

MOSHI CO-OPERATIVE UNIVERSITY

**DETERMINANTS OF CROSS-BORDER LOGISTICS PERFORMANCE
IN EAST AFRICAN COMMUNITY: A CASE OF MALABA, BUSIA
AND TAVETA - HOLILI ONE STOP BORDER POSTS**

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IN EAST AFRICAN COMMUNITY: A CASE OF MALABA, BUSIA
AND TAVETA - HOLILI ONE STOP BORDER POSTS**

**BY
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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF MASTER OF ARTS IN
PROCUREMENT AND SUPPLY MANAGEMENT OF
MOSHI CO-OPERATIVE UNIVERSITY, MOSHI TANZANIA**

NOVEMBER, 2021

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I, **ASIIMWE JONATH**, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other higher learning Institution for a similar or any other academic award.

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CERTIFICATION

The undersigned certify that he has read and hereby recommends for acceptance by the Moshi Co-operative University a Research Dissertation titled “**Determinants of Cross-Border Logistics Performance in East African Community: A Case Study of Malaba, Busia and Taveta - Holili One Stop Border Posts**” in partial fulfilment of the requirements for the award of a degree of Master of Arts in Procurement and Supply Management of Moshi Co-operative University.

(Supervisor’s Name)

(Supervisor’s Signature)

Date: _____

ACKNOWLEDGEMENTS

My research is a result of deliberate efforts from many people, without them I would have taken longer to compile all the necessary information. Great thanks to God Almighty for enabling me, my supervisor Dr. Faustine Peter Panga, who took time to read my dissertation and advise me accordingly. Also, thanks to my classmates who willingly offered assistance and the much-needed academic support. Thanks to my mother Mrs. Jadress Kyomuzinya for continuously praying for me and reassuring me that I can make it. Thanks to my siblings who made sure I was comfortable to do my work.

Thanks to the East African Community Scholarship Programme funded by the Germany Development Bank (KFW) and implemented by Inter University Council for East Africa (IUCEA) and Adroit Consult International for awarding me a fully funded master's scholarship without this my academic journey would not have been this smooth. Finally, thanks to my friends who endured this long process of burning the midnight oil with me while offering the much-needed love and support.

DEDICATION

Dedicated in the memory of my Father, Mr. John Muhwezi, who always believed in my ability to be successful in the academic world and life as a whole. You are gone but your belief in me has made this journey possible by the Grace of God.

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ABBREVIATIONS AND ACRONYMS

ANP	:	Analytical Network Process
CBL	:	Cross-Border Logistics
CET	:	Common External Tariff
EAC	:	East African Community
EU	:	European Union
FTA	:	Free Trade Area
ICT	:	Information and Communications Technology
IUCEA	:	Inter University Council for East Africa
JICA	:	Japan International Cooperation Agency
KFW	:	The Germany Development Bank
KRA	:	Kenya Revenue Authority
LPI	:	Logistics Performance Index
OSBP	:	One Stop Border Post
PPDA	:	Public Procurement and Disposal Authority
PTAs	:	Preferential Trade Agreements
RECTS	:	Regional Electronic Cargo Tracking System
REDCTS	:	Regional Electronic Cargo and Driver Tracking System
SADC	:	South African Development Community
SCT	:	Single Customs Territory
SL	:	Sri Lanka
SPSS	:	Statistical Package for Social Sciences
TMEA	:	Trade Mark East Africa
UNCTD	:	United Nations Conference on Trade and Development
UNECA	:	United Nations Economic Commission for Africa
US\$:	United States Dollars
VIF	:	Variance Inflation Factor (VIF)
WB	:	World Bank
WTO	:	World Trade Organization

ABSTRACT

Efficient and reliable cross-border logistics performance is central for economic integration of regional trading blocs, particularly the East African Community (EAC) with three landlocked countries. Despite the economic growth in individual member countries, an optimum level of economic integration is yet to be achieved, with the region incurring some of the highest cross-border logistics costs in the world. To improve this, the study assessed the key determinants of cross-border logistics performance within the EAC. A cross-sectional research design was adopted with a sample of 376 respondents selected from the Malaba, Busia and Taveta-Holili One Stop Border Posts (OSBPs). Questionnaires and key informant interviews were used to collect data. The questionnaires were tested to establish their reliability and validity. Similarly, the nature and strength of association between independent variables and dependent variable was tested using Pearson product moment correlation coefficient. Multiple regression model was used for inferential analysis against sub variables of the main independent variables. The findings showed that six sub-variables of customs clearance procedures accounted for 65.6% changes in cross-border logistics performance, six sub variables of customer service quality accounted for 58.1%, four sub variables of information technology accounted for 58.2% and five sub variables of stakeholder co-operation accounted for 67.2%. All the sub variables had positive and statistically significant relationships except online declaration ($\beta = -0.264$, $p < 0.05$) and harmonization of customs procedures ($\beta = -0.196$, $p < 0.05$). Therefore, it was concluded that overall efficiency of customs clearance procedures, customer service quality, information technology and stakeholder co-operation determine cross-border logistics performance within the EAC. The study recommends that the EAC member states should fast-track the full implementation of the OSBP strategy and full roll out of the East African Community Single Customs Territory (EAC-SCT) to improve cross-border logistics performance within the region. The study recommends that future studies should expand their scope to include other OSBPs, examining other factors particularly the Covid-19 pandemic as well as the economic and political landscapes in the EAC member states. This will enrich existing literature on the impact of pandemics on cross-border logistics performance. Finally, considering the fact that this study was under pinned by the theory of regional integration and the logistics performance theory, the study suggests that future studies should go an extra mile and employ other theories.

CHAPTER ONE

1.0 INTRODUCTION

Reliable cross-border logistics performance is central for economic integration of regional trading blocs. Without reliable cross-border logistics performance, it is practically impossible for a regional bloc to compete favourably on the global market. This study analyses the determinants of cross-border logistics performance within the East African Community a case of Malaba, Busia and Taveta-Holili One Stop Border Posts (OSBPs).

1.1 Background

Cross-border logistics is dependent on the development of transport, an aspect that increases a countries' quest of becoming more competitive on the international geo-economic scene. Given that such infrastructure facilitates trade flows offering solutions to improved access of neglected regions while offering them an opportunity to take part in the national economy (EL Khayat, 2014). Surugiu and Surugiu (2015), noted that the world has become more interdependent as a result of growth in cross-border logistics, investment and finance. In addition, the developing countries' preparedness to move their products in a resourceful manner linking various manufacturers and customers with the international markets depends primarily on the existing performance of cross-border logistics (Lowitt, 2017).

According to Arvis *et al.* (2018) much more effort is needed to close down the current gap between high and low cross-border logistics performance. This is so because the logistics industry enables industry ties within a country by linking its economy to that of the world resulting into economic development (Tang and Abosedra, 2019). Globalisation in general and the resulting expansion in the face of global competition between countries in recent years have necessitated the role of cross-border logistics in business growth and development (Chakamera and Pisa, 2020).

In Europe logistics contributes a huge chunk of both business and consumer spending, efficient and enhanced logistics can have a tangible impact on people and companies since logistics costs make up approximately 13% of the overall final consumer spending in the European Union (EU) for households (De Oliveira, 2014). In North America, there are common cross-border difficulties regarding minute details of

customs paperwork now done electronically, constantly changing customs compliance issues calling for a need to create efficient distribution networks, reduce waiting time and other problems related to strong border clearance procedures (Schulz, 2020).

