EFFECT OF CUSTOMS ADMINISTRATION STRATEGIES ON CROSS BORDER LOGISTICS EFFICIENCY IN EAST AFRICA MEMBER COUNTRIES. A CASE OF KENYAN BORDERS WITH UGANDA AND TANZANIA

Kilonzi, F.

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Kilonzi, F.

Master Candidate, Tax and Customs Administration, School of Business and Economics, Moi University, Kenya

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ABSTRACT

The main purpose of the research study was to establish the effect of customs administration on cross border logistics efficiency among East African member states. The study used an explanatory research design and the total population for the study was Uganda and Tanzania borders. The study targeted 51 senior staff, 94 middle management staff and 141 junior staff. The sample size was 47 senior staff, 92 middle management staff and139 junior staff. Questionnaires were the major data collection instruments. The data was analyzed using descriptive and inferential statistics. The findings showed a strong and positive relationship between custom harmonization and cross border logistics efficiency. There was a strong and positive relationship between custom automation and cross border logistics efficiency. There was also a strong and positive relationship between cross-border management and cross border logistics efficiency. The findings also showed a very strong and positive relationship between capacity improvement and cross border logistics efficiency. The results implied that every per unit increase in custom harmonization leads to 0.193 increase in cross border logistics efficiency. An increase in custom automation leads to 0.096 increase in cross border efficiency. A unit increase in cross border management leads to 0.310 increases in cross border efficiency. A unit increase in capacity improvement leads to 0.225 increase in cross border logistics efficiency. The study concluded that there had been little improvement in cross border logistics efficiency. Automated coding system had greatly improved cross border logistics efficiency. Centralized customs among the member countries had made movement of goods more efficient. The study recommended that member states should come up with a policy that reduces time of clearing goods by harmonizing the custom procedures. East Africa member states should improve on automated system to ensure that it identifies all goods passing through the border posts. EAC member states should come up with policies that eliminate gaps in sharing of information. East African member states should regularly train their staff on emerging trend in cross border logistics management.

***Key Words**: Custom Harmonization, Customs Automation, Cross-Border Management, Capacity Improvement*

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INTRODUCTION

An efficient logistics chain is one of the key tools to create competitive advantage in a growing economy. Every thriving economy relies on an efficient supply chain that nurtures global trade and embrace global competitiveness. Logistics is a critical yet easily neglected component of economic development. Investment in agriculture is futile if there is no supply chain in place to get produce to market. Essential medication is rendered ineffective if it cannot be transported in the appropriate conditions. Consumer goods cannot improve people's lives if the cost of importing them is too expensive for people to access (Pauwelyn, 2009).

Cross-border trade covers all goods entering or leaving a country or another country, with the exception of goods in transit. It also includes exchanges of financial services, such as foreign currency transactions (currency exchange at border crossings), among other transactions. Baron & Mathieu (2013) points out that cross-border logistics occurs when a company exports or imports goods or services to consumers in or from the neighboring country. He notes that mutual closeness, for example in the case of Kenya and Uganda, a common history and the cultural assimilation of communities in the two countries are important precursors of cross-border trade.

Cross-border logistics in East Africa is undergoing a rapid transformation and some governments, especially in developing countries, have yet to appreciate the effects of these developments and respond with the right policies. The performance of the logistics sector depends on both market behavior and market structure. The regulations that govern the behavior of the logistics industry and its structure are correlated and influence market performance (Baron & Mathieu, 2013).

The importance of cross-border logistics for an East Africa country's economy has also led to the need for large-scale measurement. To meet this need, the Logistics Performance Index (LPI) was created in 2007 by researchers commissioned by the World Bank. The LPI is an interactive benchmarking tool that countries can use to identify the possible challenges and opportunities they face in their commercial logistics performance (Widdowson, Blegen, Kashubsky & Grainger, 2014). Since the first report of 2007, new versions have been published in 2010, 2012, 2014 and the most recent version in 2016. All these versions have presented a classification of all the countries where the information was available, with 160 countries in the majority recent classification. To determine the scores of each country, experts from around the world are asked to evaluate countries in six components. The average score on these components is the overall LPI score. This score is used to determine the ranking. Each of the experts is asked to evaluate 8 different countries with a score between 1 (low performance) and 5 (excellent performance) in each of the components (Pauwelyn, 2009).

The mandates of East African government agencies are often not coordinated in order to maintain efficient cross-border logistics. Regulations are developed to meet the regulatory needs of a particular sector, which often leads to contradictory rules that discourage service integration. For example, government regulations may limit the scope of activity by requiring the use of national operators for certain segments of the chain rather than allowing suppliers to offer the full range of series (Zhang, 2009). These conflicts in the regulations of different segments of the chain influence the supply of integrated logistics services, or they can influence the simultaneity and synchronicity required by an efficient logistics chain. The complexity of the regulatory framework is also aggravated by insufficient coordination between governments for the adoption of policies affecting logistics, hindering interregional operations. As logistics services evolve

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towards an integrated process, the gap between the regulatory framework and the business reality becomes more visible (Grainger, 2011).

Since the LPI is built taking the average of the scores in the six components, it is assumed that all components are of equal importance for logistic performance. The importance of each of the components for logistic performance has not been studied. This is one of the shortcomings of the LPI, as it is unlikely that all components are in fact just as important for logistics performance (Matsuda, 2012). Logistics performance literature does not provide sufficient information on the importance of each of the components and other factors for logistic performance. Addressing the relative importance of logistical performance factors will provide a valuable insight into what determines a country's performance. This information could help countries understand where to focus projects and how to improve their performance in the most efficient way. One way to address this relative importance is to assign weights to the components of the LPI (Ndonga, 2013).

Although much of the policy reform agenda for logistics services in East Africa, there are areas where global cooperation is needed. A "complete supply chain" approach to international cooperation involves the harmonization of national laws of trading partners so that barriers in one country do not affect companies in another. This is increasingly being done through the international disciplines that derive from global trade agreements. Logistics services are the subject of an increasing number of discussions on trade liberalization both at regional and multilateral level (Kassee, 2014).

