtosis of -1.471 shows a flat distribution, indicating a broad consensus towards agreement with fewer extreme values. Lastly, the statement "Standardized procedures at OSBP decrease time taken in the border crossing of goods" had a mean of 4.03 (standard deviation = 0.812), with a skewness of -0.055 and kurtosis of -1.481. This suggests a near-symmetrical distribution and a flat curve, denoting general agreement with limited extreme responses. The consistently low skewness and negative kurtosis values across all items indicate a relatively uniform agreement with fewer deviations, highlighting the perceived efficiency and effectiveness of these standardized procedures. The aggregate mean of 3.98 indicated that there was a general agreement with the statements representing standardized procedures.

Table 4.5: Descriptive statistics Standardized Procedures

	N	Mean	Std. Deviation	Skewness	Kurtosis
Standardized clearance procedures at the OSBP prevent duplication	166	4.04	.835	-.097	-1.405
Single window system is efficient in reducing costs		3.77	.842	-.089	-1.302
Standardized customs procedure codes reduce clearance time		4.06	.809	.000	-1.471
Standardized procedures at OSBP decreases time taken in the border crossing of goods		4.03	.812	-.055	-1.481
Mean		3.98			

(Source: Research 2024)

4.6.3 Descriptive Statistics for Tax Knowledge

Table 4.6 implied that "I have attended seminars on customs matters": The mean score for this item is 4.15 (standard deviation = 0.865), indicating that, on average, respondents tend to "Agree" with having attended seminars on customs matters. The skewness of -0.231 suggests a slight tendency towards more positive responses, while the kurtosis of -1.357 indicates a distribution with lighter tails than the normal distribution, implying that most responses cluster around the mean with fewer extreme values. For "I understand tax laws and regulations": This item has a mean of 4.18 (standard deviation = 0.805), suggesting that respondents generally "Agree" with their understanding of tax laws and regulations. The skewness of -0.011 indicates a nearly symmetrical distribution of responses, and the kurtosis of -1.456 suggests a relatively flat distribution, with responses concentrated around the mean and fewer outliers. For "I know the due date for filing my tax returns": With a mean of 4.00 (standard deviation = 0.802), this item reflects that respondents "Agree" on their knowledge of due dates for tax returns. The skewness of 0.000 suggests a perfectly symmetrical distribution, while the kurtosis of -1.441 denotes a distribution with lighter tails, similar to the previous items, implying that responses are centered around the mean. For "I always attended any tax education or awareness programs": The mean score of 3.92 (standard deviation = 0.846) indicates that respondents are somewhat positive but not strongly in agreement with always attending tax education or awareness programs. The skewness of -0.093 suggests a slight tendency towards more positive responses, and the kurtosis of -1.091 reflects a distribution with lighter tails and a concentration of responses around the mean. For "I’m familiar with the penalties for late filing or non-payment of taxes": This item has a mean of 3.91 (standard deviation = 0.880), showing that respondents "Agree" to being familiar with penalties for late filing or non-payment of taxes. The skewness of -0.201 suggests a mild skew towards positive responses, and the kurtosis of -0.969 indicates a slightly flatter distribution with responses clustering around the mean. The aggregated mean of 4.08 implies a high level of agreement with items representing tax knowledge.

Table 4.6: Descriptive statistics Tax Knowledge

	N	Mean	Std. Deviation	Skewness	Kurtosis
I have attended seminars on customs matters	166	4.15	.865	-.231	-1.357
I understand tax laws and regulations		4.18	.805	-.011	-1.456
I know due date for filing my tax returns		4.23	.802	.000	-1.441
I always attended any tax education or awareness programs		3.92	.846	-.093	-1.091
I’m familiar with the penalties for late filing or non-payment of taxes		3.91	.880	-.201	-.969
Mean		4.08			

(Source: Research 2024)

4.6.4 Descriptive Statistics for Taxpayer Behaviour

Table 4.7 provides descriptive statistics for taxpayer behavior as measured by the questionnaire items. The mean scores for each item indicate a generally positive perception among respondents regarding the tax system and their tax compliance behaviors. For "I believe that the tax system is fair": The mean score for this item is 4.22 (standard deviation = 0.881), suggesting that respondents generally agree that the tax system is fair. The skewness of -0.215 and kurtosis of -1.217 indicate that responses are slightly skewed towards higher agreement and have a platykurtic distribution, meaning the responses are relatively spread out with fewer extreme values. For "I find the process of tax compliance is burdensome": With a mean of 3.90 (standard deviation = 0.844), respondents are slightly more inclined to agree that tax compliance is burdensome. The skewness of -0.069 and kurtosis of -1.195 suggest that responses are nearly symmetrical with a slightly platykurtic distribution, indicating a fairly even spread of responses. For "Paying taxes is my civic duty": The mean score of 4.09 (standard deviation = 0.824) reflects a strong agreement among respondents that paying taxes is considered a civic duty. The skewness of -0.088 and kurtosis of -1.359 show a near-normal distribution with a slight tendency towards agreement and a relatively flat peak. For "I follow the rules and pay taxes correctly and on time": The mean score of 4.03 (standard deviation = 0.834) indicates that respondents strongly agree with this statement, suggesting a high level of compliance and punctuality in paying taxes. The skewness of -0.120 and kurtosis of -1.398 reflect a nearly normal distribution with a slight skew towards higher agreement and a flatter distribution shape. Taxpayer behaviour had an aggregate mean of 4.06, indicating that on average a respondent was more likely to choose agree as a score for each of the items.

Table 4.7: Descriptive statistics Taxpayer Behaviour

	N	Mean	Std. Deviation	Skewness	Kurtosis
I believe that the tax system is fair	166	4.22	.881	-.215	-1.217
I find the process of tax compliance is burdensome		3.90	.844	-.069	-1.195
Paying taxes is my civic duty		4.09	.824	-.088	-1.359
I follow the rules and pay taxes correctly and on time		4.03	.834	-.120	-1.398
Mean		4.06			

(Source: Research 2024)

4.6.5 Descriptive Statistics for Customs Duty Compliance

Table 4.8 shows that For the statement "Compliance of customs and border control department in Kenya is measured by revenue collection" (M = 4.07, standard deviation = 0.852), the mean score indicates a general agreement among respondents about the measurement of compliance. The standard deviation suggests a moderate spread of responses around the mean. The skewness value of -0.165 indicates a slight tendency towards higher agreement, though not strongly skewed. The kurtosis value of -1.327 shows that responses are slightly platykurtic, meaning they are less peaked and flatter than a normal distribution.

The item "I file my returns on time" (M = 3.81, standard deviation = 0.844) also demonstrates a positive mean, reflecting agreement with the statement. The standard deviation indicates a moderate variability in responses. Skewness of -0.069 suggests a near-normal distribution with a very slight lean towards agreement. The kurtosis of -1.195 points to a distribution that is slightly flat compared to a normal distribution. For the statement "I file my returns accurately" (M = 4.20, standard deviation = 0.816), the mean value suggests that respondents generally agree that they file returns accurately. The standard deviation reflects moderate dispersion in responses. The skewness of 0.000 indicates a perfectly symmetrical distribution, while the kurtosis of -1.500 signifies a relatively flat distribution. The item "I'm aware of self-assessment" (M = 4.04, standard deviation = 0.826) has the highest mean, suggesting strong agreement regarding awareness of self-assessment. The standard deviation shows moderate variation among responses. The skewness value of -0.079 implies a slight negative skew, indicating a small tendency towards higher agreement. The kurtosis of -1.533 indicates a distribution that is more flat than normal. Lastly, the statement "I remit my customs duty to KRA in time" (M = 3.87, standard deviation = 0.849) reflects a high level of agreement with the timely remittance of customs duties. The standard deviation indicates some variability in responses. The skewness of -0.146 denotes a mild negative skew, with a slight tendency towards higher agreement. The kurtosis of -1.196 suggests a slightly flatter distribution. The mean aggregate of e for the items representing Customs Duty Compliance, The aggregate mean was 4.00 implying a higher scores implying high levels of agreement with the items representing customs duty compliance.