Nugent and Soi (2020) state that One-Stop Border Posts (OSBPs) have continued to be rolled out across Africa as part of the initiative of the regional integration agenda in a bid to enhance the movement of people and goods thus bettering stakeholder cooperation and cross-border logistics. According to Lowitt (2017), the biggest hinderance to better cross-border logistics performance is long physical inspections which cause major transfer delays with clearance times frequently double or four times longer at a South African Development Community (SADC) border post. These delays occur at such a high financial and compensation cost for cross-border logistic operators since a day spent waiting at a border post costs each truck an average of US\$350.

In South Africa, Tanzania, Namibia, Zambia, Angola, Zimbabwe and Lesotho, infrastructure has a higher Logistics Performance Index (LPI) score than customs which indicates that customs clearance is a bigger bottleneck in these countries (World Bank [WB], 2016). Due to the long inspection of goods and vehicles by plain clothed forces along its corridors and at border posts, lack of standardised travel documents, institutional corruption along corridors and non-cooperation among border operatives, a shipment of items moving across West Africa can expect significant delays, varying between 18 to 29 minutes per 100 kilometres or 7 hours every trip (Torres and Seters, 2016).

African economies on standard have the least logistics performance, mainly in terms of transport infrastructure, trade quality, customer service quality, adoption and use of information technologies and customs clearance procedures (Takele, 2019). This has advanced contribution to the logistics challenges faced by the African countries related to inferior infrastructure and several administrative barriers (Wawira, 2019). In Africa transportation costs represent between 50% and 75% of the retail price of the goods supporting the demand for long-term strategies to the African cross-border logistics challenges whose outcomes are being felt across the border from delivery delays within domestic destinations to slow-moving growth of cross-border logistics (Muogboh and Ojadi, 2018).

The African continent still faces low levels of trade due to low-rates of trade industrialization with the major obstacles to growth and competition being time lost at border clearing points and ports along the transit corridors (World Trade Organisation [WTO], 2015). This has caused Africa to account for 10% of world trade on a global scale, a figure lower than that of major economies like America at 22% plus Asia at 50% (WTO, 2015). Within the East African Community, cross-border logistics plays a significant role and the World Bank LPI indicates a significant improvement in the logistics of all EAC countries (Kumar and Abhishek, 2020). However, logistics costs in East Africa are still high accounting for about 42% of the total imports value and causing it to be ranked as the region with soaring transport and logistics costs in the world due to several complex and time-consuming logistical transactions at the border (Arvis *et al.* 2018).

These challenges lay on the back of general difficulties that the EAC has experienced in terms of enhancing regional coordination and although the introduction of the EAC Customs Union has largely done away with barriers to trade, the export regime including coordination of border agencies and clearing documents specifications are not yet fully harmonised (Parshotam and Balongo, 2020). Zaninović, Zaninović, and Skender (2020) found that multiple factors impact a country's cross-border logistics performance capabilities, including adherence to customs clearance procedures which are essential for timely cargo movement, customer service which increases customer loyalty, stakeholder co-operation which furthers understanding of each party's position and information technology which lowers costs by speeding up the clearance of goods through effective and timely information sharing.

Humphreys, Dumitrescu, Biju, and Lam (2020) found that in globalised and uncertain business environments affected by Covid-19, most companies worldwide are focusing more on cross-border logistics to ensure efficient and less costly business operations. Yet still notable shocks along borders in East Africa were and are still observed as a result of the pandemic, calling for improved cross-border logistics performance which is key in enhancing regional trade performance (EAC,2020).

This study explored the determinants of cross-border logistics performance within the EAC because of the role it plays in regional integration and economic growth of the entire EAC. The study chose the Taveta-Holili and Malaba, Busia OSBP because they are among the busiest in EAC and the time taken to cross through them brings about

delays and creates costs for traders within the region. The study selected four variables (customs clearance procedures, customer service quality, Information technology and stakeholder co-operation) in relation to cross-border logistics performance within the EAC

1.2 Statement of the Problem

Efficient and reliable cross-border logistics performance is central for economic integration of regional trading blocs, particularly the East African Community (EAC) with three landlocked countries. Despite the economic growth in individual member countries, an optimum level of economic integration is yet to be achieved, with the region incurring some of the highest cross-border logistics costs in the world (Nugent and Soi, 2020). The absence of uniformity in customs clearance procedures leads to time wastage and delayed deliveries (World Trade Organisation, 2015).

This is why trade in East Africa accounts for 10% of the global world trade below America at 22% and Asia at 50% (World Trade Organisation, 2015). These delays hinder the movement of cargo trucks transporting perishable goods within the region resulting into losses. This makes East African logistics costs to be three times higher than those of South America and five times those of Asia (WB, 2016). While the EAC has responded by adopting the OSBP strategy and the EAC-SCT which have slightly eased cargo movement within the region, an optimum level of cross-border logistic performance has not been achieved (Kamau and Odongo, 2020).

Several studies have been done on cross-border logistics such as Several studies have been done on cross-border logistics such as (Schulz, 2020; Nugent and Soi, 2020; Humphreys, Dumitrescu, Biju and Lam, 2020; Takele, 2019; Muogboh and Ojadi, 2018; Hwang, Hong and Lee, 2017; Edirisinghe, 2013). These studies mostly covered determinants of logistics performance at organizational levels, East African Community Single Customs Territory (SCT) and the effect of OSBP on cross-border logistics. The need for stakeholder involvement, functional information technologies, quality customer care services and harmonisation of customs clearance procedures are key to improving cross-border logistics performance. The study bridged this gap by studying selected variables on cross-border logistics performance within the EAC.

1.3 Objectives of the Study

1.3.1 Main Objective

The main objective of this research was to analyse the determinants of cross-border

logistics performance in the East African Community concentrating on the Malaba – Busia and Taveta - Holili One Stop Border Posts.

1.3.2 Specific objectives

- i. To examine the effect of the customs clearance procedures on cross-border logistics performance,
- ii. To determine whether there is a relationship between customer service quality at the borders and cross-border logistics performance,
- iii. To determine whether application of information technologies influences cross-border logistics performance,
- iv. To examine the effect of stakeholder co-operation on cross-border logistics performance.

1.4 Hypotheses

H₀₁: There is no significant relationship between customs clearance procedures and cross-border logistics performance.

H₀₂: There is no significant relationship between customer service quality at the borders and logistics performance.

H₀₃: There is significant relationship between Information technology and cross-border logistics performance.

H₀₄: There is no relationship between stakeholder co-operation and cross-border logistics performance.

1.5 Justification of the Study

The study contributed to the overall knowledge on the determinants of Cross-border logistics performance within the EAC as linked directly to high costs and un necessary cargo delivery delays. The findings of this study have a policy implication on policy makers. The EAC SCT has been tasked to improve trade of goods that are produced locally as well as investment and trade flows within the EAC. Therefore, the findings from this study have highlighted the importance of cross-border logistics performance

to making improvement in trade facilitation as well as improving the region's competitiveness and strengthening its involvement in the international market.

The main objective of the current EAC is to promote cooperation in “political, economic and social fields” by encouraging economic development including; trade liberalization, monetary and financial integration as well as the free movement of persons, capital, goods and services (East African Community [EAC], 2020). The study contributed to this through tackling border short comings along the Malaba-Busia and Taveta-Holili OSBP. The study outcomes are also of great value to scholars and those involved in research on how customs clearance procedures, customer care, ICT and stakeholder co-operation can determine cross-border logistics performance in the EAC. This has helped the EAC to know which determinants of cross-border logistics performance should be given much attention to boost the region's economic growth and reduce the time spent at the border clearing points. The study has contributed to the achievement of the EAC integration mile stone which has been in operation since 2010. Contributing to Industrialisation and Small and Medium Enterprise (SME) development sector under common market, aiming at increasing the competitiveness of the industrial sector to enable trade expansion of industrial goods within the EAC. This is so, because cross-border logistics performance is central to a countries' economic growth and competitiveness through connecting people and firms to markets and opportunities that allow them to achieve higher levels of productivity and welfare.