The Harmonized Commodity Description and Coding System, also known as the Harmonized System (HS) of tariff nomenclature is an internationally standardized system of names and numbers to classify traded products. It came into effect in 1988 and has since been developed and maintained by the World Customs Organization (WCO) (formerly the Customs Co-operation Council), an independent intergovernmental organization based in Brussels, Belgium, with over 200 member countries (Hossain, 2009).

Customs automation describes the application of information and communication technologies (ICT) for accomplishing the mission of Customs. It can support the entire clearance process - acceptance and processing of cargo and goods Customs automation offers new possibilities for administrations such as pre-arrival processing and automated release of securities and guarantees. It can facilitate the use of risk management and risk-based selectivity and the collection of data for reporting external trade statistics (Pauwelyn, 2009).

Coordinated cross border management is now recognized by the Customs community as a potential solution for the challenges that the 21st century presents especially with respect to efficient and effective border management. Its importance resulted in the concept being included in the WCO Council's strategic policy on Customs in the 21st Century that was adopted in June 2008 where it is listed as one of the 10 key building blocks for managing borders in today's environment (Zhang, 2009).

A well-designed and targeted capacity building investments focussed on improving the efficiency and effectiveness of Customs administrations can deliver significant dividends for governments and donors alike and allow developing countries to take advantage of many development opportunities provided by the expanding global trading system. Unfortunately, to date at least, many capacity building initiatives in Customs have failed to meet their desired objectives. This strategy reflects the views of the international Customs community and presents a case for a more focussed, co-ordinated and

well-resourced approach to undertaking capacity building in the Customs administrations of developing and least-developed countries (Kunz, Reiner & Gold, 2014).

Statement of the Problem

The control of logistics costs is a problem that requires attention in a company. The way to guarantee the quality and efficiency of logistics is an urgent problem that must be solved at the lowest possible cost. Due to the limited number of numerous small cross-border exchanges, they are not suitable for large containers (Zhang, 2009). This way you can take full advantage of the oceanic storage channels to be solved. The development of cross-border e-commerce so that consumers really can enjoy products and services from around the world, the opportunity to make people's lives more comfortable and colorful. Therefore, to successfully achieve development goals, to meet the demand for more rest time, space, costs and other restrictions, we must strictly control all aspects of the supply chain (Pauwelyn, 2009).

A study conducted in Kenya by Liu & Guangping (2008) shows that by the end of 2007, 85% of the key performance indicator targets of the Second Step Development Strategy had been achieved. All export products were processed in the Customs Clearance System H2000 and the electronic port was widely used among exporters. Risk management covered almost all customs operations, and the risk management platform automatically processed around 60% of the declarations. In terms of dispatch time, 84 percent of exports sent by sea and 99.7 percent of exports sent by other means of transportation could be released within eight working hours (Kassee, 2014).Effect of cargo tracking on logistics efficiency among East African states. The study shows that there has been improvement on reducing the diversion of cargo. Effect of the protocol of the African Community of Hast (EAC) in cross-border trade, with specific reference to the border between Kenya and Uganda Malaba. The results showed that to a greater extent. The protocol had a positive impact on cross-sectional volume border trade. The protocol has reduced several non-tariff trade barriers it is not necessary However, in relation to the cross-border illegal trade; the results showed that the protocol has not yet had any significant impact (Zhang, 2009).

Developing an efficient cross border logistics has been a major challenge by East African countries. There have been frequent cases of delays, lack of leadership, low capacity and theft of cargo. There are concerns of physical infrastructures such as terminals, vehicles and networks among East Africa member states. Deficiencies of infrastructure have led to inefficiency in cross border logistics. East African countries have harmonized their customs in the recent past, which represents an important step towards the integration of East Africa. However, much need to be done to improve efficiency in logistics. Studies above have not addressed the problem of cross-border logistics efficiency among EAC states which leaves a wide gap that informs the need to carry out the current study on the effects of the customs administration on logistical efficiency among the member states of East Africa.

Objectives of the Study

The study sought to examine the effect of customs administration strategies on cross border logistics efficiency at the Kenyan borders. The specific objectives were:-

- To determine the effect of custom harmonization on cross border logistics efficiency at the Kenyan borders
- To evaluate the effect of customs automation on cross border logistics efficiency at the Kenyan borders.
- To assess the effect of customs cross-border management on cross border logistics efficiency at the Kenyan borders.

- To evaluate the effect of capacity improvement on cross border logistics efficiency at the Kenyan borders.

The study sought to test the following null hypotheses:

- H_{01} There is no significant effect of Custom harmonization on cross border logistics efficiency at the Kenyan borders
- H_{02} There is no significant effect of Custom automation on cross border logistics efficiency at the Kenyan borders
- H_{03} There is no significant effect of Cross border management on cross border logistics efficiency at the Kenyan borders
- H_{04} There is no significant effect of capacity improvement on cross border logistics efficiency at the Kenyan borders

LITERATURE REVIEW

Theory of Customs Union

This is the core theory behind our study Viner (1939) developed the theory of customs union. The Viner (1939) study was the first to identify concrete criteria for distinguishing between the possible advantages and disadvantages of economic integration. The so-called "static analysis" of the economic integration of Viner (1939) has divided the possible effects of economic integration on the creation of known trade and the effects of the commercial deviation Kafeero (2008). Trade creation refers to the case where two or more countries enter into a trade agreement and trade goes from being a high-cost supplier member country to a low-cost member country in the union. Trade diversion can occur when imports move from a low-cost provider from a country that is not a union member (third country) to a high-cost supplier member country within the union. This may be the case if the common rate after the union protects the high-cost member country within the union.

