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BUSINESS

BUSINESS PROCESS OPTIMIZATION STRATEGIES AND PERFORMANCE OF CUSTOMS REVENUE IN KENYA REVENUE AUTHORITY

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ABSTRACT

Purpose of the study: The study examined the effect of business process optimization strategies on performance of customs revenue in Kenya Revenue Authority.

Problem statement: Revenue targets have been increasing over the years. Kenya Revenue Authority has been missing revenue targets piling pressure on the government to borrow loans to finance its budget. From past revenue performances, customs revenue accounts for approximately 35% of actual revenue collected. Therefore, examining existing customs cargo clearance process optimization strategies towards improving performance of customs revenue is a step forward towards achieving revenue targets. It is important to emphasize that there are very few comparable studies conducted in Kenya, and those that exist do not share the same context.

Methodology: The study adopted a secondary research approach whereby a desktop research design was adopted. The study relied on publicly available materials including revenue performance reports on the Kenya Revenue Authority website as well as previous studies to examine the identified customs process optimization strategies on performance of customs revenue collection.

Findings: The study established that automation of customs processes has a favourable impact on the performance of customs revenue. Coordination between agencies at the border has a positive impact on trade facilitation. The impact of risk management on the performance of customs revenue depends on the techniques or methods being applied.

Conclusion: The study concludes that the automation of customs processes, inter-agency cooperation, and coordinated border management have a positive influence on the performance of customs revenue collection. The study also concludes that the impact of risk management on the performance of customs revenue depends on the specific techniques or methods applied.

Recommendations: The Kenya Revenue Authority should accelerate the automation of customs processes, strengthen inter-agency cooperation and coordination, and develop a comprehensive coordinated border management strategy to enhance revenue performance. The risk management techniques employed should be regularly reviewed and updated to align with evolving trade patterns and best practices. Continuous capacity building and training programs for customs officials and stakeholders are crucial to effectively implement the recommended strategies.

Keywords: *Kenya Revenue Authority, Automation, Inter-agency Cooperation, coordinated border management, risk management, performance of customs revenue*

INTRODUCTION

Business process optimization strategies

Business process optimization (BPO) is the practice of optimizing existing procedures or processes to make them more efficient (Corona, 2024). It is a methodical approach to simplifying and improving all of an organization's operations in order to boost productivity, reduce costs, and enhance overall effectiveness (Corona, 2024). In terms of revenue performance, process optimization involves identifying and optimizing revenue operations processes to improve efficiency and effectiveness (Pille, 2023). This is achieved through maximizing efficiency as well as minimizing costs resulting in improved overall business performance (Shaheen, 2024). This may also involve modifying procedures in order to maximize parameters while observing certain limitations (Shaheen, 2024). It may be used for particular processes, specific sections, and internal or external procedures (Shaheen, 2024).

Process or procedure improvement and assessment can help businesses become more profitable, effective, and flexible in response to changing conditions (Shaheen, 2024). It can also raise the standard of products and services, increase customer satisfaction, comply with legal obligations, and foster better collaboration and employee involvement (Shaheen, 2024). Businesses ought to have a clear, concise plan in place for achieving their objectives when attempting to enhance a certain process, such as reducing turnaround time, boosting productivity, or improving overall quality. Considering that business process optimization can reduce costs, find inefficiencies, and ultimately improve overall revenue performance, it is therefore essential for revenue collection activities (Pille, 2023).

Revenue authorities worldwide employ various tax or revenue optimization strategies in their processes in one way or the other in order to respond to globalization, dynamic economic situations, and the ever-increasing volumes of Twenty Foot Equivalents (TEUs) (Salikhova et al., 2019). This study examined the effects of three customs revenue optimization strategies which include automation in the customs clearance process, customs risk management processes, and joint/coordinated border management processes (Recio, 2024) in Kenya Revenue Authority (KRA). The goal of these optimization strategies is to improve efficiency in customs cargo clearance processes, ensuring that the processes become more simple, accurate, with minimal delays (Salikhova et al., (2019).