1.6 Organisation of the Study

The thesis is organised in five chapters. The introduction presents the background to the study covering the statement of the problem, research objectives, research hypothesis, significance of the study and justification of the study and organisation of the study. The second chapter gives a review of literature on the theoretical background of cross-border logistics performance, empirical literature and conceptual framework. The third chapter gives the research methodology including the research design, geographical coverage, population, sample and sampling strategies, data collection and data collection methods as well as assurances of data reliability, validity and operational definitions of variables and their measurement. The fourth chapter introduces research findings and discussions respondent's demographic characteristics, respondents' perceptions on cross-border logistics performance at the

Malaba, Busia and Taveta-Holili OSBPs, independent variables and the dependent variable plus their statistical relationships. The final chapter dispenses the summary, conclusion, recommendations and areas for further study.

CHAPTER TWO

2.0 LITERATURE REVIEW

This chapter starts by defining study key terms and giving a review of literature on the theoretical background of cross-border logistics performance, empirical literature which aided in identifying the research gap as well as conceptual framework to show how the variables under study interact with each other.

2.1 Definition of the Key Terms

2.1.1 Cross-border logistics

Cross-border logistics refers to any logistics actions that involve the movement of goods from one geographic boundary to another, usually separated by a political entity or legal jurisdictions such as governments, sovereign states, federal states, and other relevant subnational entities (Davis and Friske, 2013). Arvis *et al.* (2018) stated that cross-border logistics calls for difficult operations done by private enterprises like freight transportation, warehouse management, customs clearing and systems to facilitate payment. However, their effectiveness is dependent on government services, investments, and policies that avail the logistics infrastructure for global trade. This study adopted a cross-border logistics definition which outlines logistics activities across borders of different governments (Davis and Friske, 2013).

2.1.2 Logistics performance

Logistics performance is the ability of supply chains to increase a firm's potential to achieve in country and cross-border trade opportunities (Ceyhun, 2019). This study adopted Ceyhun (2019) definition of Logistics performance because the strength of a countries logistical services is what determines its involvement in cross-border logistics.

2.1.3 East African Community (EAC)

The East African Community (EAC) to date has been an example in more than just free trade. With intentions of transforming the region into a single market to allow free movement of goods, people, services, labour and capital as well as creation of a single investment area (Eat African Community [EAC], 2018). The Customs Union of the East African Community (EAC) took effect in 2005. At first consisting of only Kenya, Uganda and Tanzania, Rwanda and Burundi joined the EAC in 2007 and the

Custom Union two years later in 2009. In July 2010, the EAC Common Market entered into force to do away with internal tariffs and this confirms that the EAC partner states have agreed to establish free trade also known as zero duty imposition on goods and services amongst themselves and agreed on a Common External Tariff (CET), whereby imports from countries outside the EAC are subjected to similar tariff when sold to any EAC partner state.

The EAC utilizes five modes of transportation systems made up of maritime, road, rail, oil pipeline and air transport. The infrastructure and support services sub-sector consists of railways, roads, maritime transport and ports, civil aviation, multi-modal transport, freight administration and management, the transport system in Tanzania and Kenya, apart from bearing the national economic development, serves as a key transit network for the neighbouring landlocked countries of the Lake Victoria Basin region being Rwanda, Uganda, Burundi, South Sudan, Ethiopia and the Democratic Republic of Congo (EAC, 2020). This study basically referred to the six member states that is Uganda, Tanzania, Kenya, Rwanda, Burundi and South Sudan.

2.2 Theoretical Framework

Theories avail us with procedures which control the research giving shape to relations and concepts that together show explanations of elements of interest using assumptions (Bacharach, 1989). The analysis of this study was guided by two theories that is; the theory of Regional Integration which looks at the impact of forming a customs union on both the participants and those outside the union and the logistics performance theory which brings out the dimensions of efficiency, effectiveness and differentiation of logistics activities as key determinants of logistics performance. The guiding theory in this study was the Theory of Regional Integration.

2.2.1 Theory of regional integration

Developed by Viner (1950), the regional integration theory brought a method for understanding the impact of forming a customs union on both the participants and those outside the union. This theory draws heavily from the standard trade theory which states that free trade is paramount to all other trade regimes. From this basic principle it is assumed that integration among two or more countries will improve the welfare of the member countries provided the arrangement leads to trade creation, minimum trade diversion, and or trade creation that goes beyond trade diversion.

Confirming to Jovanovic (1992) and Balassa (1961), the term integration covers a wide range of possible schemes as classified into five levels based on the integration degree as Preferential Trade Agreements (PTAs), Free Trade Area (FTA), Customs Union, Common Market and Economic Union. In this study the theory was used to analyse the cross-border logistics within the EAC basing on three dimensions that is: economic integration, political integration and physical integration. The theory has also been used in other related studies such as Global Integration in Africa versus Regional Integration in Africa which looked at whether regional integration was the best way to open up African economies (Naude and Krugell, 2001). In this study the theory argued that political integration (which ensures cargo safety) and physical integration (which eases crossing from one member country to another) are a step forward towards economic integration.

The study argued that zero-stage economic integration is key in enabling the long-term sustainability of a region (EAC) and economic integration cannot be achieved without understanding determinants of cross-border logistics performance. However, the theory was rigid and unable to lend itself to the ever-changing ways of thinking making developing countries to focus more on reallocation of their existing resources rather than developing them, hence suffering real income losses as a result of trade diversion (Bahadir, 1978). This led to the adoption of the logistics performance theory which is flexible and emphasises that cross-border logistics could create value through cost-effectiveness, competence and differentiation. Fugate, Mentzer, and Stank (2010) found that, value can be obtained using customer service variables such as timeliness and flexibility of deliveries.

2.2.2 Logistics performance theory

Fugate et al. (2010) stated that the first version of the logistics performance theory brings out the dimensions of efficiency, effectiveness and differentiation of logistics activities as key determinants of logistics performance. Aramyan, Oude Lansink, van der Vorst, and Koote (2007) stated that the second version analyses the supply chain of agri-food products looking at the level of responsiveness, flexibility, efficiency, and food quality as determinants of logistic performance. Töyli, Häkkinen, Ojala, and Naula (2008) found that the final model examines logistics performance as dependent on logistical costs and quality of logistical services. Fugate et al. affirmed that logistics performance is multi-sided and a function of the resources involved in

logistics as regards to outlined objectives and outcomes against competitors. The logistics performance theory final model was adopted in this study because of its two elements that determine the performance of cross-border logistics that is; logistical costs and quality of logistical services (management of customs procedures). The theory emphasises that for cross-border logistics performance to be effective there is need for timeliness and flexibility of deliveries within the EAC.

2.3 Empirical literature

This section reviewed relevant literature on the study variables (customs-clearance procedures, Information Communication Technology, Customer service quality and stakeholder co-operation) to establish the study research gap.

Kioko (2020) performed a study on the impact of acceptance and use of technology as well as modernization initiatives on the performance of customs officers by using Mombasa-Kenya case study. The study adopted explanatory survey design to identify any causal relationships between the variables of the research problem using data obtained via self-directed questionnaires. The study found that convenience of use as well as favourable conditions had a significant positive relationship with the effectiveness of customs officers. The study concluded that the technology acceptance and modernization programs had a significant and positive influence on the productivity of customs officers.