Customs unions are, by definition, discriminatory. They mean a reduction in tariffs within the Union and the establishment of a common external tariff wall. They combine free trade with protection. If the external tariff is established in such a way that a more expensive domestic source of an input or consumption replaces the cheaper source outside the regional business area, consumers are penalized because they pay higher prices after integration. This is known as "commercial diversion". The creation of a customs union, with common external tariffs, has further modified the existing model of trade flows. The hypothesis is that before the union, the partner countries had imposed different tariffs in different countries to protect their industries. Therefore, we can see that the whole issue of the customs union can be separated into the subject of the protection of free trade. As Kafeero points out (2008), the main objective of any customs union is to change the sources of supply. The theory supports custom harmonization and Custom automation which facilitates trade between countries.

Theory of Economic Integration

Jacob Viner founded the theory of economic integration (1950), which defined the effects of trade creation and diversion, the terms introduced for the change in the inter-regional flow of goods caused by changes in customs tariffs due to the creation of an economic union. It was founded with the significant contribution of Hussein (2009). He has differentiated between some two effects; Trade between partner countries expands in relation to international comparative advantage and trade between countries grows because of the special or unique treatment granted to imports originating in the region compared to those outside the region. When trade between partner countries expands in relation to the international comparative advantage, it calls it "creating exchanges". This is where local products are replaced by imports of low-cost goods produced by a partner in a country. When trade between countries expands due to exclusive treatment reserved for imports from the region rather than the rest of the world, it is been called commercial diversion, which means the change of imports from the lowest

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exporter to the world's most expensive products (Barron & Lisa, 2013).

Labor-intensive countries will concentrate their economic activities on industries that depend on a large amount of labor, such as production, because labor is cheap. However, the job offer will eventually decrease, which will increase wages. The country will also increase its capital, based on the profits it generates from its exports and which will allow more investment. The theory raises the hypothesis that, ultimately, the relationship between wages and benefits should be equaled among the participating countries, with the result of fair and balanced exchanges. In other words, according to the theory, a disparity between labor costs, capital investment and wealth among nations will eventually cease to exist (Grainger, 2011). The theory will help the East African countries come up with fair and balanced exchanges of economic integration which will help improve logistics efficiency. The theory supports custom harmonization, Custom automation and cross border management where inter-regional flow of goods caused by changes in customs tariffs due to the creation of an economic union.

Trade Theory

The neoclassical contributions to the trade theory of Haberler, Heckscher and Ohlin were developed by Wolfgang Stolper and Paul Samuelson (1941) and Samuelson (1948, 1949) in what became known as the Heckscher-Ohlin-Samuelson (or HOS) commercial theory. The momentum for regional integration acquires its basic principle from the Han & Ireland medium trade theory (2014) that open or free trade is greater than all other existing trade policies. The theory ignores consistent returns to scale and focuses on static gains.

The most famous neoclassical model is also the simplest: the model developed by the English political economist David Ricardo at the beginning of the 19th century. It is simple because Ricardo assumes that there is only one "production factor" (i.e. type of input) - work. This model emphasizes that trade should, in principle, benefit both parties, even if one is more efficient. More sophisticated models have been developed in the present century as economists have learned more mathematics. The best known is the Heckscher-Ohlin model, named after a pair of Swedish economists, who is often called Heckscher-Ohlin-Samuelson (HOS) because of the important contributions of the American economist Paul Samuelson. HOS includes two factors of production (for example, labor and land), and shows that some factors of production can be negatively affected by trade, although it agrees with Ricardo that there are general gains in trade (Hoekman & Nicita, 2010). The theory will help the study on how East African countries can come up with trade policies that will help improve logistics efficiency. The theory supports custom harmonization, Custom automation, cross border management and capacity improvement where exchanges between two or more countries will improve the well-being of all East Africa partner states.

Empirical Review

Quality logistics services play an important role in facilitating the transport of national, regional and international products. Inefficiencies hinder trade by imposing additional costs in terms of time and money, while efficient logistics increases the competitiveness of a country's exports by reducing the cost of transporting goods, especially for countries that are disadvantaged by the distance of the main ones. As developed nations change from traditional production and agriculture and are increasingly involved in international vertical specialization, the need for efficient logistics services becomes more important (Zhang, 2009)

The Economic Competitiveness Package (ECP) is currently a matter of high priority at the World Customs Organization (WCO). Economic competitiveness starts with trade facilitation.

Customs administrations undeniably play an important role in trade facilitation. Indeed, facilitating trade is one of the key objectives of the WCO and the Organization has contributed, through its tools and instruments as well as through technical assistance, to increasing the economic competitiveness and growth of Members. The WCO Revised Kyoto Convention (RKC), which entered into force in 2006, is the major tool for this purpose. More recently, and in response to the growing need for an efficient supply chain in a rapidly changing world, the WCO further developed guides and best practices which were incorporated in the WCO ECP, adopted in 2012 (WTO, 2014).

Pauwelyn (2009) studied the effects of personalized harmonization on cross-border logistics efficiency at the entry / exit point of Kasumbalesa in Zambia. The results of the study reveal some inconsistencies in the way the commercial facilitation measures are implemented at Kasumbalesa, compared to international standards. Although various trade facilitation techniques are implemented at Kasumbalesa, empirical evidence shows that much more needs to be done. As a result, Kasumbalesa should strive to adopt modern border management techniques to improve trade and implement it properly.

These techniques should include single window mechanisms and coordinated border management. The application of these techniques will also require an increase through transparent and predictable rules. Improving facilities in Kasumbalesa and later on other Zambian borders can benefit the country. Some of the benefits can derive from greater direct local and foreign investments. These investments can increase competition among Zambian economic agents. In return, increased competition can lead to efficiencies in small and medium-sized businesses. The forthcoming companies play a decisive role in job creation in Zambia and, in general, play an important role in alleviating poverty (Hossain, 2009).

According to Hossain (2009), the term "single window" is: a facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfill all import, export, and transit-related regulatory requirements. If information is electronic then individual data elements should only be submitted once. The concept is recognized and promoted by several world organizations that are concerned with trade facilitation. Amongst these are the United Nations Economic Commission for Europe (UNECE) and its Centre for Trade Facilitation and Electronic Business (UN/CEFACT), World Customs Organization (WCO), the United Nations Network of Experts for Paperless Trade and Transport in Asia and the Pacific (UNNExT), SITPRO Limited of the United Kingdom and the Association of Southeast Asian Nations (ASEAN).