Reducing the time taken during customs clearance of goods is of much interest in customs cargo clearance. The shorter the time taken during cargo clearance, the more the consignments

likely to be cleared within a specified period of time, and this is likely to boost collection of customs revenue. Other benefits achieved through optimization of customs processes include, heightened efficiency in the clearance of goods, streamlining lodgement and processing of customs documents, integration of customs systems with systems of other government agencies, as well as those of other partner states, joint verifications at customs border points, effective profiling and targeting of cargo, tracking of goods and real-time visibility of status of goods in transit, non-intrusive verification of goods, body scanning, and seamless clearance of goods and passengers (Recio, 2024), all of which impact performance of customs revenue.

Performance of Customs Revenue in Kenya Revenue Authority

East African Community Customs Management Act 2004, defines customs revenue as any amounts collectable by Customs in accordance with the provisions of Customs laws. Thus, customs revenue refers to taxes collected by a government through customs administration. These may include duties, taxes, levies, fees, fines and penalties, and warehouse rent. Collection of customs revenue is the core function of the Customs department in Kenya Revenue Authority. Thus, customs performance revolves around collecting customs revenue which directly depends on the level of efficiency in the customs processes and procedures.

Kenya Revenue Authority has sustained an upward revenue trajectory over the years. For instance, over the past five years, revenue collection has steadily increased, rising from Kshs 1.58 trillion to Kshs 2.166 trillion in the financial years 2018/19 and 2022/23 respectively, a 37% increase (KRA, 2023). In the fiscal year 2022/23, it experienced a 6.7% rise (KRA, 2023). Besides the notable growth, the authority has been missing revenue targets, for instance it achieved a 93.3% performance rate, Kshs 107 billion revenue less for the financial year 2022/23 (Amboko, 2023). During the period customs revenue recorded a performance rate of 95.6% of its target (Sang, 2023). Additionally, the Authority's revenue by mid-2023/24 fiscal year, ended in December 2023 was Kshs 1.27 trillion, Kshs 182.4 billion less than the target (Owili, 2024).

Customs clearance process optimization and performance of customs revenue

Kenya Container Port Throughput data shows an increasing trend of millions of Twenty Foot Equivalents (TEUs) cleared through the Kenyan ports every year from 2008 to 2021 (UNCTAD, 2021). The Port of Mombasa is the principal gateway to eastern Africa. Constraints or inefficiencies at the Port of Mombasa have an impact on increasing the cost of goods in the region (BLOC, 2021). Customs department is the lead government agency in facilitating cargo

clearance to ensure its timely release from the Port. Thus, efficiency of customs processes at the Port has a major impact on the economies of Kenya and the other countries it serves. Therefore, examining the effects of business process optimization strategies in customs cargo clearance is a worthy endeavour.

Previous studies exist on effects of automation or system technologies on performance of customs revenue (Nganda, 2020; Angalwa, 2022; Kyenche, 2023; Omosa, 2021). Studies have also been carried out on effects of inter-agency cooperation or joint border management processes on facilitation of trade (Stephen & DaSilva-Glasgow, 2023; Swaleh, 2020; Moraa, 2021; Mutua & Kilonzi, 2023). Additional research has looked into how customs risk management procedures affect revenue collection, mobilization, or protection (Hoffman et al., 2019; Al-Shbail, 2020; Njoroge, 2019; Metet, 2021). However, these studies focussed on one specific customs process independently. To the best of my knowledge no research has been done on regarding the impact of customs cargo clearance process optimization strategies on performance of customs revenue in Kenya Revenue Authority.

STATEMENT OF THE PROBLEM

Kenya Revenue Authority is currently operating under the auspices of the 8th corporate plan whereby realizing government revenue targets while building a sustainable tax base is one of the listed goals (KRA 8th Corporate Plan). In this consideration, revenue collection in the Authority has to perform optimally in order to achieve the set revenue targets by the national treasury. According to KRA Annual Revenue Performance Reports for financial years 2020/21, 2021/22 and 2022/23 customs revenue accounts for approximately 35% of actual revenue collected. Therefore, it is necessary for the Customs department to enhance efficiency of its processes and procedures in order to improve performance of customs revenue.

Efficiency on customs cargo clearance has a direct impact on performance of customs revenue considering the volumes of TEUs that can be released within a specified period of time. Kenya was ranked position 68 with Logistics Performance Index (LPI) of 2.81, last released in 2018 indicating that customs procedures need to be improved to ensure seamless clearance of imports and exports. Studies have shown that customs cargo clearance procedures have a strong influence on cargo clearance efficiency and turnaround time (Matunda, 2019; Mwamutsi, 2022; Tavares & Castañeda-Ayarza, 2022; Chinnapareddy & Zemede, 2019).