In line with Kilonzi, Odunga, and Kibet (2019), the study recommended the need for further technology training to improve the skills, knowledge and technical ability to enhance service delivery in regard to quality of clearance and high revenue. Today physical movement of goods entails efficient and timely exchange of information making use of information technologies a significant determinant of cross-border logistics performance (Johannes and Robin, 2017; WB, 2016; Kubai, 2015). The above study established the impact of acceptance and use of technology on the performance of customs officers at Mombasa-Kenya but the current study looked at the role of information technology adoption as a bedrock of CBL performance within the EAC.

Sung-Bou and Dongwook (2020) conducted a study to examine how the Korea Customs Service initiated its digital customs system in tandem. The study used a mixed-methods approach by analysing documents and use of semi-structured

interviews at the headquarters and regional customs offices. In line with (Toots, 2019; Syong'oh, 2018), the study found that customs clearance had the ability to employ appropriate technology to aid with trade and better border control. The study concluded that border controls can have benefits such as cutting down on time and cost goods and travellers take to cross the border. This can be achieved through acquisition and use of automated cargo clearance systems, digital customs systems and modern screening machines at the border. The study recommended a dynamic ICT acquisition model that takes system resilience and flexibility into consideration and promotes sustainable development as well as handling current and anticipated risks.

Logistic operators suggest that online customs declaration is a major stumbling block since ICT usage is hampered by lack of electricity at border posts and that even when documents have been submitted online, requirement and examination of hardcopies is still necessary (Munim and Schramm, 2018; Lowitt, 2017). The present study values the findings from Sung-Bou and Dongwook (2020) study and was tailored to the EAC a case of three OSBPs. This study also went ahead and established the statistical relationship between use of information technologies and CBL performance.

Cheruiyot and Rotich (2018) conducted a study with the aim of examining the implementation of one stop border post strategy and its resulting effect on the Kenyan border. The study adopted stratified random sampling technique and open and close ended questionnaires for primary data collection. The study found out that improvement in the effectiveness and efficiency of customs services as well as other government agencies through avoiding unwanted duplication of clearance procedures and increasing cooperation has impacted implementation of OSBP. The study concluded that it is important that government agencies join hands and carry out inspections as one body to reduce on cross-border logistics costs and time.

The study recommended the need to sensitize and empower border users and other stakeholders about the new procedures which have risen out of OSBP strategy as well as setting of visible implementation objectives as far as timeframes and clarity of their action plans are concerned. Tengan and Aigbavboa (2017) stated that strong cooperation between agencies brings together efficiency of operations and eliminates

duplication of procedures The present study is working on the above recommendation by looking at stakeholder co-operation in detail as a determinant of CBL performance.

Lehtinen and Atkova (2013) conducted a study describing logistics infrastructure in the Murmansk region and northern Finland with an aim of pinpointing major setbacks in the sphere of logistics lagging growth of cross-border operations as well as find out key logistic challenges faced by the organizations participating in Murmansk market internationally. The study was done as qualitative case study based on the semi-structured interviews. The study found that customs operations and bureaucracy are the most pronounced hinderances in cross-border operations and poorly developed logistics infrastructure. The study concluded that Russian customs long procedures, policies of changing laws and regulations, poor roads and undeveloped railway infrastructure are the biggest barriers to cross-border logistics in the region.

These long procedures are as a result of uncoordinated inspections at the border (Ochieng, 2018). The study recommended more research on international cross-border barriers pointing out the impact of institutional and physical factors. The study looked at cross-border logistics within Murmansk region and northern Finland focusing on infrastructure but the present study looked at the determinants of CBL performance within the EAC. The study considered four variables (customs clearance procedures, customer care, information technology and stakeholder co-operation).

Saida, Sigit, Danang and Zudhy (2020), conducted research to determine the most important and influential stakeholders in the analysis of freight transportation in the cross-border area. The study engaged Analytical Network Process (ANP) and found that the organizational owners are the most influencing then governments, employees and finally customers. In agreement with Tengan and Aigbavboa (2017), the study concluded that stakeholder analysis is an important element of logistics planning more so when choosing parties that affect and are affected by the cross-border Logistics. The study recommended further study to be done in the form of a relationship between the shipper and the customer and between the shipper and the carrier. The study looked at most influential stakeholders but the current study looked at stakeholder co-operation as a determinant of cross-border logistics performance within the EAC.

Ochunga and Awiti (2017) conducted a study to analyse the impact of stakeholder participation on sustainability of community development projects by Plan

International in Homa Bay Town Subcounty. The study employed simple random sampling technique to obtain 113 respondents while using quantitative data. The study found that there was a positive significant relationship between functional participation among stakeholders and community development projects sustainability. In line with Gregory, Atkins, Midgley, and Hodgson (2015) the study concluded that stakeholders play a big role in the development and sustainability of a project. The study recommended Plan International to cut on passive stakeholder engagement while increasing interactive participation, strengthening functional participation and reinforcing optimal participation to enable greater efficiency and effectiveness of programming as well as accountability among the stakeholders to ensure project sustainability

Edirisinghe (2013) carried out a study to examine key reasons for limited level of service delivery performance and the needed improvements in policy regulations. The study utilized quantitative and qualitative data obtained out of secondary sources in the presence of LPI as a cross-border analysis tool for cross-border logistics performance in Sri Lanka (SL). The study found that the key reasons for stunted level of service delivery performance was the inability of the firms involved in logistics activities to fully utilize existing modern systems and infrastructure facilities. The study concluded by pointing out the need for a holistic approach with customs to bring down the burden of multiple barriers at borders.

The study recommended customs reform and modernization or re-engineering as well as the need for redesigned clearance systems and processes that have relevance to cargo movement across the border. Cross-border Logistics performance is generally rated and assessed in terms of the efficiency and effectiveness of customs clearance procedures (Lowitt, 2017). The study contributed to the level of customs service delivery by looking at reasons for its limitation in SL but the present-day study looked at customs clearance procedures as key determinants of cross-border logistics performance within the EAC.

Jeske (2015) carried out a study on evaluation of customer service and the impact of efficiency on Namibia's logistical sector. The study used simple random sampling to select customers from five selected courier companies. Quantitative data were collected using self-administered satisfaction level and expectation questionnaires

while qualitative data was collected using interviews. The study found that, customer service and good relationships with service providers are two of the most important factors that influence logistical services in Namibia. The study concluded that current customer service levels in the transport and courier industry in Namibia seem to be in a stable and good state.

The study recommended focusing on new approaches to business and service delivery so as to allow companies identify logistical gaps in the industry and improve them for better logistics performance. Lancaster (2020) asserted that in logistics, customers may not have a chance to see a firm's warehouses or trucks however they will always remember their experience with the staff. Ndonga (2015) further asserted that willingness of staff at the border to tailor their services in accordance to customer needs reduced complaints as well as cargo traffic at the borders. The above study looked at the impact of customer services on the efficiency of the logistical sector in Namibia but this current study looked the influence of customer services on CBL performance and was tailored to the EAC a case of Malaba, Busia and Taveta-Holili OSBPs.