Table 4.8: Descriptive statistics Customs Duty Compliance

	N	Mean	Std. Deviation	Skewness	Kurtosis
Compliance of customs and border control department in Kenya is measured by revenue collection	166	4.07	.852	-.165	-1.327
I file my returns on time		3.81	.844	-.069	-1.195
I file my returns on accurately		4.20	.816	.000	-1.500
I'm aware of self – assessment,		4.04	.826	-.079	-1.533
I remit my customs duty to KRA in time		3.87	.849	-.146	-1.196
Mean		4.00			

(Source: Research 2024)

4.7 Factor Analysis

Factor analysis is often employed for dimension reduction, a technique that simplifies complex datasets by transforming them from a high-dimensional space into a lower-dimensional one. Essentially, this method represents the original matrix as the product of two smaller matrices, with some random noise added. By projecting data from a higher-dimensional space, such as from three dimensions to two dimensions, factor analysis helps to model the variability among observed variables more effectively (Engelhardt, 2013).

4.7.1 Factor Diagnostic Test

According to Kaiser (1974), the Kaiser-Meyer-Olkin (KMO) test evaluates the appropriateness of data for factor analysis by measuring the extent of inter-variable correlations. The KMO score ranges from 0 to 1, with values above 0.5 indicating that the data is suitable for factor analysis. Additionally, Bartlett's test of sphericity assesses whether the correlation matrix is significantly different from an identity matrix, suggesting that the correlations among variables are sufficient for factor analysis if Bartlett's test yields a significant result. Customs Duty Compliance: The KMO value for Customs Duty Compliance was 0.905, indicating an excellent level of sampling adequacy (Kaiser, 1974). Bartlett’s test of sphericity was significant,

$p<.05$, suggesting that the correlation matrix was significantly different from the identity matrix and factor analysis could be performed. Integrated Customs Management System: For Integrated Customs Management System, the KMO value was 0.892, also reflecting a high degree of sampling adequacy. Bartlett’s test of sphericity was significant, $p<.05$, supporting the appropriateness of factor analysis. Standardized Procedures: The KMO measure for Standardized Procedures was 0.742, which is considered good, though lower than the other variables. Bartlett's test of sphericity was significant, p<.05, indicating that the data is suitable for factor analysis. Tax Knowledge: The KMO value for Tax Knowledge was 0.843, reflecting good sampling adequacy. Bartlett's test of sphericity was significant, p<.05, validating the appropriateness of factor analysis. Taxpayer Behavior: For Taxpayer Behavior, the KMO measure was 0.852, suggesting good sampling adequacy. Bartlett's test of sphericity was significant, p<.05, confirming that factor analysis could be effectively conducted. In summary, all KMO values were above the recommended threshold of 0.5 (Kaiser, 1974), and Bartlett's test for sphericity was significant for each variable group, indicating that the data across all groups were suitable for factor analysis.

Table 4.9: KMO& Bartlett's test

	Customs Duty Compliance	Integrated Customs Management System	Standardized Procedures	Tax Knowledge	Taxpayer Behavior
Kaiser-Meyer-Olkin test	0.905	0.892	0.742	0.843	0.852
Bartlett's test for sphericity (sig)	0.000	0.000	0.000	0.000	0.000

(Source: Research 2024)

4.7.2 Convergent Validity

Convergence validity evaluates whether items intended to measure the same theoretical construct, such as CDC (Customs Duty Compliance), ICMS (Integrated Customs Management System), SP (Standardized Procedures), TK (Tax Knowledge), and TPB

(Taxpayer Behavior), actually do so. Generally, a correlation of over 0.70 is considered indicative of acceptable convergent validity. Convergent Validity Analysis Convergent validity was assessed by examining the correlations among items designed to measure the same construct. For each construct, items should exhibit high correlations, typically above 0.70, to demonstrate acceptable convergent validity. The results for each construct are detailed below, The items measuring Customs Duty Compliance (CDC1, CDC2, CDC3, CDC4, CDC5) all showed strong correlations with one another, with coefficients ranging from 0.769 to 0.887. Specifically, CDC1 and CDC2 had the highest correlation ($r = 0.887$), while CDC5 and CDC3 had the lowest but still substantial correlation ($r = 0.769$). These results indicate that the items effectively measure the same construct, supporting the convergent validity of the Customs Duty Compliance scale. The items for the Integrated Customs Management System (ICMS1, ICMS2, ICMS3, ICMS4, ICMS5) demonstrated exceptionally high correlations, ranging from 0.900 to 0.959. The highest correlation was observed between ICMS3 and ICMS4 ($r = 0.960$), suggesting very strong convergent validity among these items. For the Standardized Procedures construct (SP1, SP2, SP3, SP4), all item correlations were above the acceptable threshold, with values ranging from 0.889 to 0.979. The highest correlation was between SP2 and SP3 ($r = 0.979$). These results confirm that the items are highly consistent with each other, supporting strong convergent validity for this construct. The Tax Knowledge items (TK1, TK2, TK3, TK4, TK5) had correlations ranging from 0.705 to 0.967. Although the lowest correlation was between TK5 and TK3 ($r = 0.705$), all other item correlations exceeded 0.70. The highest correlation was between TK2 and TK3 ($r = 0.967$), which indicates that the items are generally consistent with one another, demonstrating adequate convergent validity. The Taxpayer Behavior items (TPB1, TPB2, TPB3, TPB4) exhibited correlations ranging from 0.821

to 0.930. The highest correlation was between TPB1 and TPB2 (r = 0.930). These results suggest that the items are highly related and effectively measure the same construct, thus supporting the convergent validity of the Taxpayer Behavior scale. Overall, the results indicate that the items for each construct demonstrate acceptable convergent validity, with most correlations well above the 0.70 threshold.

Table 4.10: Correlation Matrix Convergent Validity

		CDC1	CDC2	CDC3	CDC4	CDC5
	CDC1	1.000	.887	.818	.850	.788
	CDC2	.887	1.000	.871	.882	.794
	CDC3	.818	.871	1.000	.871	.769
	CDC4	.850	.882	.871	1.000	.830
	CDC5	.788	.794	.769	.830	1.000
		ICMS1	ICMS2	ICMS3	ICMS4	ICMS5
	ICMS1	1.000	.928	.904	.900	.915
	ICMS2	.928	1.000	.943	.921	.928
	ICMS3	.904	.943	1.000	.960	.959
	ICMS4	.900	.921	.960	1.000	.973
	ICMS5	.915	.928	.959	.973	1.000
		SP1	SP2	SP3	SP4	
	SP1	1.000	.889	.898	.893	
Correlation	SP2	.889	1.000	.979	.914	
	SP3	.898	.979	1.000	.959	
	SP4	.893	.914	.959	1.000	
		TK1	TK2	TK3	TK4	TK5
	TK1	1.000	.878	.831	.752	.724
	TK2	.878	1.000	.967	.837	.728
	TK3	.831	.967	1.000	.841	.705
	TK4	.752	.837	.841	1.000	.740
	TK5	.724	.728	.705	.740	1.000
		TPB1	TPB2	TPB3	TPB4	
	TPB1	1.000	.930	.860	.833	
	TPB2	.930	1.000	.865	.821	
	TPB3	.860	.865	1.000	.828	
	TPB4	.833	.821	.828	1.000	

(Source: Research 2024)

4.7.3 Discriminant Validity

Discriminant validity evaluates whether factors intended to measure different constructs are indeed separate from one another. According to the correlation matrix given, the assessment shows that the constructs typically retain their distinctiveness. Within each construct, CDC (Customs Duty Compliance), ICMS (Integrated Customs Management System), SP (Standardized Procedures), TK (Tax Knowledge), and TPB (Taxpayer Behavior), The results from Table 4.11 indicate that the constructs generally exhibit strong discriminant validity, as evidenced by the relatively low correlations between variables representing different constructs. For example, variables from the Customs Duty Compliance construct show high correlations with each other but are distinctly separated from variables representing other constructs like Integrated Customs Management System, Standardized Procedures, Tax Knowledge, and Taxpayer Behavior, which exhibit much lower inter-construct correlations. Specifically, the correlations between Customs Duty Compliance variables and those from Integrated Customs Management System, Standardized Procedures, Tax Knowledge, and Taxpayer Behavior are notably lower, suggesting that each construct is measuring a unique aspect of the study's theoretical framework. This separation confirms that the constructs maintain their distinctiveness, thereby supporting the discriminant validity of the model.