Previous studies investigated how automation or system technologies affected customs revenue performance (Nganda, 2020; Angalwa, 2022; Kyenche, 2023; Omosa, 2021), the effects of

inter-agency cooperation or joint border management processes on facilitation of trade (Stephen & DaSilva-Glasgow, 2023; Swaleh, 2020; Moraa, 2021; Mutua & Kilonzi, 2023) as well as the influence of risk management procedures for customs on protection, mobilization, or revenue collection (Hoffman et al., 2019; Al-Shbail, 2020; Njoroge, 2019; Metet, 2021). However, these studies did not include all the independent variables in consideration within the same context.

It is worth emphasizing that none of the comparable studies employed similar methodological constructs as used in this study. Most of the related studies adopted the use of descriptive or exploratory research designs and relied either on primary or both primary and secondary data for analysis. Contrastingly, this study employed desktop research design where publicly available materials including journals, articles, academic research studys, and revenue performance reports were reviewed and analysed. Therefore, this study is unique. In this regard and to the best of my knowledge, this is the first research on customs cargo clearance process optimization strategies and performance of customs revenue in Kenya Revenue Authority.

RESEARCH OBJECTIVES

i. To establish the effect of automation of customs clearance processes on performance of customs revenue in Kenya Revenue Authority.

ii. To establish the effect of customs risk management processes on performance of customs revenue in Kenya Revenue Authority.

iii. To establish the effect of joint/coordinated border management processes on performance of customs revenue in Kenya Revenue Authority.

THEORETICAL REVIEW

Dynamic Capabilities Theory

This idea was brought forth by Teece, Pisano, and Shuen (1997). According to them dynamic competences of an organization are its ability to acquire, integrate, and rearrange both external and internal skills so as to respond to and influence quickly evolving business environments. These competencies facilitate businesses' ability to adjust, create, and react efficiently to intricate and dynamic commercial settings (Helfat et al., 2007). The theory perspective underscores the idea that an organization like KRA needs to continuously develop and adapt their existing customs revenue optimization strategies which include automation of customs

processes, customs risk management, and joint/ coordinated customs border management in order to stay competitive in international trade.

Thus, KRA Customs department needs to analyse and review its procedures or processes or existing customs revenue optimization strategies from time to time in order to respond to the rapidly changing business environments, in order to improve revenue collection. Sensing changes in the environment, grasping new opportunities, and altering resources and procedures to establish and maintain competitive advantage are important components of dynamic capabilities (Teece, 2016; Bornay-Barrachina et al., 2023). The dynamic capabilities concept has received criticism in that the underlying operational processes are difficult to measure empirically, as well as the dynamic capabilities and firm performance correlation (Easterby-Smith et al., 2009). However, the variables selected for this study are measurable empirically and the relationship between independent and dependent variables was established.

Systems Theory

The theory as being applied in social work was first proposed by Ludwig von Bertalanffy (1901–1972). When the theory was first proposed, its creator viewed it as a way to structure how different elements of a bigger organism interact with one another (Bertalanffy, 1968). Thus, the theory examines how different systems interact with one another. A system's overall functioning or other specific components may be impacted by changes made to one component. According to Friedman and Allen (2014), the way a field defines the system dictates the type of interaction that occurs. Defining the system in terms of customs process optimization strategies, then it means when one process, for example, automation of customs process is interfered with, it can affect other processes or even the entire overall customs operations.

Thus, efficiency or effectiveness in customs process optimization strategies necessitates efficiency in all processes, not just one or a few. In this sense, the theory views an organization as a set of relationship comprising customs process optimization strategies each having its own role, and which has an influence on performance of customs revenue. The theory is criticised for its belief that all the different processes/strategies have equal control or impact on the overall organisational performance, which is impractical (Berman, 1996). For this particular study, the impact of automation of customs processes, customs risk management processes and joint/cooperative customs border management processes on performance of customs revenue was established, and it was found to be dissimilar.