Liu & Guangping (2008) studied the effect of the automation of customs processes on cross border logistics efficiency on the export of Hulk oil products to Kenya implemented by the Kenya Revenue Authority in 2005. Automation of customs in transit and export of petroleum products had positive results and negative effects for its main stakeholders. Kenya Revenue Authority has achieved its main goals of automating customs seen through the reduction of real corruption amid perceived bribery in customs, expanding the tax base, declarations of accuracy loading and sealing point's loss of income. Oil sellers also benefit in terms of integration with regional branches. However, the impact on exporters of bulk petroleum products was largely negative. This is reflected in a lower return on investment, profitability and turnover, due to a longer delivery time caused by delayed access to goods.

Pauwelyn (2009) conducted a study to establish the main factors that, by hindering the creation of the Organ, have prevented EAC from contributing to a crucial role in the creation of peace. The first and most important factor, "there is an absence of common values among member states, between

democratic and authoritarian states and between states oriented to pacifist and militarist foreign policy". Second state that EAC members ignore the transition to a sovereign measure towards a security system that includes binding rules and the possibility of being involved in internal affairs. The third factor is that the region stands out for its small economies, low development and weak organizational skills that weaken the success of all CAO forums and programs.

Tosevska-Trpcevska (2014) revealed that the main contributors to disintegration and the eventual collapse of the EAC were political and economic. The centralization of administrative and / or administrative structures in Kenya and the constant hostility between partner countries were key political determinants that led to the collapse of the RIA. Bearing in mind that the harmonization mechanisms provided for in the Treaty did not achieve regional stability among the members; the Treaty on the one hand led to an increase in inflation and very large trade deficits in Tanzania and Uganda, while Kenya conquered the industrial domain. The conflicting economic structures in each country have also multiplied the momentum until the last division of the EAC.

Hausman, Lee, Napier, Thompson & Zheng (2010) has established that there is a contradiction in the lists of sensitive products and violation of the rules of origin due to the documentation challenges and the failure to recognize the certificates of origin of other partner states. In addition to infrastructure, non-tariff barriers and the lack of competent and effective human resource capacity, the trio also identified the lack of institutional integrity as another important factor in the operation of the EAC UC challenge. They argue that the EAC customs practice is hampered by numerous integrity problems, such as corruption and lack of impartiality in assessing the rights of imported products. Given that customs is a significant fiscal area in the EAC, there is a significant challenge in creating a balance between trade facilitation and control. As a result, the audit capacity is incredibly low and provides fertile ground for unscrupulous businesses and traders to unduly benefit.

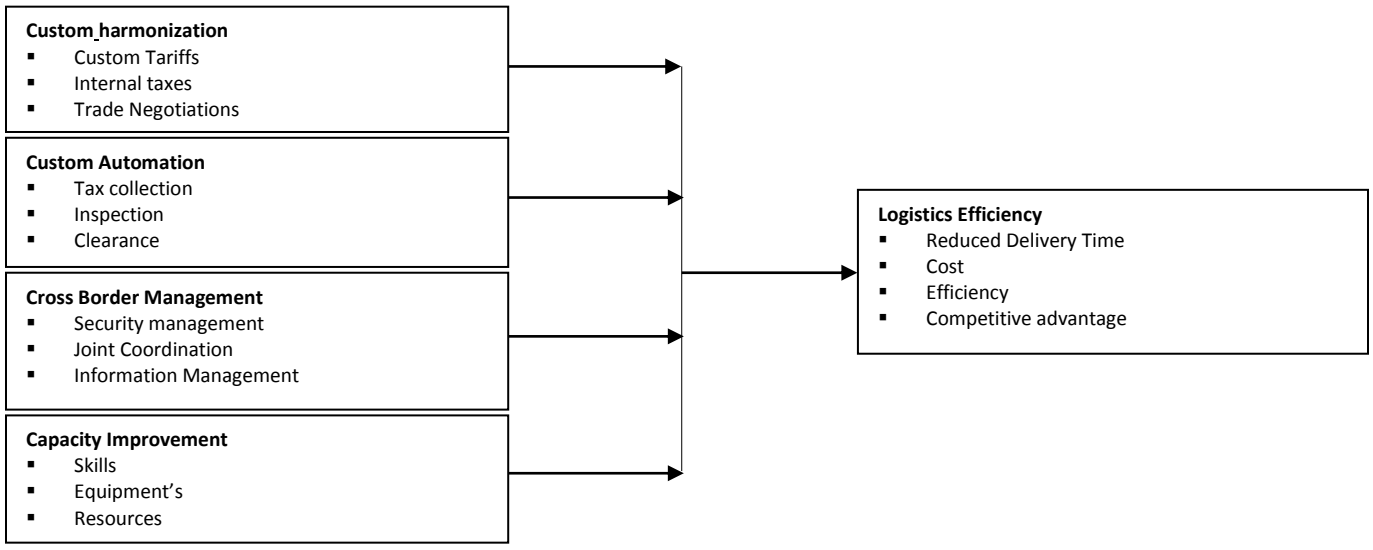

Figure 1: Conceptual Framework

Source: **Author (2019)**

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METHODOLOGY

An explanatory research design approach was adopted for the study. The study targeted 51 senior staff, 94 middle management staff and 141 junior staff from Kenyan borders with Uganda and Tanzania. The choice of target population was appropriate since the boarder points were involved in cross boarder custom administration among the 3 East Africa Member States. The Unit of Analysis was ; Holili, Isebania, Loitokitok, Lunga Lunga, Namanga, Taveta, Busia, Lokitanyala, Lwakhakh, Malaba and Suam boarder points. The stratified random sampling was appropriate as the population was heterogeneous. The questionnaires were used in collecting information from the 278 staff of Kenyan borders with Uganda and Tanzania. The computer software of the statistical package for social sciences (SPSS) Version 22 was used for the analysis in order to generate datasets that were used for the subsequent analysis of the data.