Table 4.11: Discriminant Validity

Variables	(1)																						
(1) cdc1	1.000																						
(2) cdc2	0.887	1.000																					
(3) cdc3	0.818	0.871	1.000																				
(4) cdc4	0.850	0.882	0.871	1.000																			
(5) cdc5	0.788	0.794	0.769	0.830	1.000																		
(6) icms1	0.159	0.151	0.111	0.192	0.062	1.000																	
(7) icms2	0.156	0.206	0.153	0.215	0.137	0.928	1.000																
(8) icms3	0.181	0.209	0.207	0.223	0.095	0.904	0.943	1.000															
(9) icms4	0.199	0.159	0.172	0.231	0.105	0.900	0.921	0.960	1.000														
(10) icms5	0.151	0.154	0.149	0.211	0.134	0.915	0.928	0.959	0.973	1.000													
(11) sp1	0.204	0.122	0.205	0.192	0.129	0.117	0.124	0.159	0.185	0.145	1.000												
(12) sp2	0.136	0.118	0.176	0.158	0.127	0.053	0.112	0.149	0.159	0.136	0.889	1.000											
(13) sp3	0.141	0.107	0.165	0.154	0.124	0.056	0.100	0.136	0.146	0.122	0.898	0.979	1.000										
(14) sp4	0.183	0.153	0.192	0.215	0.141	0.084	0.119	0.154	0.172	0.140	0.893	0.914	0.959	1.000									
(15) tk1	0.154	0.146	0.180	0.191	0.150	0.105	0.172	0.170	0.169	0.158	0.914	0.892	0.884	0.860	1.000								
(16) tk2	0.141	0.125	0.184	0.173	0.124	0.056	0.091	0.128	0.138	0.113	0.893	0.966	0.986	0.963	0.878	1.000							
(17) tk3	0.142	0.108	0.185	0.174	0.125	0.066	0.091	0.147	0.166	0.142	0.870	0.943	0.972	0.968	0.831	0.967	1.000						
(18) tk4	0.112	0.104	0.184	0.161	0.142	0.017	0.075	0.113	0.098	0.091	0.792	0.849	0.842	0.815	0.752	0.837	0.841	1.000					
(19) tk5	0.124	0.042	0.093	0.097	0.079	-0.009	0.021	0.025	0.036	0.009	0.770	0.743	0.741	0.725	0.724	0.728	0.705	0.740	1.000				
(20) tpb1	0.242	0.188	0.202	0.241	0.170	0.094	0.150	0.167	0.168	0.129	0.857	0.907	0.902	0.881	0.867	0.889	0.859	0.871	0.806	1.000			
(21) tpb2	0.162	0.174	0.246	0.212	0.134	0.071	0.110	0.174	0.151	0.136	0.845	0.912	0.897	0.870	0.819	0.902	0.887	0.928	0.769	0.930	1.000		
(22) tpb3	0.138	0.106	0.162	0.177	0.148	0.091	0.125	0.134	0.170	0.157	0.934	0.918	0.928	0.914	0.926	0.923	0.890	0.802	0.738	0.860	0.865	1.000	
(23) tpb4	0.118	0.080	0.107	0.148	0.061	0.009	0.036	0.088	0.070	0.063	0.817	0.838	0.871	0.875	0.837	0.866	0.852	0.854	0.656	0.833	0.821	0.828	1.000

4.7.4 Dimension Reduction

Dimension reduction through factor analysis is an exploratory data analysis technique designed to uncover a smaller set of underlying components within a high-dimensional dataset. Its primary purposes include reducing the dimensionality and denoising of a high-dimensional matrix, thereby simplifying the data structure. This method involves projecting the high-dimensional matrix onto a lower-dimensional linear subspace, which helps in simplifying complex data. Additionally, factor analysis involves matrix factorization, where a high-dimensional matrix is decomposed into two lower-dimensional matrices. In this process, orthogonality between the factors is not a requirement. Based on the factor loadings provided in Table 4.12, we can identify the dimensions for each question. For Customs Duty Compliance (CDC), the questions CDC1 through CDC5 have factor loadings ranging from .895 to .952, indicating strong correlations and effective measurement of this dimension. The Integrated Customs Management System (ICMS) is represented by questions ICMS1 to ICMS5, with factor loadings from .955 to .982, showing very high associations with this dimension. Standardized Procedures (SP) are measured by questions SP1 to SP4, which have loadings ranging from .947 to .989, suggesting that these items are highly indicative of this dimension. Tax Knowledge (TK) is reflected in questions TK1 to TK5, with loadings between .844 and .965; although TK5 has the lowest loading at .844, it is still considered strong. Finally, Taxpayer Behavior (TPB) is represented by questions TPB1 to TPB4, with factor loadings from .920 to .960, indicating a very strong relationship with this dimension. Overall, the factor loadings are all above the cut off of 0.7, the threshold for a good indicator, suggesting that the questions are appropriately grouped and effectively measure their respective constructs.

Table 4.12: Principal component Factor Analysis

	Customs Duty Compliance	Integrated Customs Management System	Standardized Procedures	Tax Knowledge	Taxpayer Behavior
CDC1	.932				
CDC2	.952				
CDC3	.929				
CDC4	.952				
CDC5	.895				
ICMS1		.955			
ICMS2		.970			
ICMS3		.980			
ICMS4		.977			
ICMS5		.982			
SP1			.947		
SP2			.975		
SP3			.989		
SP4			.971		
TK1				.914	
TK2				.965	
TK3				.951	
TK4				.910	
TK5				.844	
TPB1					.960
TPB2					.958
TPB3					.940
TPB4					.920

(Source: Research 2024)

4.7.5 Step-by-Step Procedure for Variable Construction

Each dimension or construct, such as "Customs Duty Compliance (CDC)," "Integrated Customs Management System (ICMS)," "Standardized Procedures (SP)," "Tax Knowledge (TK)," and "Taxpayer Behavior (TPB)," was assessed through multiple survey questions. Each question, referred to as an item asked participant to rate their response on a 1 to 5 Likert scale.

Standardization and Coding of Responses

Once the responses were collected, they were coded numerically according to the Likert scale values (1 to 5). Higher numbers typically indicate a greater agreement or a more positive response concerning the construct being measured, while lower numbers indicate disagreement or a less favorable view.

For each construct, a mean score was calculated by taking the average of all the responses to the questions (items) that represent that particular construct. For example:

$$\text{Mean CDC} = \frac{\text{CDC1} + \text{CDC2} + \text{CDC3} + \text{CDC4} + \text{CDC5}}{5}$$

This mean score represents the average level of agreement or perception of respondents regarding Customs Duty Compliance. This process was repeated for all constructs, including Integrated Customs Management System (ICMS), which is represented by five items (ICMS1 to ICMS5), "Standardized Procedures (SP)" (SP1 to SP4), "Tax Knowledge (TK)" (TK1 to TK5), and "Taxpayer Behavior (TPB)" (TPB1 to TPB4). After calculating the mean scores for each construct, these scores served as composite variables that summarize the overall responses for each dimension. This transformation reduces the data's dimensionality, simplifying the analysis while retaining the core information necessary to measure each construct accurately. The computed mean scores for each construct were then subjected to factor analysis to validate that the items grouped under each construct indeed represent a single underlying factor or dimension. The factor loadings indicated how well each item (question) correlated with the underlying dimension it was intended to measure. High loadings (above the cutoff of 0.7) confirmed that the items were well-constructed and aligned with their respective dimensions.

4.8 Statistical Assumptions

The regression assumptions testing was carried carefully to check and avoid incorrect assumptions that could generate inaccurate conclusions and in particularly statistical assumptions. The following statistical diagnostic tests were carried out for normality, linearity, heteroscedasticity, and multicollinearity

4.8.1 Normality Tests

Normality tests were utilized to assess whether a data set followed a normal distribution (Doornik & Hansen, 2008). In this research, the Jarque-Bera test, originally devised for constant conditional variance models with no functional dependence between conditional mean and variance parameters. P-value>0.05 indicates the residuals are normally distributed. Table 4.13 shows a P-value of 0.7516>0.05 indicating that the residuals are normally distributed.

Table 4.13: Normality Test

jb residuals	Jarque-Bera test for Ho: normality
Jarque-Bera normality test:	0.5711 Chi (2) 0.7516

(Source: Research 2024)

4.8.2 Linearity Test

The Ramsey RESET test was employed to assess whether the relationship between the dependent variable and the predictor variables is linear. According to the linearity test results in table 4.14, the p-value is 0.2298>0.05, indicating a linear relationship between Integrated Customs Management System, Standardized procedures tax knowledge, and taxpayer behavior on customs duty compliance.