EMPIRICAL REVIEW

Automation of customs processes on performance of customs revenue

Kyenche (2023) investigated how customs system automation was impacting performance of customs collection in Tanzania. The dependent variable in the study is customs revenue collection while indepenedent variable is integrated cargo management technologies, with capacity building included as a moderating variable. This was a survey research which adopted cross-sectional design. The study sample, which comprised 141 customs officers and clearing agents stationed at customs stations in Kilimanjaro Airport, Holili, and Tarakea, was chosen using cluster sampling technique. The findings of the study indicate that while cargo valuation system and cargo scanner technology have little influence on compliance, automation of customs systems, in particular the electronic cargo tracking system, significantly improves transparency, accountability, and traceability. Further, staff training, risk management, collaboration, and other capacity-building initiatives greatly increase compliance levels and customs revenue performance. However, the findings that electronic cargo tracking system has a greater influence on compliance than cargo scanners and cargo valuation system does not seem to be theoretically consistent.

Angalwa (2022) investigated how automation of customs systems was impacting customs revenue performance in Kenya. Dependent variable in the study is customs revenue performance while independent variables include electronic cargo tracking system, integrated customs management system, and scanner technology. The study adopted a descriptive survey research design. The study's 170 respondents, including 36 customs officers and 134 clearing and forwarding agents based in Nairobi were selected using a stratified sampling technique. Structured questionnaires were utilized to gather primary data. The results revealed that integrated customs management system, scanner technology, and electronic cargo tracking system have a positive and significant effect on performance of customs revenue ($p<0.05$ in all categories). However, the study did not factor in release of goods which is very critical in customs cargo processing. Our study covered the whole import cargo clearance process from declaration by clearing agents up to the final process of releasing goods from the customs area.

Omosa (2021) investigated how system automation was impacting performance of customs revenue in Kenya. Dependent variable in the study is customs revenue performance while independent variables include electronic cargo tracking system, integrated customs management system, and scanner technology. The study adopted an explanatory research

design. Stratified sampling technique was used to select study respondents, where the sample consisted of 227 clearing agents and customs officers based in Nairobi. Collection of data from primary sources was done using self-administered questionnaires. The findings indicate that integrated customs management system, scanner technology, and electronic cargo tracking system have a positive and significant effect on performance of customs revenue ($p<0.05$ for all variables). However, the study did not factor in release of goods which is very critical in customs cargo clearance. Our study covered the whole import cargo clearance process from declaration by clearing agents up to the final process of releasing goods from the customs area.

Jerono (2020) examined how customs reforms was impacting performance of customs revenue in Kenya. Dependent variable in the study is customs revenue performance while independnet variables include customs procedures, customs value reforms, and automation of customs processes. This was a survey research which adopted a descriptive research design. The author used stratified sampling technique in selecting study respondents, and the sample consisted of 165 customs officers stationed at Mombasa port. According to the study findings customs procedures, customs value reforms, and automation of customs processes have positive and significant effects on performance of customs revenue ($p<0.05$ in all categories). However, multicollinearity test was not carried out to reveal the degree of correlation between automation of customs processes and customs procedures. Our study used independent variables that are not collinear.

Customs risk management processes on performance of customs revenue

Njoroge (2019) investigated how risk management tools was impacting trade facilitation in Kenya. Dependent variable in the study is trade facilitation while independent variables include technology, customs procedures, and human resources. The study employed a mixed research method. For the study, 67 respondents who worked as customs officers were chosen as a sample. The results of the study show that applying customs processes, using technology, and appropriate application of human resource practices all improve customs revenue performance ($p <0.05$ for all variables). However, the author did not conduct the various diagnostic tests on the data to check its suitability for analysis or make necessary corrections accordingly. Further, the adjusted R^2, 0.243 was too low to justify the study findings. As such, the study results are not reliable. Our study reviewed and analysed numerous research publications, as such methodological flaws or errors in a single study could not have an impact on its findings.

Hoffman et al. (2020) investigated how customs operations was impacting trade in South Africa. This was an exploratory research. Data was gathered from multiple South African clearing & forwarding agents. The data showed the transaction levels that were shared between exporters of commodities that were imported into South Africa and the South African Customs Authority (SARS) for a period of two years, from 2014 to 2016. Data in roughly 3.5 million transactions was obtained. Input data was grouped into 10 categories based on customs entry columns. Meaningful information was extracted from the available dataset after which comparisons of results between the different categories of input data was done. Finally, correlation coefficients were computed between the various input factors and the most significant results. The information gathered indicates a rising trend in the average amount of time SARS needs to process shipments, primarily as a result of a rise in the quantity of shipments for which customs requires more studywork. The results of the study show that customs targets shipments for inspection based on certain input parameters; the exporter's identity appears to be the most important factor, followed by type of cargo and country of origin. Moreover, correlations between these parameters and infractions are shown to be substantially smaller than correlations with most consignments that were stopped by SARS. This suggests that the existing risk profiling technique is not efficient, as it does not provide high conversion rates.