FINDINGS AND DISCUSSIONS

Table 1: Descriptive Statistics for Custom Harmonization

	N	Mean	Std. Deviation
Harmonized custom procedures have led to improved cross border logistics efficiency	248	3.0282	1.17118
Harmonized tariffs have increased cross border logistics efficiency	248	2.9355	1.19202
Harmonized internal tariffs have enabled cross border logistics efficiency	248	4.2056	.93192
Trade negotiations have improved cross border logistics efficiency	248	2.8992	1.28284
Harmonized Commodity Description has improved cross border logistics efficiency	248	3.5484	1.31546

Source: Researcher (2019)

Table 1 above showed the effect of custom harmonization on cross border logistics efficiency. Majority of respondents indicated to a moderate extent that harmonized custom procedures had led to improved cross border logistics efficiency as shown by (M=3.0282 SD=1.17118), this showed that there had been little improvement in cross border logistics efficiency due to custom harmonization, however more needed to be done by the member countries to make them more efficient. The study findings agreed with Pauwelyn (2009) who argued that lack of harmonization in the documentation and documentation processes required by the COMESA Member States hindered cross border trade and led to long waiting periods for imports/exports in various internal borders. Harmonized tariffs had increased cross border logistics efficiency to a moderate extent as indicated by (M=2.9355 SD=1.19202), this showed that there had been little improvement in cross border logistics efficiency due to harmonized tariffs. The study disagreed with Baron and Mathieu, (2013) who argued that tariffs and trade facilitation remain important obstacles to greater integration with global industrial product markets. Harmonized internal tariffs had enabled cross border logistics efficiency. Respondents indicated to a great extent that harmonized internal tariffs have enabled cross border logistics efficiency as indicated by (M=4.2056 SD=0.93192), this showed that harmonized internal tariffs has led to great improvement on cross border logistics efficiency. The study disagreed with Baron and Mathieu, (2013) who argued that tariffs and trade facilitation remain important obstacles to greater integration with global industrial product markets. Trade negotiations have improved cross border logistics efficiency to a moderate extent as

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indicated by (M=2.8992 SD=1.28284), this showed that trade negotiations has done very little in ensuring that there is cross border logistics efficiency. Respondents indicated to a great extent that harmonized commodity description has improved cross border logistics efficiency as indicated by (M=3.5484 SD=1.31546), this showed that harmonized commodity description has led to cross border logistics efficiency. The findings would help East Africa member countries improve on custom harmonization. The study findings agreed with Baron and Mathieu, (2013) trade negotiations have improved cross border logistics efficiency to a moderate extent. Respondents indicated to a great extent that harmonized commodity description has improved cross border logistics efficiency.

Table 2: Descriptive Statistics for Custom Automation

	N	Mean	Std. Deviation
Custom automation has improved cross border logistics efficiency	248	2.9879	1.30549
Automated coding system has improved cross border logistics efficiency	248	3.4476	1.39304
Automated tax collection has improved cross border logistics efficiency	248	3.2823	1.36800
Automated inspection has improved cross border logistics efficiency	248	3.1573	1.33296
Automated clearance has improved cross border logistics efficiency	248	3.2137	1.30349

Source: Researcher (2019)

The effect of custom automation on cross border logistics efficiency was shown in table 2. Respondents indicated to a moderate extent that custom automation has improved cross border logistics efficiency as shown by (M=2.9879 SD=1.30549). This showed that there has been little improvement in cross border logistics efficiency. The study findings agreed with Han and Ireland (2014) who argued that the Harmonized System (HS) is an orderly system of commodity description and coding for the classification of transportable goods. Respondents indicated to a great extent that automated coding system has improved cross border logistics efficiency as evidenced by (M=3.4476 SD=1.39304), this showed that automated coding system had greatly improved cross border logistics efficiency. Automated tax collection had improved cross border logistics efficiency was indicated to a great extent by (M=3.2823 SD=1.36800), this showed that automated tax collection had reduced time for collecting tax and reduced the cases of tax evasion. Majority of respondents indicated to a moderate extent that automated inspection has improved cross border logistics efficiency as evidenced by (M=3.1573 SD=1.33296). This showed that automated inspection has slightly improved cross border logistics efficiency, however there has been cases of systems delays leading to slow movement of goods. Automated clearance has improved cross border logistics efficiency to a moderate extent as evidenced by (M=3.2137 SD=1.30349). This showed that there has been slight improvement in clearance of goods, however, there are many processes involved in clearance of goods which has led to inefficiency in cross border logistics. The findings will help East Africa member countries improve on cross border management. The study findings agreed with Liu and Guangping (2008) who argued that Kenya Revenue Authority has achieved its main goals of automating customs seen through the reduction of real corruption amid perceived bribery in customs, expanding the tax base, declarations of accuracy loading and sealing point's loss of income.

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Table 3: Descriptive Statistics for Cross Border Management

	N	Mean	Std. Deviation
Centralized customs has improved cross border logistics efficiency	248	3.5726	1.31126
Cross border management has improved logistics efficiency	248	3.4073	1.44237
Coordination across the border has improved cross border logistics efficiency among EAC member states.	248	3.1452	1.38057
Improved security among EAC member states has improved cross border logistics efficiency	248	3.0685	1.28812
Exchange of information has led to improved cross border logistics efficiency among EAC member states.	248	2.9516	1.32160

Source: Researcher (2019)