Table 4.14: Ramsey RESET Linearity Test

Ramsey RESET test using powers of the fitted values of Customs Duty Compliance		
Ho: model has no omitted variables		
F(3, 158)	=	1.45
Prob > F	=	0.2298

(Source: Research 2024)

4.8.3 Multicollinearity test

Multicollinearity tests assess the presence of strong correlations among the independent variables in a regression model. The variance inflation factor (VIF) is a commonly used method for detecting multicollinearity in regression analysis, indicating the degree of multicollinearity present in the data Sinclair (2011) A VIF less than 10 and a tolerance greater than 0.1 suggest low levels of multicollinearity, indicating that the statistical assumption is not violated. Table 4.15 showed that integrated customs management system had a VIF of 1.265<10, standardized procedures had VIF of 1.186<10, tax knowledge had a VIF of 1.101<10, taxpayer behaviour had VIF of 1.188<10. The results showed that the independent variables are not highly correlated.

Table 4.15: Multicollinearity test

Model		Collinearity Statistics	
		Tolerance(1/VIF)	VIF
1	Integrated Customs Management System	.790	1.265
	Standardized Procedures	.843	1.186
	Tax Knowledge	.908	1.101
	Taxpayer Behavior	.842	1.188

a. Dependent Variable: Customs Duty compliance

(Source: Research 2024)

4.8.4 Homoscedasticity Test

Homoscedasticity means that the variance or spread of errors from the regression line is constant. Lani (2011) notes that in regression, an error is how distant a point deviates from the normal line of regression. P-value >0.05 indicates homoscedasticity. Table 4.16 implies that the P-value of 0.4479 indicted that the assumption that there is constant variance in the spread of errors from the regression line.

Table 4.16: Test for Homoscedasticity

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	
Ho: Constant variance	
Variables: fitted values of Customs Duty compliance	
chi2(1)	= 0.63
Prob > chi2	= 0.4479

(Source: Research 2024)

4.9 Correlation Analysis

Correlation Analysis is a statistical tool used to identify the direction and strength of the relationship between variables in a research study. The study found that Integrated Customs Management System correlates positively to Custom duty compliance at 57.4% p= 0.000<0.05. Standardized procedures correlate positively to Custom duty compliance at 63.3% p= 0.001<0.05. Tax knowledge correlate positively to Custom duty compliance at 50.9% p= 0.000<0.05. Lastly taxpayer behavior correlates positively to Customs duty compliance at 52.3% p= 0.002<0.05.

Table 4.17: Correlation Analysis

		CDC	ICMS	SDP	TKE	TPB
Customs Duty Compliance	Pearson Correlation	1				
	Sig. (2-tailed)					
ICMS	Pearson Correlation	.574	1			
	Sig. (2-tailed)	.000				
Standardized Procedures	Pearson Correlation	.633	.332	1		
	Sig. (2-tailed)	.001	.001			
Tax Knowledge	Pearson Correlation	.509	.222	.254	1	
	Sig. (2-tailed)	.000	.003	.000		
Taxpayer Behavior	Pearson Correlation	.523	.369	.243	.177	1
	Sig.(2tailed)	.002	.000	.000	.000	
	N	166				

Correlation is significant if sig<0.05

Source: Research data, (2024)

4.10 Regression Analysis without moderator

The regression analysis tested the direct effects of Integrated Customs Management System, Standardized procedures tax knowledge, on customs duty compliance.

4.10.1 Model summary without moderator

The model summary on table 4.18 shows that Integrated Customs Management System, Standardized procedures tax knowledge, has a positive correlation with customs duty compliance at 52.6%. Further investigation shows that 27.6% variance is caused on customs duty compliance is attributed to Integrated Customs Management System, Standardized procedures tax knowledge. The remaining 72.4% variance was caused by factors not captured in the model.

Table 4.18: Model Summary without moderator

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.526	0.276	0.263	1.051287

a. Predictors: (Constant), TaxKnowledge, ICMS, Standardized Procedures

(Source: Research 2024)

4.10.2 Analysis of Variance without moderator

The Analysis of variance on table 4.19 implied that the regression model is significant in showing the variance caused on customs duty compliance F =20.605 p-value =0.000<0.05.

Table 4.19: ANOVA without moderator

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	68.306	3	22.769	20.605	.000[b]
	Residual	179.043	162	1.105		
	Total	247.349	165			

a. Dependent Variable: Customs Duty Compliance

b. Predictors: (Constant), Tax Knowledge, ICMS, Standardized Procedures

(Source: Research 2024)

4.10.3 Regression coefficient analysis

The regression model was Y = 0.717 +0.231 X_1 + 0.311X_2 + 0.179X_3

Table 4.20: Standardized Coefficients analysis without Moderator

Model		Standardized Coefficients		Unstandardized Coefficients	t	Sig.
		β	Std. Error	β		
1	(Constant)	0.717	0.274		2.617	0.012
	ICMS	0.231	0.078	0.252	2.962	0.001
	Standardized Procedures	0.311	0.080	0.343	3.888	0.000
	Tax Knowledge	0.179	0.076	0.193	2.355	0.011

a. Dependent Variable: Customs Duty Compliance

(Source: Research 2024)

Table 4.20 showed that a unit change in Integrated Customs Management System caused a 0.231 increase in customs duty compliance. The study further found that a unit change in standardized procedures resulted in a 0.311 increase in customs duty compliance. Lastly a unit change in tax knowledge caused a 0.179 increase in customs duty compliance.

4.11 Hierarchical Regression Analysis

A hierarchical regression model was employed to determine the moderating effect of taxpayer behaviour on the relationship between Integrated Customs Management System, Standardized procedures and tax knowledge on customs duty compliance.

4.11.1 Model summary with moderator

The model summary indicating the process of moderation.

Table 4.21 Model Summary with moderator

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Sig. F Change
1	0.526	0.276	0.263	1.0512	0.276	0.000
2	0.583	0.339	0.323	1.0074	0.063	0.000
3	0.586	0.344	0.323	1.0073	0.004	0.031
4	0.588	0.346	0.321	1.0089	0.002	0.047
5	0.604	0.365	0.337	.9971	0.019	0.030

(Source: Research 2024)

The model summary table 4.21 indicates that in Model 5, the inclusion of taxpayer behavior as a moderating variable enhances the relationship between the Integrated Customs Management System (ICMS), standardized procedures, tax knowledge, and customs duty compliance. This is evidenced by an increase in the R Square value to 0.365, suggesting that 36.5% of the variance in customs duty compliance is explained by the predictor variables combined with the moderating effect of taxpayer behavior. The R Square Change of 0.019 and the significant F Change (p = 0.030) demonstrate that taxpayer behavior significantly contributes to explaining the variance in customs duty compliance beyond the effects of ICMS, standardized procedures, and tax knowledge alone.

4.11.2 Analysis of Variance with moderator

The ANOVA to indicate the significance of the model was undertaken.

Table 4.22: ANOVA with moderator

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	68.306	3	22.769	20.601	0.000
	Residual	179.043	162	1.105		
	Total	247.349	165			
2	Regression	84.071	4	21.018	20.725	0.000
	Residual	163.278	161	1.014		
	Total	247.349	165			
3	Regression	84.939	5	16.988	16.736	0.000
	Residual	162.410	160	1.015		
	Total	247.349	165			
4	Regression	85.519	6	14.253	14.004	0.000
	Residual	161.830	159	1.018		
	Total	247.349	165			
5	Regression	90.237	7	12.891	12.964	0.000
	Residual	157.112	158	0.994		
	Total	247.349	165			

(Source: Research 2024)

The ANOVA table for Model 5 on table 4.22 demonstrates that the inclusion of taxpayer behaviour as a moderating variable significantly improves the model's explanatory power regarding customs duty compliance. F-statistic is 12.964, with a highly significant p-value ($p = 0.000$), confirming that the model is a significant predictor of customs duty compliance. This suggests that the combined effects of the Integrated Customs Management System, standardized procedures, tax knowledge, and the moderating role of taxpayer behaviour significantly explain variations in customs duty compliance.