2.4 Research Gap

Several studies have been done on cross-border logistics such as (Schulz, 2020; Nugent and Soi, 2020; Humphreys, Dumitrescu, Biju and Lam, 2020; Takele, 2019; Muogboh and Ojadi, 2018; 2013 Hwang, Hong and Lee, 2017; Edirisinghe, 2013). These studies mostly covered determinants of logistics performance at organizational levels as well as the effect of OSBP on cross-border logistics. The discussions on cross-border tend to be more of trade and supply chain than for cross-border logistics in particular. This shows that there is an empirical research gap (Muller-Bloch and Kranz, 2014), which this study filled. In order to improve cross-border logistics performance, it is important to identify its determinants. This study bridged this gap by studying selected variables (customs clearance procedures, customer care, information technology and stakeholder co-operation) on cross-border logistics performance within the East African Community.

2.5 Conceptual Framework

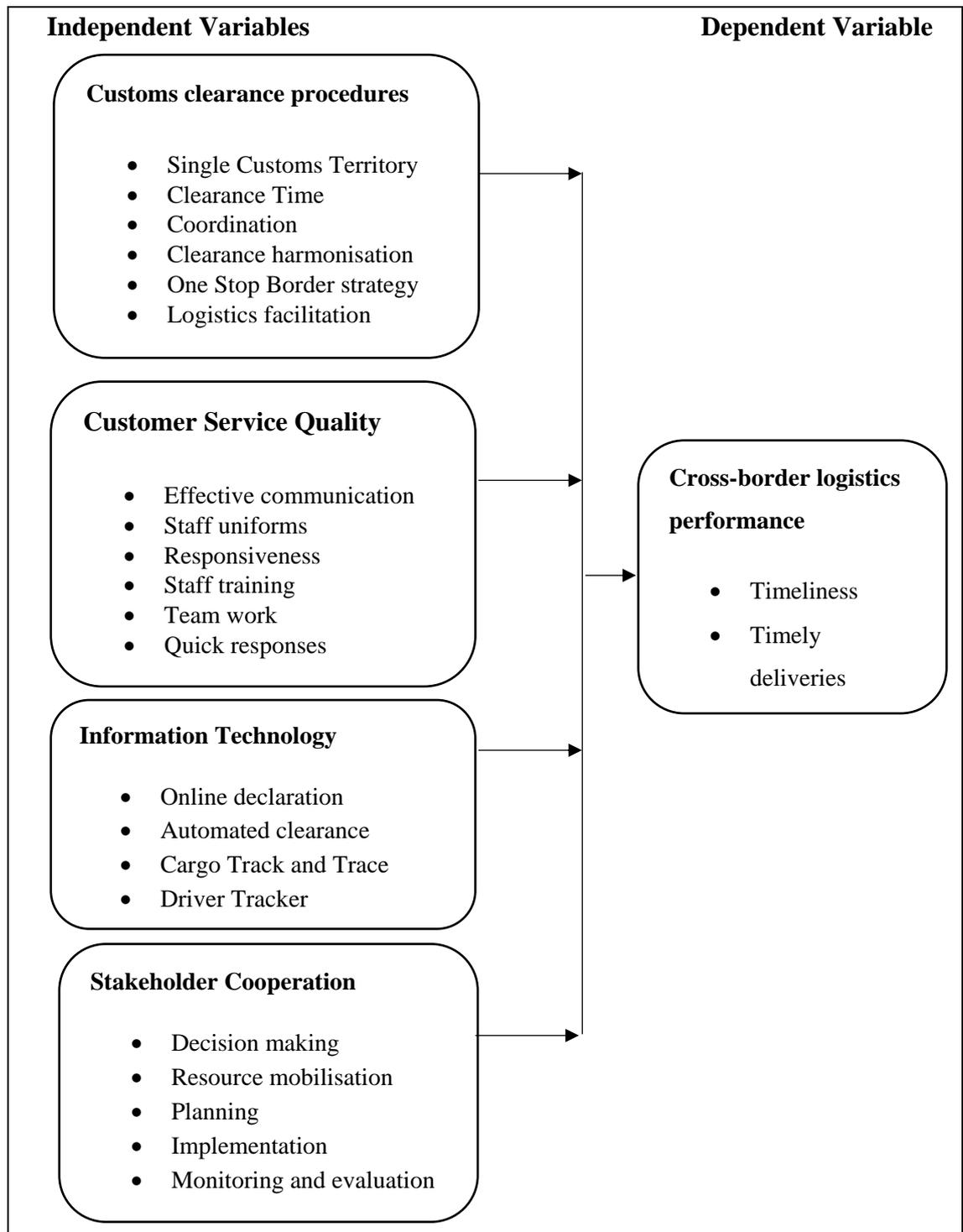


Figure 1 : Conceptual framework

The conceptual framework of this study explains CBL performance indicators to identify its determinants from the variables under study (Takele, 2019). The regional integration theory emphasised the role of integration schemes in determining CBL performance through harmonisation of customs clearance procedures and formation of

a customs union (Viner, 1950). The logistics performance theory also emphasised timeliness of deliveries and feasible logistical costs as key indicators of CBL performance (Töyli *et al*, 2008). Subsequently, this study divided integration schemes into four independent determinants (customs clearance procedures, customer service quality, information technologies and stakeholder co-operation). Thus, determinants of CBL performance will be identified through their ability to ensure timeliness while clearing at the border posts and timely deliveries within the EAC.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

In this chapter, the research methodology including the research design, geographical coverage, population, sample and sampling strategies, data collection and data collection methods as well as assurances of data reliability, validity and operational definitions of variables and their measurement.

3.1 Research Design

This study used a cross-sectional research design which aimed at data collection for two or more variables to be examined at a single point in time to detect variables patterns of association. The design was preferred because of the consistency nature of objectives aiming to reveal relationships among variables and allowing inferences to be made on the effects of explanatory variables on an outcome variable (Burns and Burns, 2012). Additionally, the study applied a mixed approach to include both qualitative and quantitative approaches. Qualitative data provided detailed information inform of statements allowing room to study issues in detail (Silverman, 2017) while quantitative design enhanced the statistical inferences by linking the independent and dependent variables (Creswell, 2018)

3.2 Geographical Coverage

Malaba, Busia and Taveta-Holili OSBPs are three of the 13 fully operational OSBPs established by the EAC secretariat (EAC,2018). The border posts were among the first OSBP to adopt the rationale that immigration and customs formalities for the two countries sharing a border post ought to happen once at the entry point (Cheruiyot and Rotich, 2018). Oparanya, Mdadila, and Rutasitara (2019) state that Malaba rolled out as early as 2006 using the piloting of six sensitive commodities and in 2008 petrol tankers crossed from Kenya to Uganda without stopping on the exit side. Secondly the 3 border posts are among the busiest OSBP in the region with an average of 1800 vehicles crossing per day (Nugent and Soi, 2020). This traffic is what triggered the study to consider the three border posts so as to acquire sufficient data for the study. Thirdly the three border posts were easily accessible making it possible for the study to gather the necessary data within the required time.

3.3 Study Population

For the purpose of this study, the target population was the participants involved in cross-border logistics performance at the Malaba, Busia and Taveta-Holili OSBP in EAC. Population is a group of individuals, events or objects having common observable characteristics of interest to the researcher (Sekaran and Bougie, 2016). However, the study was limited to individuals who are directly involved in the day-to-day cross-border logistical activities such as Truck drivers, clearing agents, custom duty officials and Information Technology personnel at the selected OSBP. Since the total population number consisted of different individual circles and was unknown a sample size calculator which is an electronic tool was used to estimate the sample by employing Scott Smiths formula.