Al-Shbail (2020) investigated how risk management was impacting customs revenue protection in Jordan customs. Dependent variable in the study is revenue protection (RP) proxied by risk prevention, risk detection, and recovery of customs revenue losses. Independent variable is risk management system proxied by intelligence information, random selectivity, and risk targeting criteria. After reviewing the risk criteria, or risk indicators or profiles, created in the risk selectivity system, 27 risk profiles pertaining to revenue protection were chosen. Based on risk characteristics that could be used for targeting, the 27 risk criteria were then divided into 8 major types of revenue risk indicators. The results show that there is a substantial positive connection between revenue protection and all risk targeting criteria ($p < 0.05$ for all variables), with the exception of random selectivity and HS code. That there is a non-significant correlation between revenue protection, and HS code, and random selectivity. This finding clarifies that revenue protection is not much impacted by the risk criteria associated with HS code and random selectivity. The results of the study relied upon the 8 proxies for risk targeting criteria which were arbitrarily selected hence not robust. Our study findings were based on findings from various studies, hence more reliable.

Metet (2021) investigated how risk management strategies were impacting performance of customs revenue. The dependent variable is performance of customs revenue while independent variables include integrated systems, cargo scanning, cargo tracking, and customs intelligence. Explanatory research design was adopted for this study. The author used stratified sampling technique to select respondents, where a sample comprising 230 customs officers based at Namanga, Busia, and Malaba One Stop Border Posts was selected. To get primary data, structured questionnaires were used. The results show that performance of customs revenue is positively impacted by the risk management variables ($p < 0.05$ for all variables). However, it was not explained in the study how customs intelligence was measured. Our independent variables are measurable.

Joint/coordinated customs border management on performance of customs revenue

Swaleh (2020) investigated how One Stop Border Post (OSBP) framework was impacting trade facilitation at Lunga Lunga border in Kenya. Dependent variable in the study is customs revenue while independent variables include customs intelligence, integrated systems, cargo tracking, cargo scanning, and cargo tracking. The research followed a cross-sectional survey approach where descriptive research design was used. Selection of study participants was done using stratified sampling technique, and the sample comprised 400 officers from different government agencies, cross border traders, and transporters. Primary data was collected using questionnaires; structured, unstructured, and semi-structured while secondary data was gathered from KRA website. The study findings postulate that shared infrastructure, system integration, and inter-agency cooperation at the OSBP have a positive effect on trade facilitation ($p < 0.05$ for all variables). However, diagnostic tests were not run on the data to see if it was suitable for analysis. Therefore, the study results were not reliable. Our study reviewed and analysed various research studys and hence could not be affected by methodological weaknesses or inaccuracies arising from one study.

Arifin and Nurkumalawati (2021) investigated the integration status of customs agency and immigration in Indonesia. Dependent variable in the study is integration of border agencies while independent variables include international cooperation, intra-agency cooperation, and intra-service cooperation. This was a survey study where quantitative research design was adopted. Data was collected through an online survey. A sample of 177 respondents comprising immigration and customs officers from 5 sea ports, 5 international airports and 5 border crossing stations which were considered the busiest was chosen using purpose random sampling technique. According to the study findings, majority of border immigration and

customs officers stressed the significance of integrating their departments through the use of Integrated Border Management (IBM) approach. Integration initiative through adoption of IBM framework with its three pillars; international cooperation, intra-agency cooperation, and intra-service cooperation, was advocated for as the best approach. However, descriptive statistics used in this study for data analysis is limited to making summations of the sample elements and hence cannot be relied upon as the only analysis tool to infer the properties of the whole population being studied. Our study reviewed and analysed various research studys and hence could not be affected by methodological weaknesses or inaccuracies arising from study.