4.11.3 Overall Regression Analysis

The overall regression models are

Model (i)

$Y = 0.717 + 0.231 X_1 + 0.311X_2 + 0.179X_3$

Model (ii)

$Y = 0.228 + 0.145X_1 + 0.278X_2 + 0.157X_3 + 0.274M$

Model (iii)

$Y = 0.470 + 0.342X_1 + 0.268X_2 + 0.168X_3 + 0.467M + 0.328M*X_1$

Model (iv)

$Y = 0.769 + 0.262X_1 + 0.413X_2 + 0.161X_3 + 0.563M + 0.199M*X_1 + 0.251M*X_2$

Model (v)

$Y = 0.454 + 0.325X_1 + 0.464X_2 + 0.258X_3 + 0.227M + 0.359M*X_1 + 0.310M*X_2 + 0.707M*X_3$

Table 4.23: Hierarchical regression Coefficients

Model		Standardized Coefficients		Unstandardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.717	0.274		2.617	0.012
	ICMS	0.231	0.078	0.252	2.962	0.001
	Standardized procedures	0.311	0.080	0.343	3.888	0.000
	TaxKnowledge	0.179	0.076	0.193	2.355	0.011
2	(Constant)	0.228	0.100		2.280	0.004
	ICMS	0.145	0.069	0.167	2.101	0.045
	Standardized procedures	0.278	0.077	0.136	3.610	0.000
	TaxKnowledge	0.157	0.073	0.258	2.151	0.020
	Taxpayerbehaviour	0.274	0.075	0.333	3.653	0.000
3	(Constant)	0.470	0.190		2.474	0.010
	ICMS	0.342	0.127	0.374	2.693	0.025
	Standardized procedures	0.268	0.078	0.295	3.436	0.000
	TaxKnowledge	0.168	0.074	0.182	2.270	0.014
	Taxpayerbehaviour	0.467	0.220	0.504	2.123	0.023
	ICMS*TPB	0.328	0.061	0.062	5.377	0.000
4	(Constant)	0.769	0.196		3.923	0.002
	ICMS	0.262	0.121	0.287	2.165	0.022
	Standardized procedures	0.413	0.133	0.455	3.105	0.012
	TaxKnowledge	0.161	0.075	0.174	2.147	0.035
	Taxpayerbehaviour	0.563	0.264	0.608	2.133	0.021
	ICMS*TPB	0.199	0.070	0.037	2.843	0.228
	SP*TPB	0.251	0.067	0.047	3.746	0.000
5	(Constant)	0.454	0.120		3.783	0.000
	ICMS	0.325	0.158	0.355	2.057	0.043
	Standardized procedures	0.464	0.137	0.512	3.387	0.000
	TaxKnowledge	0.258	0.120	0.279	2.150	0.040
	Taxpayerbehaviour	0.227	0.109	0.245	2.083	0.043
	ICMS*TPB	0.359	0.071	0.067	5.056	0.000
	SP*TPB	0.310	0.066	0.058	4.697	0.000
	TK*TPB	0.707	0.062	0.136	11.403	0.000

a. Dependent Variable: CustomsDutyCompliance

(Source: Research 2024)

Table 4.23 in model 5 indicates the overall model which implied that a unit change in Integrated Customs Management System caused a 0.325 increase in customs duty compliance. The study further found that a unit change in standardized procedures resulted in a 0.464 increase in customs duty compliance. A unit change in tax knowledge caused a 0.258 increase in customs duty compliance. Further a unit change in taxpayer behaviour caused a 0.227 increase in customs duty compliance. The study also found that the interaction between Integrated Customs Management System and taxpayer behaviour caused a 0.359 increase in customs duty compliance, the interaction between standardized procedures and taxpayer behaviour caused a 0.310 increase in customs duty compliance, and lasty a unit change in the interaction between tax knowledge and taxpayer behaviour caused a 0.707 increase in customs duty compliance.

4.12 Modi Graph moderation Analysis

Moderators can be evaluated using either a single item or multiple items, utilizing reflective or formative indicators. However, the crucial distinction lies in the measurement scale of the moderator, distinguishing between categorical (commonly dichotomous) and continuous moderators. Modi graphs are employed to determine the effects of the interaction between independent variables and the moderator at both low and high levels. Miocevic (2020).

4.12.1 Modi Graph interaction between Integrated Customs Management System and taxpayer behavior

The Modi graph on figure 4.1 shows the moderating effect of taxpayer behaviour on the relationship between integrated customs management system and customs duty compliance.

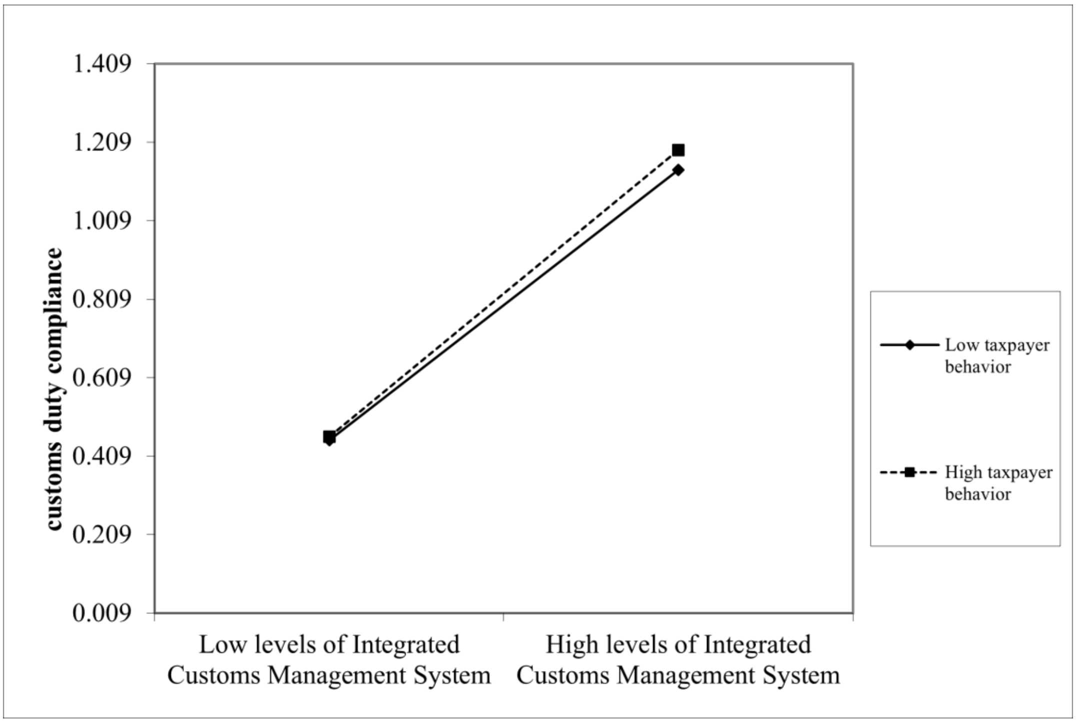

Figure 4.1: ICMS* Taxpayer behaviour
(Source: Research 2024)

The modi graph shows that taxpayer behavior enhances the positive effects of ICMS on custom duty compliance

4.12.2 Modi Graph interaction between Standardized procedures and taxpayer behavior

The Modi graph on figure 4.2 shows the moderating effect of taxpayer behaviour on the relationship between Standardized procedures and customs duty compliance.

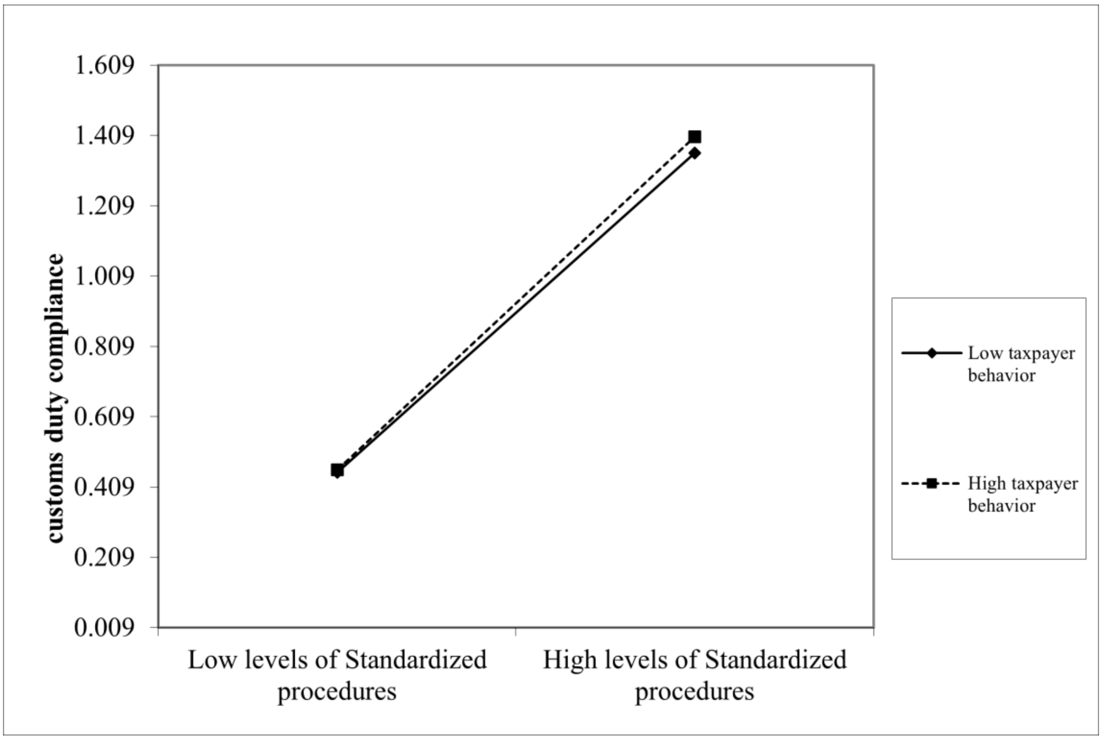

Figure 4.2: Standardized procedures* Taxpayer behaviour
(Source: Research 2024)