3.4 Sampling Technique

Since the total population number consisted of different individual circles and was unknown a sample size calculator which is an electronic tool was used to estimate the sample by employing Scott Smiths formula where the; The Z-value or Z-score corresponds with the chosen confidence level which is obtained from the Z tables available that tell the Z-score, the study used a confidence Level of 95% with a Z value of 1.96 meaning that if the study is repeated again and again, we would get the same results in 95% of the cases and a confidence Interval of 5% also known as the margin of error representing the degree of uncertainty in statistics or how much error will be allowed and a standard deviation suggestion of 0.5 (Rucker, 2017) calculated as; Sample Size (n) = (Z value)² X standard deviation (1-standard deviation)/ (margin of error)²

$$n = (1.96)^2 \times 0.5 (1-0.5) / (0.05)^2$$

$$n = 384.$$

Lastly, convenience sampling technique which included individuals who happen to be most accessible to the researcher as well as being an inexpensive way to gather data was used to select the number of respondents' category (Etikan and Bala, 2017) as represented in table 1.

Table 1: Sample size distribution

Category	Sample Size (n=384)
Truck Drivers	144
Clearing Agents	140
Custom Duty Officials	100
Grand Total	384

3.5 Data Collection

3.5.1 Types of data

Both quantitative and qualitative data were obtained to meet essentials of the specific study variables. The study employed both qualitative and quantitative data to allow a more comprehensive collection and utilization of data than each method can achieve independently to improve data analysis by making sure that the weaknesses one type of data are balanced by the strength of the other (Edirisinghe, 2013). It is also important to note that some research problems cannot be fully handled by one data type hence the need for two (Morse and Niehaus, 2016).

3.5.2 Sources of data

To be able to obtain first-hand information, the study utilised primary data to study the variables under survey. The data obtained from primary sources allowed the study to obtain first-hand information and materials on the study variables. The advantage of using primary data was the ability to gather information specific to the purposes of the study (Gupta, 2020). That is, the questions asked by the researcher were customised to obtain data for use in the study. Primary data was obtained from Truck drivers, custom duty officials and clearing agents.

3.6 Data Collection Methods

The data collection instruments used were; Structured survey Questionnaires and key informant interview guides

3.6.1 Structured survey questionnaires

The Structured questionnaire was used to capture the perception of cross-border logistics stakeholders at the Malaba- Busia and Taveta- Holili OSBP. The method was preferred because of its effectiveness as a data collection instrument that allows respondents to give much of their opinions pertaining to the research problem, flexibility, free from bias and researchers influence and the ability to collect much information (Kothari, 2004). To add on this the questionnaires were applied in person to aid in building a bond and encourage respondent participation as well as offer clarity where necessary (Kindy , Shahl, and Jusoh, 2016) The structured questionnaire had sub sections A, B, C, D and E. Section A had questions on respondents' bio-data, Section B had questions regarding cross-border logistics performance, Section C had questions on customs clearance procedures, Section D

had questions on customer service quality, Section E had questions on stakeholder co-operation and Section F looked at information communication technology.

3.6.2 Response rate

The study targeted a sample size of 384 respondents where the sample was drawn from the Truck drivers, clearing agents and custom duty officials. Out of 384 questionnaires administered, 376 questionnaires were effectively filled in for analysis translating to 97.9% response rate due to different clearing times some truck drivers left before answering all the questions, some clearing agents and custom duty officials were busy and couldn't respond to every question correctly as indicated in Table 3. Cooper and Schindler (2013) argued that a response rate higher than 30% of the total sample size gives ample data for generalising the elements of the problem under study as expressed by the opinions of some of the respondents from the target population. The profiles of the respondents were fully examined to understand how much knowledge they had in cross-border logistics performance.

3.6.3 Key informant interview

The study employed semi-structured face-to-face interviews to gather data from key informants that influence CBL performance in the EAC. Ten interviews were conducted including Heads of customs, Operations managers, Logistics officers, Transport managers and Human resource managers. The beauty of using interviews is the fact that, detailed data which cannot be obtained by other methods is got (Gupta, 2020).

3.7 Validity and Reliability

3.7.1 Validity

Validity refers to the extent to which the research tool measures what it is intended to measure (Kumar, 2011). In this study, the content validity of the data collection instrument was determined by seeking expert opinion on the research instrument from the research supervisor of the university. The valuable comments, corrections and suggestions given by the research supervisor assisted in the validation of the research instrument. The study also developed questions relative to the study to ensure consistence while the validity of the responses obtained from key respondents have been tested against the study objectives as well as the findings of other studies carried out in cross-border logistics

3.7.2 Reliability

Reliability is an essential measure of consistency and stability in the measurement of a concept (Drost, 2011). A pilot study was conducted to determine the reliability of the data collection instrument. The study selected a pilot group of 20 participants from Namanga OSBP. Internal consistency was tested using Cronbach Alpha reliability test of $\alpha = 0.70$ or above (Taber, 2017). A reliability coefficient below 0.7 was poor and unacceptable. A low value of alpha can be due to a low number of questions, poor interrelatedness between items or heterogeneous constructs such values were rejected while alpha values between 0.7 and above were accepted as reliable. In this study the computed Cronbach's alpha values for the four independent variables were above 0.70 which indicates that the items under each variable were consistent as shown in Table 2.

Table 2: Reliability test results

Reliability Analysis	Cronbach's Alpha	No. of Items
Cross-border logistics Performance	0.742	10
Customs and border clearance efficiency	0.736	6
Customer Service Quality	0.799	6
Information Technology	0.812	4
Stakeholder co-operation	0.830	5
Overall Cronbach's Alpha	0.784	

3.8 Data Analysis Methods

The data acquired was analysed on the basis of an overview identified for the purpose of the study in the design of the research. Qualitative data was analysed using content analysis through which information obtained from key informants was written to achieve theme and concept relevant to cross-border logistics performance. Quantitative data was presented in tables and explanation presented in prose descriptive and inferential statistics were used to analyse the collected quantitative data through frequency, percentage, mean and standard deviation to establish the key determinants of cross-border logistics performance within the EAC. The study used multiple regression to analyse four objectives; effect of the customs clearance procedure on cross-border logistics performance, relationship between customer service and cross-border logistics performance, the role of Information technologies on cross-border logistics performance and the effect of stakeholder co-operation on cross-border logistics performance. The model was preferred since it allows the researcher to examine the relationship between variables allowing you to model the relationship between variables and be able to make predictions on what one variable will do based on the scores another giving the strength and importance of each of the

predictor variables to the relationship (see data analysis matrix appendix 1 for more details). The following multiple regression equation was used;

Regression Equation

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon \dots \dots \dots \text{Equation 1}$$

Y=Dependent variable (Cross border logistics performance)

β_0 = Intercept

X_1 - X_2 = *independent variables which includes custom clearance procedure, customer service, information technologies and stakeholder co-operation*

ε = Error term

Table 3: Measurement of Variables

Variable	Definition	Measurement	Instrument
Customs clearance procedures (I.V)	Single customs territory, clearance time, coordination, clearance harmonisation, one stop border post strategy, logistics facilitation	5-Point Likert scale	Questionnaires and interview guide
Customer service quality (I.V)	Effective communication, staff uniforms, responsiveness, staff training, team work and quick responses	5-Point Likert scale	Questionnaires and interview guide
Information Technology (I.V)	Online declaration, automated clearance, cargo track and trace and driver tracker	5-Point Likert scale	Questionnaires and interview guide
Stakeholder cooperation (I.V)	Decision making, resource mobilization, planning, Implementation and monitoring and evaluation	5-Point Likert scale	Questionnaires and interview guide
Cross-border logistics performance (D.V)	Timely deliveries Ease of clearance	5-Point Likert scale	Questionnaires and interview guide