Moraa (2021) investigated how border management coordination was impacting trade facilitation at Namanga OSBP in Kenya. Dependent variable in the study is trade facilitation while independent variables include coexistence among government agencies, cooperation between government agencies, coordination of government agencies, and collaboration of government agencies. The study adopted a causal research design. The study found that, integrated border management significantly improves trade facilitation at Namanga (OSBP). However, there was a possibility of common method bias as the respondents did self-reporting. This is because the respondents answered the questions based on their subjective judgments which could have perceptual bias. Our study reviewed and analysed many research studys and hence could not be affected by methodological weaknesses or inaccuracies arising from one study.

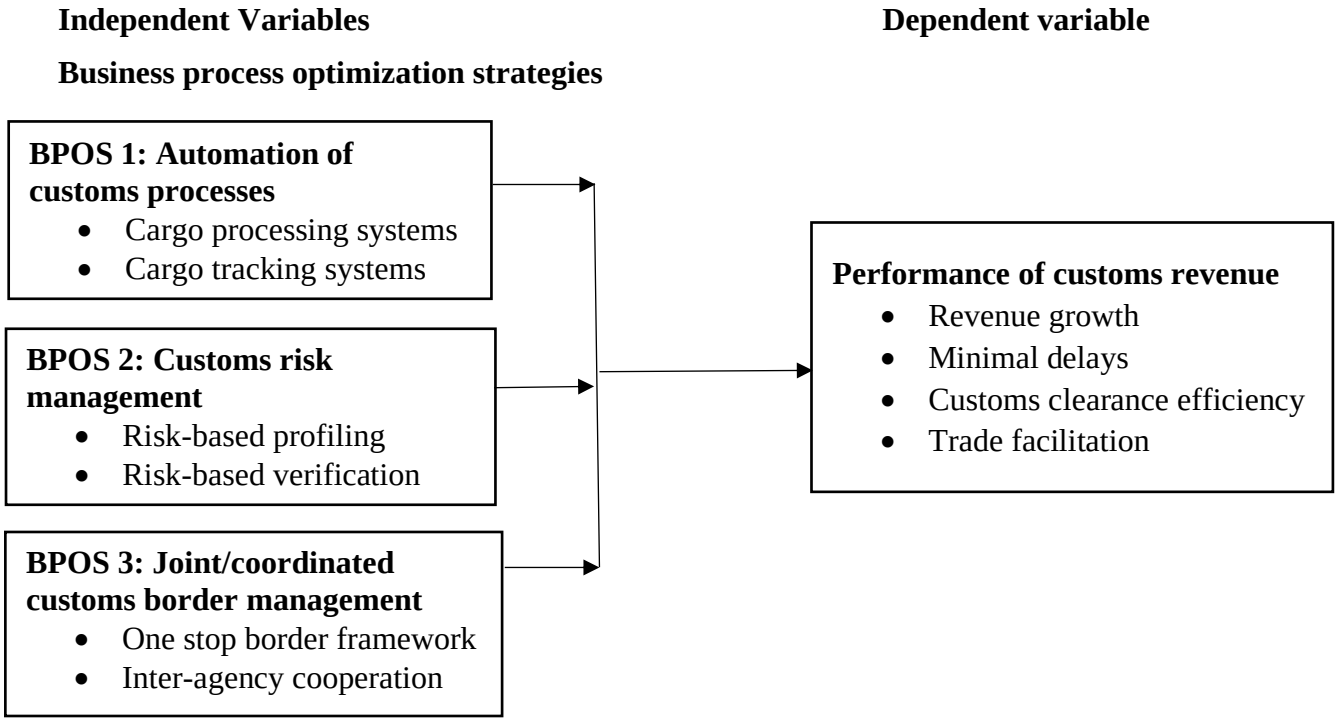
Stephen and DaSilva-Glasgow (2023) examined how improved inter-agency coordination was enhancing trade facilitation in Guyana. The dependent variable is transaction costs while independent variable is inter-agency coordination. The research employed a mixed methods design. Institutional interviews were conducted to obtain qualitative data on representatives of 8 government agencies which were responsible for issuing most of the licenses, certificates and permits required for trading in the country. Convinience sampling approach was employed to select the governement agencies, while availability of the participants was the key selection criterion. Further, quantative data was obtained through conducting structured interviews on a sample of 4 exporters and 4 importers. The study found that a significant barrier to the clearance of commodities was inadequate communication between customs and other authorities. That there were no protocols in place to efficiently assist traders or coordinate with other agencies. That agencies were ignorant of the roles played by other agencies or how they went about importing or exporting goods. Every importer and exporter surveyed reiterated that absence of working frameworks between various agencies resulted in increased expenses, unnecessary

amount of studywork, and repetitive procedures. However, the sample size of 4 exporters and 4 importers was too small to derive reliable results. Our study reviewed and analysed various research studys and hence could not be affected by methodological weaknesses or inaccuracies arising from one study.