Table 3 showed summary on cross border management and cross border logistics efficiency. Centralized customs has improved cross border logistics efficiency to a great extent as indicated by (M=3.5726 SD=1.31126), this shows that Centralized customs among the member countries has made movement of goods more efficient. The findings agreed with Liu & Guangping (2008) who argued that customs automation is one of the most powerful tools for increasing the efficiency of customs. Respondents indicated that cross border management has improved logistics efficiency to a moderate extent as shown by (M=3.4073 SD=1.44237). This showed that the management at the border has greatly improved which has led to easy movement of goods. Coordination across the border has improved cross border logistics efficiency among EAC member states to a moderate extent as shown by (M=3.1452 SD=1.38057). This showed that cross border management has led to improved coordination. The study findings agreed with Grainger (2011) who argued that Harmonized System (HS) remove trade barriers and facilitating the international trade. Respondents indicated that improved security among EAC member states has improved cross border logistics efficiency to a moderate extent. Respondents indicated that improved security among EAC member states has improved cross border logistics efficiency to a moderate extent as indicated by (M=3.0685 SD=1.28812), this showed that cross border management has improved security but more needs to be done as there are still cases of goods being stolen at the border points. Exchange of information has led to improved cross border logistics efficiency among EAC member states to a low extent as indicated by (M=2.9516 SD=1.32160), this shows that cross border management has not led to improved exchange of information thus facilitating cross border logistics efficiency. The findings will help East Africa member countries improve the capacity. The findings disagreed with Liu & Guangping (2008) who argued that customs automation is one of the most powerful tools for increasing the efficiency of customs. The findings will help East Africa member countries improve the capacity.

Table 4: Descriptive Statistics for Capacity Improvement

	N	Mean	Std. Deviation
Employees have skills to facilitate cross border logistics efficiency	248	3.8266	1.21319
There are resources to support cross border logistics efficiency	248	3.9597	1.12318
Employees are competent to support cross border logistics efficiency	248	4.3105	.81577
There is technology to facilitate cross border logistics efficiency	248	3.8629	1.06725

Source: Researcher (2019)

Table 4 showed summary on capacity improvement and cross border logistics efficiency. Employees have skills to facilitate cross border logistics efficiency to a great extent as shown by (M=3.8266 SD=1.21319), this showed that skills of employees at the border post is important in effective movement of goods across the border. The study findings disagreed with Hausman, Lee, Napier, Thompson & Zheng (2010) who argued that there is lack of competent and effective human resource capacity at the border post. Employees were not regularly trained on changing trends in cross border logistics. Respondents indicated to a great extent that there resources to support cross border logistics efficiency to a moderate extent as evidenced by (M=3.9597 SD=1.12318), this showed that resources were important in supporting cross border logistics although the member states have been slow to contribute resources to facilitate cross border logistics efficiency. The study findings agrees with Hausman, Lee, Napier, Thompson & Zheng (2010) who argued that there is lack of competent and effective human resource capacity at the border post. On whether employees are competent to support cross border logistics efficiency was shown to a great extent by (M=44.3105 SD=0.81577), this showed that employees were competent although they needed regular training on cross border logistics efficiency. The study findings disagreed with Hausman, Lee, Napier, Thompson & Zheng (2010) who argued that capacity is incredibly low and provides fertile ground for unscrupulous businesses and traders to unduly benefit. There is technology to facilitate cross border logistics efficiency to a great extent as evidenced by (M=3.8629 SD=1.06725), this shows that technology was used in cross border efficiency although more needed to be done to improve its reliability. The study findings disagrees with Hausman, Lee, Napier, Thompson & Zheng (2010) who argued that there is lack of competent and effective human resource capacity at the border post. There is technology to facilitate cross border logistics efficiency to a great extent.

Table 5: Descriptive Statistics for Cross Border Logistics Efficiency

	N	Mean	Std. Deviation
Customs administration has reduced the cost of logistics	248	3.8710	2.84830
Customs administration has reduced delivery time	248	3.2036	1.33444
Cross border efficiency has facilitated the transport of regional products	248	3.2661	1.30156
Efficient cross border logistics has increased the competitiveness of a country's exports	248	3.2258	1.48812
Tariffs act as a barrier to logistics efficiency	248	3.1774	1.54316

Source: Researcher (2019)

Table 5 showed the summary of cross border logistics efficiency. On whether customs administration has reduced the cost of logistics was indicated to a great extent by (M=3.8710 SD=2.84830), this showed there had been reduced cost of transporting goods due to custom harmonization, custom automation and cross border management. Respondents indicated that customs administration has reduced delivery time to great extent as indicated by (M=3.2036 SD=1.33444), this showed that customs administration had led to reduced delivery time. Cross border efficiency has facilitated the transport of regional products to a great extent as shown by (M=3.26613.2661 SD=1.30156), this showed that transport of regional products has been made efficient by custom harmonization, custom automation and cross border management. Respondents indicated that efficient cross border logistics has increased the

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competitiveness of a country's exports to a moderate extent as indicated by (M=3.2258 SD=1.48812), this showed that there has been increased competitiveness due to efficient cross border logistics. Tariffs act as a barrier to logistics efficiency was indicated to a moderate extent by (M=3.1774 SD=1.54316), this shows that there has been tariffs among member countries which slows movement of goods.

Table 6: Correlation

Correlations

		Custom Harmonization	Custom Automation	Cross Border Management	Capacity Improvement	Cross Border Logistics Efficiency
Custom Harmonization	Pearson Correlation	1	.355**	.343**	.012	.330**
	Sig. (2-tailed)		.000	.000	.849	.000
	N	248	248	248	248	248
Custom Automation	Pearson Correlation	.355**	1	.455**	.036	.296**
	Sig. (2-tailed)	.000		.000	.568	.000
	N	248	248	248	248	248
Cross Border Management	Pearson Correlation	.343**	.455**	1	-.170**	.468**
	Sig. (2-tailed)	.000	.000		.007	.000
	N	248	248	248	248	248
Capacity Improvement	Pearson Correlation	.012	.036	-.170**	1	.329**
	Sig. (2-tailed)	.849	.568	.007		.000
	N	248	248	248	248	248
Cross Border Logistics Efficiency	Pearson Correlation	.330**	.296**	.468**	-.329**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	248	248	248	248	248

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Researcher (2019)

The study conducted correlation analysis on the effect of customs administration strategies on cross border logistics efficiency at the Kenyan borders. Table 6 showed a strong and positive relationship between custom harmonization and cross border logistics efficiency. The relationship was significant ($r = 0.330$, $p<0.01$) thus custom harmonization had major influence on cross border efficiency. The table showed a strong and positive relationship between custom automation and cross border logistics efficiency. The relationship was significant at ($r = 0.296$, $p< 0.01$), thus custom automation greatly affect cross border efficiency. The table also showed strong and positive relationship between cross-border management and cross border logistics efficiency. The relationship was significant at ($r = 0.468$, $p<0.01$), thus custom automation affect cross border logistics efficiency. The table also showed a very strong and positive relationship between capacity improvement and cross border logistics

efficiency. The relationship is significant at (r = 0.329, p<0.01), thus capacity improvement affects cross border logistics efficiency.