3.8.1 Normality test

To test whether the data was normally distributed, the study used two statistical tests of normality that is the Kolmogorov-Smirnov and Shapiro-Wilk were performed on the study variables. The findings as seen in Table 4 show that p-values are greater than 0.05 both in Kolmogorov and Shapiro-Wilk, thus implying that the assumptions of normality were satisfied in this study

Table 4: Normality Test

Variables	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Cross-border logistics Performance	.041	376	.110*	.425	376	.250
Efficiency of customs and border clearance	.587	376	.423*	.368	376	.156
Customer service quality	.451	376	.254*	.646	376	.259
Information Technology	.163	376	.312*	.872	376	.073
Stakeholder co-operation	.169	376	.344*	.451	376	.158

3.8.2 Multicollinearity test

The general assumption in regression model is that predictor variables used in the study should be independent of each other (George and Mallery, 2003). Alabi, Ayinde, Babalola, Bello, and Okon (2020) asserted that multicollinearity exists when there are high linear relationships between two or more explanatory variables, going up against the assumption that explanatory variables in a study should be independent of each other. The Variance Inflation Factor (VIF) was used whereby if the VIF value was between 1 and 10 it indicated no multicollinearity but if it was below 1 and above 10 it meant that multicollinearity existed (Yoo, Ference, Cote and Schawartz, 2012). Based on the coefficients output relating to collinearity, the VIF for all of the independent variables were between 1 and 10 implying that no multicollinearity as shown in table 5.

Table 5: Multicollinearity test results for the study variables

Variable	Tolerance	VIF
Cross-border logistics performance	0.582	1.716
Customer service quality	0.413	2.421
Information Technology	0.475	2.104
Stakeholder co-operation	0.634	1.578

3.8.3 Test for heteroscedasticity

Alabi *et al.* (2020) stated that heteroscedasticity is a major concern in the application of regression analysis, which always occurs in cross sectional data, when the variances of the error terms are no longer constant, it is often investigated with the ideology of relationship between error terms and exogenous variables. Violation of this assumption makes coefficient estimates less precise increasing the probability that the estimates are not a true representation of the population. The study used Levene's test to detect homogeneity and where the value was above 0.05 it meant that the populations were independent observations (Alabi *et al.*). All the study variables used

had a value above 0.05 which indicates that heteroscedacity was not violated as shown in table 6.

Table 6: Heteroscedasticity Test

Variable	Levene Statistic	Sig.
Cross-border logistics Performance	2.154	0.631
Customer service quality	1.371	0.638
Information Technology	1.561	0.961
Stakeholder co-operation	0.457	0.759

3.8.4 Correlations of study variables

Pearson product moment correlation was carried out to determine the strength and nature of association between the dependent and independent variables. As indicated in table 7, there was very strong positive and statistically significant correlation between custom clearance procedures ($r=0.810$, $p<0.05$), customer service ($r=0.763$, $p<0.05$), information technology ($r= 0.750$, $p<0.05$), stakeholder co-operation ($r = 0.800$, $p<0.05$) and cross-border logistics performance. This suggests that all independent study variables can immensely influence the performance of cross-border logistics performance, hence they were all included in the study.

3.9 Ethical Considerations

The study involved attainment of data from truck drivers, customs and clearing agents at the Malaba, Busia and Taveta-Holili one stop border posts. For this matter, there was need for compliance with ethical considerations so as to acquire quality information while keeping all the participants safe and out of danger (Gupta,2020). In order to meet ethical standards while conducting this study the following measures were put in place. The objectives, issues, risks and benefits of the research project were well 79 conveyed to the participants. The objectives of the research were clearly and precisely stated in the introductory letter so as to enlight respondents. The researcher also acquired free consent from each of the participants before starting to interview them. To maintain free consent the researcher told the participants that they were free to withdraw from the interview if they felt uncomfortable or got emotional. The interview transcripts were safely kept where only the researcher had access to them, the interviewees personal details such as names, addresses and telephone numbers were also not disclosed to anyone to ensure participant privacy and data confidentiality.

Table 7: Correlation of study variables

		CBPL	CCP	CS	IT	ST
CBLP	Pearson	1	*			
	Correlation					
	Sig. (2-tailed)					
	N	376				
CCP	Pearson	.810	1			
	Correlation					
	Sig. (2-tailed)	.000				
	N	376	376			
CS	Pearson	.763	.750	1	.	
	Correlation					
	Sig. (2-tailed)	.000	.000			
	N	376	376	376		
IT	Pearson	.750	.754	.780	1	
	Correlation					
	Sig. (2-tailed)	.000	.000	.000		
	N	376	376	376	376	
ST	Pearson	.800	.758	.720	.780	1
	Correlation					
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	376	376	376	376	376

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

Note: CBLP = Cross-border logistics performance CCP = Custom clearance procedures
CS = Customer service IT = Information technology ST = Stakeholder co-operation

CHAPTER FOUR

4.0 FINDINGS AND DISCUSSION

This chapter presents a detailed analysis of collected data from the field. The first section discusses the overall demographic characteristics of the respondents. The second section presents the findings of the study, while the last section shows the model analysis of the findings and the accompanying discussions. The second and third sections are carried out on each of the four specific objectives of the study.

4.1 Demographic Profile

The study considers the importance of analysing the characteristics of a study population as it helps in data interpretation. The respondents were asked about their gender, age, level of education and working experience. These variables were deemed important since they help the reader to understand some critical information about the impact of each respondent on the study.

4.1.1 Gender

The findings in table 8 revealed that there were more male respondents 217(57.7%) compared to female respondents 159(42.3%). It can be noted that most of the respondents were male, a fact that may be attributed to gender patterns in household activities and female reproductive roles (Brenton, Bashinge, Hossein, Shiho and Ntagoma, 2011). The findings relate with those of Parshotam and Balongo (2020) who highlighted that the burden of house chores alongside the women's reproductive roles made them less mobile and hindered their participation in cross-border logistics.

4.1.2 Age

Majority of the respondents were between the age group of 31-35 years and these on average constituted 82 (21.9%) of the sample, these were closely followed by respondents less than 30 years and 41-45 years that had 75(19.8%) as well as 68(18.1%) respectively. Furthermore 60(16%) of the respondents were between 46 to 50 years, 56(14.8%) of the respondents were between 36 to 40 years whilst 35(9.3%) of the respondents were above 51 years of age. This indicates that most of the respondents were of the productive and youthful age bringing about better cross-border logistics performance (Opoku and Yan, 2017). The findings are in line with those of Tyson (2017) which revealed that, a large number of respondents at the Busia OSBP were aged between 36-51 years.

4.1.3 Level of education

In terms of the level of education attained, the results indicated that majority of the respondents had attained a Diploma as represented by 139(37%) of the respondents. This was closely followed by respondents with a Bachelor's degree represented by 126 (33.5%) of the respondents. Respondents having attained a Certificate and Masters constituted of 96(25.5%) and 15(4%) of the respondents respectively. This could be due to the fact that most of the respondents were private employees with minimum professional education from basic customs and clearance certificates to diplomas. From the study findings, most of the respondents had broad knowledge in their respective field of engagement which facilitated better understanding of cross-border logistics performance and ability to give the most appropriate answers.