The modi graph shows that taxpayer behavior improves the positive effects of standardized procedures on custom duty compliance

4.12.3 Modi Graph interaction between tax knowledge and taxpayer behavior

The Modi graph on figure 4.3 shows the moderating effect of taxpayer behaviour on the relationship between tax knowledge and customs duty compliance.

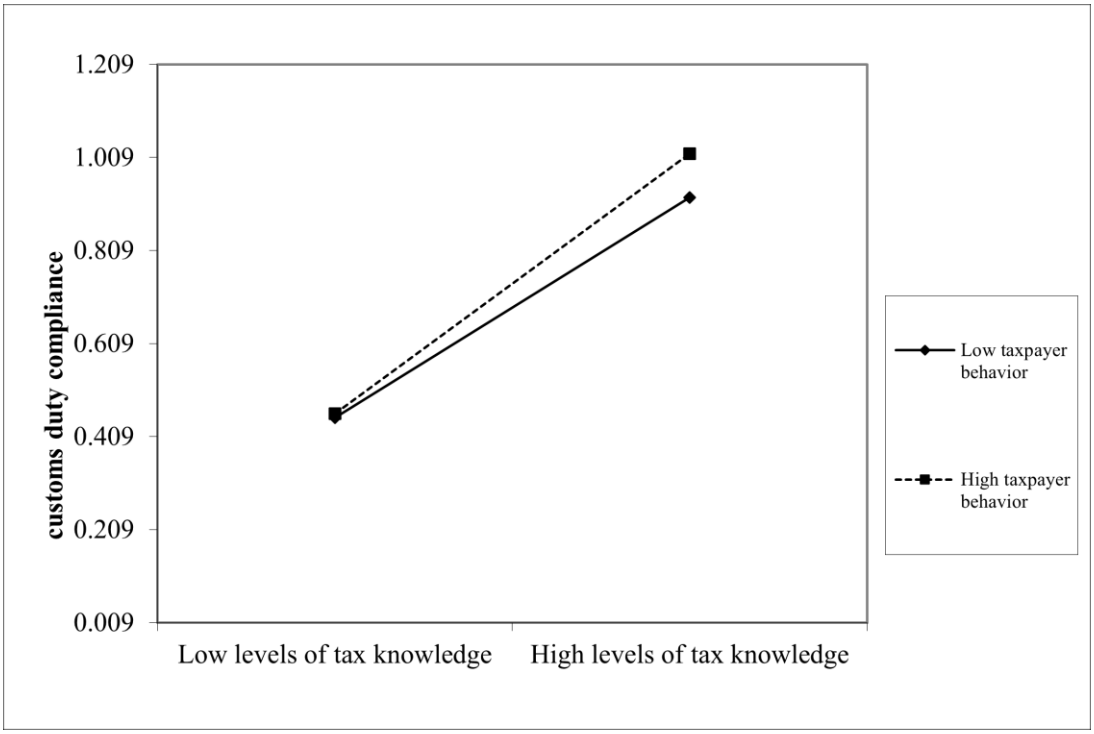

Figure 4.3: tax knowledge* Taxpayer behaviour

(Source: Research 2024)

The modi graph shows that taxpayer behavior improves the positive effects of tax knowledge on custom duty compliance.

4.13 Hypotheses Tests

The hypotheses summarized on table 4.24 were;

Table 4.24: Summary of Hypotheses Testing

Hypotheses	P-value	Verdict
H_{01} Integrated Customs Management System has no significant effect on customs duty compliance at Malaba one-stop-border-post, Kenya	0.043	**Reject H_{01}**
H_{02} Standardized procedures have no significant effect on customs duty compliance at Malaba one-stop-border-post, Kenya.	0.000	**Reject H_{02}**
H_{03} Tax knowledge has no significant effect on customs duty compliance at Malaba one-stop-border-post, Kenya	0.040	**Reject H_{03}**
H_{04a} Taxpayer behavior have no significant moderating effect of on the relationship between Integrated Customs Management System and customs duty compliance at Malaba one-stop-border-post, Kenya.	0.000	**Reject H_{04a}**
H_{04b} Taxpayer behavior have no significant moderating effect of on the relationship between Standardized procedures and customs duty compliance at Malaba one-stop-border-post, Kenya.	0.000	**Reject H_{04b}**
H_{04c} Taxpayer behavior have no significant moderating effect of on the relationship between Tax knowledge and customs duty compliance at Malaba one-stop-border-post, Kenya.	0.000	**Reject H_{04c}**

(Source: Research 2024)

The first hypotheses H_{01} was Integrated Customs Management System has no significant effect on customs duty compliance at Malaba one-stop-border-post, Kenya.

The study found that Integrated Customs Management System has a significant effect on customs duty compliance p-value =0.043<0.05, the null hypothesis was rejected. The second hypotheses H_{02} was Standardized procedures have no significant effect on customs duty compliance at Malaba one-stop-border-post, Kenya. The study found that Standardized procedures has a significant effect on customs duty compliance p-value =0.000<0.05, the null hypothesis was rejected. The third specific H_{03} was Tax knowledge has no significant effect on customs duty compliance at Malaba one-stop-border-post, Kenya. The study found that Tax knowledge has a significant effect on customs duty compliance p-value =0.040<0.05, the null hypothesis was rejected. The fourth specific hypothesis H04 was Taxpayer behavior have no significant moderating effect of on the relationship between: H_{04a}. Integrated Customs Management System and customs duty compliance at Malaba one-stop-border-post, Kenya. The study found that Taxpayer behavior significantly moderates the relationship between Integrated Customs Management System and customs duty compliance p-value =0.000<0.05, the null hypothesis was rejected. H_{04b}. Standardized procedures and customs duty compliance at Malaba one-stop-border-post, Kenya. The study found that Taxpayer behavior significantly moderates the relationship between Standardized procedures and customs duty compliance p-value =0.000<0.05, the null hypothesis was rejected. H_{04c}. Tax knowledge and customs duty compliance at Malaba one-stop-border-post, Kenya. The study found that Taxpayer behavior significantly moderates the relationship between Tax knowledge and customs duty compliance p-value =0.000<0.05, the null hypothesis was rejected.

4.14 Discussion of Findings

4.14.1 Integrated Customs Management System and Customs Duty Compliance

The first specific objective was to determine the effect of Integrated Customs Management System on customs duty compliance at Malaba one-stop-border-post, Kenya. The study found that Integrated Customs Management System correlates positively to customs duty compliance at 57.4%. This suggests that as the implementation of the ICMS increases, customs duty compliance also tends to increase. The study also found that Integrated Customs Management System had a positive and significant effect on customs duty compliance $\beta=0.325$ p-value $=0.043<0.05$. This means that the effect of the ICMS on customs duty compliance is not only positive but also unlikely to be due to chance. The study aligns with the findings of Kollie and Roosevelt (2021), who examined the impact of the Automated System for Customs Data (ASYCUDA) on customs revenue performance at the Liberia Revenue Authority. Their analysis utilized monthly series data from the Liberia Revenue Authority (LRA), the Central Bank of Liberia, and the Harmonized Tariff of Liberia, covering a four-year period from January 2015 to December 2018. Their results indicated that ASYCUDA, along with the total trade of goods and services tax, positively influenced customs revenue performance in both the short and long term.