Regression Analysis

The researcher conducted a multiple regression analysis so as to test relationship among variables (independent) on cross border logistics efficiency. The study applied the Statistical Package for Social Sciences (SPSS) Version 22.0 to code, enter and compute the measurements of the multiple regressions for the study.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.574[a]	.330	.319	.90031

a. Predictors: (Constant), Capacity Improvement, Custom Harmonization, Custom Automation, Cross Border Management

Source: Researcher (2019)

Table 7 showed the results of multiple regressions. The value of R2 is 0.330, revealing 33.0% variability in factors relating to custom harmonization, custom automation, cross border management and capacity improvement accounted to cross border logistics efficiency in the model developed. The adjusted R2 is an improved estimation of R2 in the population. The value of adjusted R2 was 0.319. This adjusted measure provided a revised estimate, revealing 31.9% variability in factors relating to custom harmonization, custom automation, cross border management and capacity improvement accounted to cross border logistics efficiency, and this shows the model is good.

Table 8: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	97.034	4	24.259	29.928	.000[b]
	Residual	196.965	243	.811		
	Total	294.000	247			

A. Dependent Variable: Cross Border Logistics Efficiency

B. Predictors: (Constant), Capacity Improvement, Custom Harmonization, Custom Automation, Cross Border Management

Source: Researcher (2019)

ANOVA for capacity improvement, customs harmonization, customs automation, customs cross border management and cross border logistics efficiency was done and the results presented in table 4.16 above. A P-value of 0.000 which is less than 5%level of significance implies that capacity improvement, harmonization, automation and Cross Border Logistics Efficiency have statistical significance on cross border logistics efficiency. This implied goodness of fit of the model, thus the variables can be carried on for further analysis to determine with significance the level of its influence.

Table 9: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		

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1	(Constant)	2.198	.491		4.473	.000
	Custom Harmonization	.355	.106	.193	3.345	.001
	Custom Automation	.132	.084	.096	1.577	.116
	Cross Border Management	.396	.079	.310	5.013	.000
	Capacity Improvement	.175	.062	.225	2.838	.006

A. Dependent Variable: Cross Border Logistics Efficiency

Source: Researcher (2019)

The study further determined the beta coefficients of custom harmonization, custom automation, cross border management and capacity improvement. The results showed that the beta coefficient of harmonization, custom automation, cross border management and capacity improvement was 0.355, 0.132, 0.396 and 0.175 which helps to generate the model $Y=2.198 +0.355X_1+ 0.132X_2+0.396X_3 0.175X_4$ for custom harmonization, custom automation, cross border management and capacity improvement versus cross border logistics efficiency. This model implies that every per unit increase in custom harmonization leads to 0.193 increase in cross border logistics efficiency. An increase in custom automation leads to 0.096 increase in cross border efficiency. A unit increase in cross border management leads to 0.310 increases in cross border efficiency. A unit increase in capacity improvement leads to 0.225 increase in cross border logistics efficiency.

DISCUSSION

Majority of respondents indicated to a moderate extent that harmonized custom procedures have led to improved cross border logistics efficiency, the study findings agrees with Pauwelyn (2009) who argued that lack of harmonization in the documentation and documentation processes required by the COMESA Member States hinder cross border trade and lead to long waiting periods for imports/exports in various internal borders. Harmonized tariffs have increased cross border logistics efficiency to a moderate extent the study disagrees with Baron and Mathieu, (2013) who argued that tariffs and trade facilitation remain important obstacles to greater integration with global industrial product markets. Respondents indicated to a great extent that harmonized internal tariffs have enabled cross border logistics efficiency, the study disagrees with Baron and Mathieu, (2013) who argued that tariffs and trade facilitation remain important obstacles to greater integration with global industrial product markets. Trade negotiations have improved cross border logistics efficiency to a moderate extent. Improving trade facilitation and the logistics environment should be a priority, given its potential to stimulate trade in industrial products. The study findings agree with Baron and Mathieu, (2013) trade negotiations have improved cross border logistics efficiency to a moderate extent. Respondents indicated to a great extent that harmonized commodity description has improved cross border logistics efficiency.

Respondents indicated to a moderate extent that custom automation has improved cross border logistics efficiency. Respondents indicated to a great extent indicated that automated coding system has improved cross border logistics efficiency, the study findings agrees with Han and Ireland (2014) who argued that the Harmonized System (HS) is an orderly system of commodity description and coding for the classification of transportable goods. Automated tax collection has improved cross border logistics efficiency was indicated to a great extent, the study findings agrees with Liu and Guangping (2008) who argued that Kenya Revenue Authority has achieved its main goals of automating customs seen through the reduction of real corruption amid perceived bribery in

customs, expanding the tax base, declarations of accuracy loading and sealing point's loss of income.

Centralized customs has improved cross border logistics efficiency to a great extent. The findings agreed with Liu & Guangping (2008) who argued that customs automation is one of the most powerful tools for increasing the efficiency of customs. Respondents indicated that cross border management has improved logistics efficiency to a moderate extent. Coordination across the border has improved cross border logistics efficiency among EAC member states to a moderate extent. The study findings agree with Grainger (2011) who argued that Harmonized System (HS) remove trade barriers and facilitating the international trade. Respondents indicated that improved security among EAC member states has improved cross border logistics efficiency to a moderate extent. Exchange of information has led to improved cross border logistics efficiency among EAC member states to a low extent, the findings disagrees with Liu & Guangping (2008) who argued that customs automation is one of the most powerful tools for increasing the efficiency of customs. The findings will help East Africa member countries improve the capacity.