Mutua and Kilonzi (2023) investigated how border management coordination was impacting trade facilitation in Kenya. A descriptive survey research design was used in the study. Stratified sampling technique was employed in selecting study participants. The selected sample comprised 150 officers from Customs department, Kenya Bureau of Standards, Port Health Services and Directorate of Immigration Services based at Mombasa port. The study relied on primary sources of collecting data where structured questionnaires were used as well as secondary sources of data. Reliability of data on internal consistency was tested using Cronbach's Alpha while data validity was determined using content validity index. The findings of the study revealed that One Stop Border Posts, joint patrols, joint risk initiatives influence trade facilitation positively and significantly ($p < 0.05$ for all variables). However, the study did not collect data from clearing agents who bear the brunt of customs cargo clearance inefficiencies. Our study covered the whole import cargo clearance process from declaration by clearing agents up to the final process of releasing goods from the customs area.

CONCEPTUAL FRAMEWORK

Figure 1:Conceptual framework.



Source: Author (2024)

RESEARCH METHODOLOGY

The study adopted a desktop research design, which involves analyzing and synthesizing information from existing sources and publicly available materials, instead of collecting primary data through surveys or fieldwork. Specifically, the study relied on revenue performance reports from the Kenya Revenue Authority website, as well as previous studies examining the impact of customs process optimization strategies on customs revenue performance. This approach offers benefits such as time efficiency, quick data access, and lower research expenses. The use of desktop research has been successfully employed in various studies, including those by Gajardo et al. (2022) on brownfield container terminal automation projects and Mishi and Mushonga (2023) on emerging skills needed in the banking sector, reflecting a consistent rise in the utilization of this research design, particularly in the past five years (Wahid et al., 2023).

RESULTS AND DISCUSSIONS

This study established that automation of customs processes has a positive influence on performance of customs revenue in Kenya. That the use of customs systems like integrated customs management system has significantly reduced the cost of doing business by traders thereby facilitating international trade in Kenya. The system has enabled clearing agents to follow through processing of goods by customs officers from the comfort of their offices reducing the daily movement expenses from one customs office to the next. The system which enables communication between customs officers and clearing agents through system notifications has improved transparency in the cargo clearance process. That electronic cargo tracking system has made it easy to follow through the movement of goods as well as detect cargo diversion attempts by unscrupulous traders. This has resulted in collection of more customs fines and customs taxes as per transit diversion regulations. Cargo scanner technology has effectively helped in detecting misdeclaration of goods resulting in extra taxes and customs fines being collected. Cargo scanning has also significantly reduced the need for absolute physical verification of containerized goods, thereby reducing delays experienced during clearance of customs cargo. The overall effect of automation in customs processes include reduction in delays during clearance of goods, improved transparency during cargo processing, effective monitoring of goods in transit, and increasing number of TEUs or cargo volumes being transacted. This has resulted in better performance in customs revenue.

The study established that the degree of risk management effectiveness on performance of customs revenue depends on the techniques or methods being employed. For instance, it was established that the use intelligence information is very effective in risk profiling of cargo. Further, risk targeting criteria like operator's history, consignor's previous record, type of cargo, port of loading and country of origin have been found to be effective in profiling cargo for targeting. This means that the accuracy levels of those methods or criteria are high. When risk profiling is near accurate then, the probability of collecting extra taxes and customs fines due to misdeclaration is high. Efficient risk management methods enhance deterrence when traders fear the probability of being caught and the resulting extra costs. Therefore, efficient techniques of risk management improve compliance levels by traders, leading to better performance in customs revenue. Nevertheless, certain risk targeting criteria like use of HS code, and profiling methods like random selectivity have been found to be ineffective in cargo profiling. The randomness in these two processes reduce the probability of accuracy. Thus, they are ineffective and not significant in improving performance of customs revenue.