4.14.2 Standardized Procedures and Customs Duty Compliance

The second specific objective was to establish the effect of Standardized procedures on customs duty compliance at Malaba one-stop-border-post, Kenya. The study found that Standardized procedures correlates positively to customs duty compliance at 63.3%. This suggests that as standardized procedures are implemented more effectively, customs duty compliance tends to increase significantly. The study also found that Standardized procedures had a positive and significant effect on customs duty compliance β=0.464 p-value =0.000<0.05. This means that the effect of standardized procedures on customs duty compliance is not only positive but also highly significant, implying a strong and reliable influence. The study agrees with the findings of Ndenga and Ayuma (2018), who investigated the influence of customs procedures and practices on tax collection within Mombasa County's Customs Service Department. Their study used customs pre-arrival clearance, customs audit visits, standards, and procedural measures to conceptualize the PCA variable. A total of 110 respondents were selected from a target group of 366 heads of Mombasa clearing and forwarding enterprises and staff members in the Customs Services Department, employing a descriptive research design and stratified random selection. The findings revealed that customs audit visits, pre-arrival clearance, post-clearance audit visits, and post-clearance audit standards had the most significant impact on revenue collection at the customs services department.

4.14.3 Tax Knowledge and Customs Duty Compliance

The third specific objective was to determine the effect of tax knowledge on customs duty compliance at Malaba one-stop-border-post, Kenya. The study found that tax knowledge correlates positively to customs duty compliance at 50.9%. This suggests that as individuals' or entities' tax knowledge increases, their compliance with customs duty requirements also tends to improve. The study also found that tax knowledge had a positive and significant effect on customs duty compliance β=0.258 p-value =0.040<0.05. This means that there is strong evidence to suggest that the observed relationship is not due to random chance. Overall, the study demonstrates that improving tax knowledge can lead to better compliance with customs duty regulations. The study aligns with Fitria (2019), who emphasizes that tax knowledge has a significant impact on meeting tax obligations. This knowledge is especially crucial for Micro, Small, and Medium Enterprises (MSMEs), which often lack specialized expertise in taxation (Prajogo & Widuri, 2020). As highlighted, the greater the knowledge or understanding of tax regulations among MSME taxpayers, the higher their likelihood of compliance in fulfilling their tax duties.

4.14.4 Taxpayer Behavior and The Relationship Between Integrated Customs Management System, Standardized Procedures, Tax Knowledge and Customs Duty Compliance

The fourth specific objective was to determine the moderating effect of taxpayer behavior on the relationship between Integrated Customs Management System, Standardized procedures, tax knowledge and customs duty compliance. The study found that taxpayer behavior correlates positively to customs duty compliance at 52.3%. This indicates that as taxpayer behavior improves, customs duty compliance tends to improve as well, and vice versa. The study also found that taxpayer behavior had a positive and significant effect on customs duty compliance $\beta=0.227$ p-value $=0.043<0.05$. This means that changes in taxpayer behavior are statistically significant in predicting changes in customs duty compliance, with better taxpayer behavior leading to higher compliance rates.

The study also further found that tax behavior moderates the relationship between Integrated Customs Management System and customs duty compliance $\beta=0.359$ p-value $=0.000<0.05$. This means that the influence of the ICMS on customs duty compliance is significantly impacted by the tax behavior of individuals or organizations, with better tax behavior strengthening the positive effect of ICMS on compliance.

The study also found that tax behavior moderates the relationship between Standardized procedures and customs duty compliance $\beta=0.310$ p-value $=0.000<0.05$.

this implies that, tax behavior plays an important role in enhancing the effectiveness of standardized procedures in ensuring customs duty compliance. Lastly the study found that tax behavior moderates the relationship between tax knowledge and customs duty compliance $\beta=0.707$ p-value $=0.000<0.05$. The findings confirm that this moderation effect is statistically significant. In summary, individuals with better tax behavior are more likely to translate their tax knowledge into actual compliance with customs duties. The study concurs with Damayanti *et al*., (2021), in their study to investigate the influence of attitudes toward tax compliance, descriptive norms, injunctive norms, subjective norms, personal norms, tax compliance intention. The results showed that attitudes towards tax compliance, injunctive norms, subjective norms, personal norms, and financial performance positively affect SME owners' tax compliance intentions. Prior studies have shown that taxpayers are responsive to changes in the tax code, particularly when it comes to residential income taxes (Kleven, Knudsen, Saez, & Schultz, 2020).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section provides a summary of the investigative findings, draws conclusions related to the research objectives, and offers recommendations. Additionally, it suggests potential areas for further research.

5.2 Summary of Findings

5.2.1 Integrated Customs Management System and Customs Duty Compliance

The study investigated the impact of the Integrated Customs Management System (ICMS) on customs duty compliance at Malaba one-stop-border-post, Kenya. Findings indicate a positive correlation between ICMS and customs duty compliance, suggesting that increased implementation of ICMS is associated with higher compliance rates. The analysis revealed a significant positive effect of ICMS on customs duty compliance, $\beta=0.325$ p-value $=0.043<0.05$, indicating that the relationship is statistically significant and not likely due to random chance.

5.2.2 Standardized Procedures and Customs Duty Compliance

The research explored the effect of standardized procedures on customs duty compliance at the same location. The results show a positive correlation implying that more effective implementation of standardized procedures enhances customs duty compliance. A significant positive effect on customs duty compliance $\beta=0.464$ p-value $=0.000<0.05$, was observed highlighting the strong and reliable influence of standardized procedures on compliance.

5.2.3 Tax Knowledge and Customs Duty Compliance

The effect of tax knowledge on customs duty compliance was also examined. The findings revealed a positive correlation suggesting that higher tax knowledge correlates with improved compliance. The impact of tax knowledge was found to be significant demonstrating a statistically significant relationship between tax knowledge and customs duty compliance. $\beta=0.258$ p-value $=0.040<0.05$.

5.2.4 Taxpayer Behavior and Its Moderating Role

The study assessed taxpayer behavior's moderating effect on the relationships between ICMS, standardized procedures, tax knowledge, and customs duty compliance. Taxpayer behavior correlated positively with customs duty compliance indicating that better taxpayer behavior enhances compliance. The results show that taxpayer behavior significantly moderates the relationship between ICMS and customs duty compliance $\beta=0.359$ p-value $=0.000<0.05$ suggesting that effective taxpayer behavior strengthens the positive impact of ICMS. Similarly, taxpayer behavior moderates the effect of standardized procedures on customs duty compliance $\beta=0.310$ p-value $=0.000<0.05$. and the relationship between tax knowledge and compliance $\beta=0.707$ p-value $=0.000<0.05$, confirming that improved taxpayer behavior translates tax knowledge into better compliance.

5.3 Conclusion

The study sought to determine the moderating effect of taxpayer behavior on the relationship between Integrated Customs Management System, Standardized procedures and tax knowledge on customs duty compliance at Malaba one-stop-border-post, Kenya.

The findings of this study underscore the critical role of the Integrated Customs Management System (ICMS) in enhancing customs duty compliance at Malaba one-stop-border-post, Kenya. The positive correlation and significant effect demonstrated that increased implementation of ICMS is associated with improved compliance rates. This suggests that the adoption and effective use of ICMS significantly contribute to better adherence to customs duty regulations, emphasizing the need for continued investment and refinement of such systems.

Similarly, the study reveals that standardized procedures play a substantial role in promoting customs duty compliance. The positive correlation and strong significant effect indicate that well-implemented standardized procedures lead to higher compliance rates. This highlights the importance of developing and adhering to standardized procedures as a means to ensure consistent and effective customs duty compliance.

The research also highlights the importance of tax knowledge in enhancing customs duty compliance. The positive correlation and significant effect suggest that increased tax knowledge is associated with better compliance. This finding underscores the value of tax education and training in fostering better compliance practices among individuals and organizations.

Moreover, the study demonstrates that taxpayer behavior significantly moderates the relationships between ICMS, standardized procedures, tax knowledge, and customs duty compliance. The significant moderation effects revealed that improved taxpayer behavior enhances the effectiveness of ICMS, standardized procedures, and tax knowledge in achieving higher compliance rates. These results suggest that efforts to improve taxpayer behavior are essential for maximizing the benefits of other compliance-enhancing measures.

In conclusion, the study illustrates that both structural and individual factors play pivotal roles in improving customs duty compliance. Effective implementation of ICMS and standardized procedures, coupled with increased tax knowledge and improved taxpayer behavior, are crucial for achieving higher levels of compliance.