Employees have skills to facilitate cross border logistics efficiency to a great extent. The study findings disagrees with Hausman, Lee, Napier, Thompson & Zheng (2010) who argued that there is lack of competent and effective human resource capacity at the border post. Employees were not regularly trained on changing trends in cross border logistics. The study findings agrees with Hausman, Lee, Napier, Thompson & Zheng (2010) who argued that there is lack of competent and effective human resource capacity at the border post. Respondents indicated to a great extent that there were resources to support cross border logistics efficiency to a moderate extent. The study findings disagrees with Hausman, Lee, Napier, Thompson & Zheng (2010) who argued that capacity is incredibly low and provides fertile ground for unscrupulous businesses and traders to unduly benefit. On whether employees are competent to support cross border logistics efficiency was shown to a great extent. The study findings disagrees with Hausman, Lee, Napier, Thompson & Zheng (2010) who argued that there is lack of competent and effective human resource capacity at the border post. There is technology to facilitate cross border logistics efficiency to a great extent.

Hypothesis Testing

H_{01} There is no significant effect of Custom harmonization on cross border logistics efficiency at the Kenyan borders. The p-value of the t-test for this variable is 0.001. Since the p-value 0.001 is below 0.05, the null hypothesis is rejected. Hence, the study finds that custom harmonization has an effect on cross border logistics efficiency at the Kenyan borders

H_{02} There is no significant effect of Custom automation on cross border logistics efficiency at the Kenyan borders. The p-value of the t-statistic for the variable custom automation is 0.116. Since the p-value 0.116 is above than 0.05, the null hypothesis is accepted and the alternative hypothesis rejected. This means that there is no significant effect of custom automation on cross border logistics efficiency at the Kenyan borders.

H_{03} There is no significant effect of Cross border management on cross border logistics efficiency at the Kenyan borders. A simple regression analysis has shown a statistical significance relationship between cross border management and cross border logistics efficiency, 0.000. Since the p-value 0.000 is below 0.05. Thus, we reject the null hypothesis, thus cross border management has significant effect on cross border logistics efficiency at the Kenyan borders.

H_{04} There is no significant effect of capacity improvement on cross border logistics efficiency at the Kenyan borders. The p-value of the t-statistic for the variable capacity improvement is 0.006. Since the

p-value 0.006 is greater than 0.05, the null hypothesis is accepted and the alternative hypothesis accepted. This means that there is no significant effect of capacity improvement on cross border logistics efficiency at the Kenyan borders**.**

CONCLUSION

There had been little improvement in cross border logistics efficiency due to custom harmonization; however more need to be done by the member countries to make them more efficient. There had been little improvement in cross border logistics efficiency due to harmonized tariffs. Harmonized internal tariffs have enabled cross border logistics efficiency. Harmonized internal tariffs have led to great improvement on cross border logistics efficiency. A trade negotiation has done very little in ensuring that there is cross border logistics efficiency. Harmonized commodity description has led to cross border logistics efficiency.

There had been little improvement in cross border logistics efficiency. Automated coding system has greatly improved cross border logistics efficiency. Automated tax collection has reduced time for collecting tax and reduced the cases of tax evasion. Automated inspection has slightly improved cross border logistics efficiency, however there has been cases of systems delays leading to slow movement of goods. There has been slight improvement in clearance of goods, however, there are many processes involved in clearance of goods which has led to inefficiency in cross border logistics.

Centralized customs among the member countries has made movement of goods more efficient. The management at the border has greatly improved which has led to easy movement of goods. Cross border management has led to improved coordination and improved security but more needs to be done as there are still cases of goods being stolen at the border points. Cross border management has led to improved exchange of information thus facilitating cross border logistics efficiency.

There has been reduced cost of transporting goods due to custom harmonization, custom automation and cross border management. Customs administration has led to reduced delivery time. Transport of regional products has been made efficient by custom harmonization, custom automation and cross border management. There has been increased competitiveness due to efficient cross border logistics. There have been tariffs among member countries which slows movement of goods.

Skills of employees at the border post are important in effective movement of goods across the border. Resources were important in supporting cross border logistics although the member states have been slow to contribute resources to facilitate cross border logistics efficiency. Employees were competent although they needed regular training on cross border logistics efficiency. Technology was used in cross border efficiency although more needed to be done to improve its reliability.

RECOMMENDATIONS

Member states should come up with a policy that reduces time of clearing goods by harmonizing the custom procedures. The policy should be put in place to ensure that there are harmonized tariffs of all member states. East Africa member states should do more in ensuring that there is a policy on harmonized commodity description. The East Africa member states should come up with policies that remove barriers to efficient movement of goods.

East Africa member states should come up with a policy to improve automated system to ensure that it identifies all goods passing through the border posts. East Africa member states should have a back-up system that cautions against system failures during clearance of goods at the border posts. East Africa member states should put in place a strong policy on

harmonized tax system so as to reduce delays and eliminate double taxation.

EAC member states should embrace a policy that eliminates gaps in sharing of information. East Africa member states should come up with common policies that improve security of goods in transit. EAC member states should ensure that there is a policy on improved coordination in regard to logistics management by coming up with policies aimed at improving logistics.

East African member states should have a policy to regularly train their staff on emerging trend in cross border logistics management. EAC member states should allocate more resources towards improving infrastructure, improving security and employ more staff at the border posts. The EAC member states should continuously improve technology at the border posts.

Recommendations for Further Research

The study was to identify the effect of customs administration strategies on cross border logistics efficiency at the Kenyan borders. The study findings narrowed into four custom administration strategies. Suggestion for further study is recommended to identify other strategies which can make custom administration and logistics more efficient across the border at the Kenyan borders. Further study is necessary to identify the factors affecting logistics efficiency among E.A member countries.

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