Further, this study established that inter-agency cooperation and coordinated border management between customs department and other agencies involved in the clearance of cargo have a positive impact on trade facilitation. Inter-agency cooperation brings about synergy especially on matters risk management at the border. Sharing of intelligence amongst the agencies becomes easy due to improved levels of trust. This has made it possible for joint verification of consignments by the responsible agencies thereby significantly reducing the time taken in processing consignments. Cooperation and coordination of the agencies bolter intervention efforts like conducting joint patrols which become more effective due to combination of individual agency strengths. Coordinated border management is the concept behind One Stop Border Post (OSBP) framework. This is whereby customs officers from two bordering partner states share the same office buildings like at Namanga, Busia, Malaba, Loitoktok and Taveta and Lunga Lunga customs border stations. It has led to centrality in processing of goods, removing duplicity of customs processes at border points. This has greatly facilitated trade at the border and resulted in cohesion among the partner states agencies. The OSBP framework has also provided a platform for sharing of intelligence on matters tax evasion, and smuggling of uncustomed goods, or restricted and prohibited goods. Therefore, inter-agency cooperation and coordinated border management has led to improved compliance levels by traders, resulting in better performance in customs revenue.

CONCLUSION

This study established that automation of customs processes has a positive impact on performance of customs revenue. That the use of customs systems has greatly lowered traders' cost of doing business, consequently promoting international trade in Kenya. That customs systems have brought about transparency in customs cargo clearance process whereby traders can follow through processing of their consignments. That automation in customs has reduced the need to conduct physical verification for every consignment hence significantly reduced the time taken during clearance of goods. Automation has also facilitated efficient detection of misdeclarations in containerized goods as well as diversion of goods in transit. Therefore, automation is very effective in generating extra customs revenues making it an optimal strategy for application in customs processes.

The degree of risk management effectiveness on performance of customs revenue depends on the techniques or methods being applied. Some risk management methods like use of intelligence information are very effective in risk profiling of cargo. Additionally, risk profiling criteria like operator's history, consignor's previous record, type of cargo, port of loading and country of origin have been found to be effective in profiling cargo for targeting. However, certain risk targeting criteria like use of HS code, and profiling methods like random selectivity have been found to be ineffective in cargo profiling. An effective risk profiling criteria or technique increases the probability of collecting extra customs revenue. Therefore, in achieving an optimal customs cargo clearance process, it is necessary to employ effective risk management techniques or methods to improve performance of customs revenue.

Inter-agency cooperation and coordinated border management between Customs department and other agencies involved in the clearance of cargo have positive impact on trade facilitation. Cooperation of agencies at the border brings about synergy especially on matters risk management and customs interventions. For instance, it enables sharing of intelligence information, conducting joint patrols and carrying out joint physical verifications. Further, OSBPs ensure that customs processes are centralized thereby minimizing unnecessary delays and duplicity in the customs clearance process. Cooperation of state agencies and between partner states agencies at the border is necessary in optimizing customs cargo clearance process in order to improve performance of customs revenue.

RECOMMENDATIONS

The study recommends that the Kenya Revenue Authority (KRA) accelerate the automation of customs processes to streamline operations, reduce manual interventions, and enhance efficiency in revenue collection. KRA should leverage advanced technologies and integrated systems to minimize delays, errors, and potential revenue leakages in the customs clearance process. The study recommends that KRA implement effective risk management techniques and methods tailored to the Kenyan context, such as utilizing intelligence information and risk profiling criteria like operator history, consignor records, cargo type, port of loading, and country of origin. In addition, KRA should avoid using ineffective risk targeting criteria and profiling methods, such as relying solely on HS codes or random selectivity, as they have been found to be ineffective in cargo profiling.

In addition, KRA to enhance inter-agency cooperation and coordinated border management between the Customs department and other agencies involved in cargo clearance to enable synergies in risk management, intelligence sharing, joint operations, and centralized customs processes. The study recommends that KRA collaborate with partner state agencies at One-Stop Border Posts (OSBPs) to minimize delays and duplicity in the customs clearance process, thereby optimizing the process and boosting revenue collection. Continuous capacity building and training programs Should be prioritized for customs officials and relevant stakeholders to equip them with the necessary skills and knowledge to effectively implement the recommended strategies and adapt to changing operational environments.

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