5.4 Limitation of the Study

Regarding limitations, since the researcher used printed questionnaire for data collection hence costs with respect to data collection definitely will pose a challenge to this study. The researcher countered this by using a manageable population and sample size that helped in generalizability of the findings. Some respondents were not willing to participate in the study as a result of fear of being victimized on providing information. The researcher however, assured the respondents of the anonymity and confidentiality of their responses.

5.5 Recommendations

5.5.1 Policy Implications for Government of Kenya

The findings suggest that the Government of Kenya should prioritize the continued implementation and enhancement of the Integrated Customs Management System (ICMS) to improve customs duty compliance. There is a clear policy implication to develop and enforce standardized customs procedures across all border points, which would increase compliance rates. Additionally, the government should focus on initiatives that enhance tax knowledge among taxpayers, as it is significantly associated with higher compliance. Encouraging taxpayer education programs and communication campaigns can help bridge knowledge gaps and promote voluntary compliance.

5.5.2 Practical Implications for Practice by KRA or Taxpayers

For the Kenya Revenue Authority (KRA), the results indicate a need to enhance the deployment and functionality of the ICMS to ensure seamless customs operations and to foster a culture of compliance. KRA should also ensure that standardized procedures are effectively communicated and adhered to at all border points. This could involve regular training for customs officers and stakeholders. Furthermore, KRA should actively engage with taxpayers to improve their tax knowledge and address behavioral factors that influence compliance. Taxpayers are encouraged to seek adequate knowledge about customs duties and adhere strictly to established customs procedures to avoid penalties and enhance compliance.

5.5.3 Theoretical Implications

The positive impact of ICMS, standardized procedures, and tax knowledge on customs duty compliance aligns with the Diffusion of Innovations theory, which suggests that the adoption of innovative systems leads to improved outcomes. The Theory of Customs Union is validated by the demonstrated need for harmonized customs procedures to enhance compliance. Furthermore, the Social Rule System Theory is supported, as it illustrates that the social behavior of taxpayers' adherence to rules and regulations moderates and strengthens the effectiveness of compliance measures.

5.5.4 Recommendations for Future Research

Future research should explore the specific elements within the ICMS that have the greatest impact on customs duty compliance to help refine and target policy measures. Studies could also examine the role of taxpayer education methods in different demographic contexts to identify the most effective strategies for increasing tax knowledge and compliance. Additionally, research should investigate the long-term effects of taxpayer behavior on compliance and how behavioral interventions could be optimized to sustain compliance improvements over time. Comparative studies involving other border points or regions could provide further insights into the effectiveness of standardized customs procedures.

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APPENDICES

Appendix I: Introduction Letter

Dear Sir/Madam,

RE: ACADEMIC RESEARCH PROJECT

I am a master's student from Moi University. I wish to conduct research entitled ***"*MODERATING EFFECT OF TAXPAYER BEHAVIOR ON INTEGRATED CUSTOMS MANAGEMENT SYSTEM, STANDARDIZED PROCEDURES AND TAX KNOWLEDGE ON CUSTOMS DUTY COMPLIANCE AT MALABA ONE-STOP-BORDER-POST, KENYA*"*** You have been selected to participate in this study and I wish to request that you assist in filling up the below questionnaire. The information you provide will exclusively and solely be used for academic purposes and will be treated with the confidence it deserves.

Thank you in advance for your cooperation.

Yours Sincerely

ENOCK KIPKEMOI

Appendix II: Questionnaire

Kindly answer all the questions by either ticking in the boxes or writing in the spaces provided.

SECTION A: Respondents demographic Information.

1. What is your gender?

Male ☐ Female ☐

2. What is your age?

18 – 30 Years ☐ 31– 43 years ☐

44– 55 years ☐ 56 years and above ☐

3. What is your highest level of education?

Primary school ☐ Secondary school ☐

Undergraduate Level ☐ Postgraduate Level ☐

Doctorate Level ☐

SECTION B:

INTEGRATED CUSTOMS MANAGEMENT SYSTEM

Please indicate your rate by ticking appropriately on a scale of 5-1. **5= strongly agree, 4=agree 3=neutral 2=disagree 1=strongly disagree.**

	1	**2**	**3**	**4**	**5**
Traders have benefitted immensely from this system since it facilitates real time responses from the customs department					
The system is supported by rapid response units strategically along the transit route					
Using ICMS decentralizes customs operations affecting time costs.					
ICMS is critical in streamlining customs procedures.					
The introduction of online monitoring of cargo by use of the Electronic Cargo Tracking System helps tracks and monitors cargo					

STANDARDIZED PROCEDURES

Please indicate your rate by ticking appropriately on a scale of 5-1. **5= strongly agree, 4=agree 3=neutral 2=disagree 1=strongly disagree.**

	1	**2**	**3**	**4**	**5**
Standardized clearance procedures at the OSBP prevent duplication					
Single window system is efficient in reducing costs					
Standardized customs procedure codes reduce clearance time					
Standardized procedures at OSBP decreases time taken in the border crossing of goods					

TAX KNOWLEDGE

Please indicate your rate by ticking appropriately on a scale of 5-1. **5= strongly agree, 4=agree 3=neutral 2=disagree 1=strongly disagree.**

	1	**2**	**3**	**4**	**5**
I have attended seminars on customs matters					
I understanding of tax laws and regulations					
I know due date for filing my tax returns					
I always attended any tax education or awareness programs					
I'm familiar with the penalties for late filing or non-payment of taxes					

CUSTOMS DUTY COMPLIANCE

Please indicate your rate by ticking appropriately on a scale of 5-1. **5= strongly agree, 4=agree 3=neutral 2=disagree 1=strongly disagree.**

	1	**2**	**3**	**4**	**5**
Compliance of customs and border control department in Kenya is measured by revenue collection					
I file my returns on time					
I file my returns on accurately					
I'm aware of self – assessment,					
I remit my customs duty to KRA in time					

SECTION C: **MODERATOR**

TAXPAYER BEHAVIOR

Please indicate your rate by ticking appropriately on a scale of 5-1. **5= strongly agree, 4=agree 3=neutral 2=disagree 1=strongly disagree.**

	1	2	3	4	5
I believe that the tax system is fair					
I find the process of tax compliance is burdensome					
Paying taxes is my civic duty					
I follow the rules and pay taxes correctly and on time					

-The End-

Appendix III: KESRA Letter

KENYA REVENUE AUTHORITY

PUBLIC

ISO 9001:2015 CERTIFIED

KENYA SCHOOL OF REVENUE ADMINISTRATION

REF: KESRA/NBI/036

6th August 2024

TO: WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: REQUEST FOR ASSISTANCE TO ENOCK KIPKOECH OF REGISTRATION NO.: KESRA105/0022/2022 UNDERTAKING MASTERS AT KESRA

This is to confirm that the above named is a student at Kenya School of Revenue Administration (KESRA) Nairobi Campus pursuing Masters in Tax and Customs Administration.

The named student is undertaking Research on TOPIC: **"Moderating effect of taxpayer behavior on the relationship between integrated customs management system, standardized procedures and tax knowledge on customs duty compliance at Malaba one-stop-border-post, Kenya."**

The purpose of this letter is to request for your kind facilitation in enabling the student progress in his research project by allowing access to any relevant information and/or conduct interviews, which are relevant to the project.

Your support to the student in this regard will be highly appreciated.

Thank you.

SCHOOL OF REVENUE ADMINISTRATION
DEAN OF STUDIES
06 AUG 2024
ACADEMIC AFFAIRS DIVISION

Damacrine Masira
Manager Academic Research,
KESRA

Tulipe Ushuru, Tujitegemee!

Appendix IV: NACOSTI Research License

Appendix V: Plagiarism Awareness Certificate

SR689

ISO 9001:2019 Certified Institution

THESIS WRITING COURSE

PLAGIARISM AWARENESS CERTIFICATE

This certificate is awarded to

KIPKEMOI ENOCK KIPKOECH

KESRA 105/0022/2022

In recognition for passing the University's plagiarism

Awareness test for Thesis **entitled: MODERATING EFFECT OF TAXPAYER BEHAVIOR ON THE RELATIONSHIP BETWEEN INTEGRATED CUSTOMS MANAGEMENT SYSTEM, STANDARDIZED PROCEDURES AND TAX KNOWLEDGE ON CUSTOMS DUTY COMPLIANCE AT MALABA ONE-STOP-BORDER-POST, KENYA** similarity index of 11% and striving to maintain academic integrity.

Word count:20321

Awarded by

Prof. Anne Syomwene Kisilu
CERM-ESA Project Leader Date: 17/09//2024