Table 8: Respondents demographic information

Variable	Response	Frequency (n=376)	Percentage (%)
Gender	Male	217	57.7%
	Female	159	42.3%
	Total	376	100.0%
Age	Response	Frequency (n=376)	Percentage (%)
	Less than 30 years	75	19.8%
	31 to 35 years	82	21.9%
	36 to 40 years	56	14.8%
	41 to 45 years	68	18.1%
	46 to 50 years	60	16.0%
	Above 51 years	35	9.3%
	Total	376	100.0%
Education level	Response	Frequency (n=376)	Percentage (%)
	Certificate	96	25.5%
	Diploma	139	37.0%
	Bachelor's degree	126	33.5%
	Master's degree	15	4.0%
Total	Total	376	100.0%

4.2 Cross-border Logistics Performance

Cross-border logistics is one of the things that enable economic and physical integration within a regional trading bloc. This study intended to determine the influence of various independent variables on cross-border logistics performance as the dependent variable. As such, through the use of five-point Likert scale, various statements were presented requiring respondents to indicate their level of perception, ranging from 1-5. Where '1' was strongly disagree, '2' disagree, '3' not sure, '4' agree and '5' strongly agree. The terms 'strongly disagree' and 'disagree' were assigned a mean of 1.0 to 2.5, to represent not agreed. The term 'neutral' was assigned

the mean of 2.6 to 3.4, and it identified neutrality. While the assertion ‘agree and strongly agree’ were given the mean of 3.5 to 5.0 to represent agreed upon.

Table 9: Perceptions on Cross-Border Logistics Performance

Statement	Mean	Standard deviation
There is Timeliness and flexibility of deliveries that has resulted into growth of Cross-border logistics	4.1	0.877
Significant improvement has been recorded in the customs	4.1	0.839
Transport infrastructures have developed	3.9	1.014
International shipments have improved	4.3	0.950
There is high quality logistics and competence services	4.2	1.105
Tracking and tracing is observed	3.9	0.744
The current volume of trade at the border points is high due to the EAC trade protocols	3.6	1.03
Logistic costs in East Africa directly affect trade	3.8	1.09
Average	3.99	0.956

As shown in table 9, various variables were perceived differently by respondents. Some variables had very high means whereas others rated poorly. For instance, some variables had high mean ranging between 4.0 and 4.3 like improvement in international shipment with a mean of 4.3 and high-quality logistics and competence at the border, a mean of 4.2. At the same time other variables such as current volume of trade at the border was high due to EAC trade protocols scored the least mean of 3.6. Nonetheless, the general perception of cross-border logistics performance was strong, with an average mean of 3.99 and standard deviation of 0.956. This indicates a strong perception that cross-border logistics was performing well within the East African Community.

These findings contradict with those of (Arvis *et al.* 2018) who stated that cross-border logistics performance in the East African community is poor accounting for about 42% of the total imports value. Consequently, East Africa is ranked as the region with soaring transport and logistics costs in the world due to several complex and time-consuming logistical transactions at the border (Kamau and Odongo, 2020). Gasiorek, Mendez-Parra, and Willenbocke (2017) also reported that the costs of logistical barriers within the East African Community are between 1.7% to 2.8% of the gross domestic product of the region’s economy.

4.3 Influence of Custom Clearance Procedures and Cross-border Logistics Performance

The first specific objective of this study was to determine the effect of customs clearance procedures on cross-border logistics performance. This was in line with argument by logistic performance theory that it is impossible to improve the performance of logistics function without improving the quality of logistics services activities (Fugate *et al.*, 2010). Custom clearance procedure is one of the major activities undertaken at the border while providing logistics services to the user. To determine its effect, the study formulated questions around some of the activities within custom clearance procedures including coordination of border agencies, clearance time and use of the EAC-SCT.

4.3.1 Perceptions of the influence of custom clearance procedures and CBL performance

Various statements were presented on a Likert scale where respondents were asked to state their level of agreement or disagreement on a scale of 1 to 5 where '1' was strongly disagree, '2' disagree, '3' not sure, '4' agree and '5' strongly agree. The terms 'strongly disagree' and 'disagree' were assigned a mean of 1.0 to 2.5, to represent not agreed. The term 'neutral' was assigned the mean of 2.6 to 3.4, and it identified neutrality. While the assertion 'agree and strongly agree' were given the mean of 3.5 to 5.0 to represent agreed upon.

Table 10: Perceptions of the influence of customs clearance procedures on cross-border logistics performance (n=376)

Statement	Mean	Std. Deviation
Establishment and use of the EAC-SCT has improved cross-border logistics performance.	4.1	1.040
Reducing time taken at customs and border clearances affects logistics performance.	2.4	1.120
Coordination among border agencies improves service delivery.	3.8	1.278
Adoption of the OSBP strategy has improved logistics performance.	4.4	0.659
Harmonisation of customs clearance documents has improved logistic performance.	4.4	0.601
Logistics Facilitation has improved logistics performance.	4.3	0.702
Overall Mean	3.9	

On the statement whether establishment and use of the EAC-SCT improved cross-border logistics performance, had a mean of 4.1 and a standard deviation of 1.040, showing that many of the respondents agreed. Calabrese and Eberhard-Ruiz (2017)

also reported that establishment and use of the EAC-SCT had led to a reduction in the cost of moving goods within the EAC by around (10-18) % hence increasing cross-border logistics performance within the EAC. Furthermore, EAC (2018) revealed that the use of the EAC-SCT had cut the required time for moving goods along the EAC main transport corridors by almost half of the time taken before facilitating cross-border logistics performance. The findings imply that the Implementation and use of the EAC-SCT is very key in boosting the performance of cross-border logistics through time and cost reduction which are among the top challenge that hinder cross-border logistics performance within the EAC. The statement that time taken at customs and border clearance points affects cross-border logistics performance, had a mean of 2.4 and standard deviation of 1.120. This shows that respondents did not agree with it. Nonetheless, one of the key informant interviewees explained that,

“...Border delays are the most frustrating thing yet every day we encounter long queues of trucks waiting to be cleared at the border hence acting as a barrier to cross-border logistics performance...” (Key Informant interviewee, Field Data, Malaba OSBP, 11 April, 2021).

These findings reveal that time taken at customs and border clearances affects cross-border logistics performance. According to Cheruiyot and Rotich (2018), logistics costs within EAC are among the highest in the world largely due to time taken to move from the port to a landlocked country and the many steps involved in clearance of goods at the borders which are time consuming. Time taken at customs and border clearance points is used as a practical indicator of cross-border logistics performance since it has a huge influence on transit traffic making it hard for shippers to take part in timely deliveries due to unpredictable delivery times (Cheruiyot and Rotich, 2018). The shorter and more realistic the border clearance process, the better the cross-border logistics performance as a result of easy planning and management of cargo flow within the region.

The statement that coordination among border agencies positively impacted cross-border logistics performance had a mean of 3.8 and standard deviation of 1.278. This implies that most of respondents agreed with it. Lehtinen and Atkova (2013) pointed out that uncoordinated inspection of goods at the border by different border agencies as well as the many steps involved causes delays and negatively impacts cross-border logistics performance. The findings clearly show that border agencies' cooperation is

instrumental in the reduction of border delays. This can be achieved through combined inspection tests on cargo and sharing of resources to make cross-border logistics performance better and cost effective.

The statement that adoption of the OSBP strategy had improved cross-border logistic performance had a mean of 4.8 which shows that most of the respondents agreed with the statement. This indicates that adoption of the OSBP strategy had improved cross-border logistics performance to a greater extent. Cheruiyot and Rotich (2018) support the findings by demonstrating that for cross-border logistics to be seamless, many countries ought to see the advantage of cross-border logistics less restriction through adoption of OSBP strategy as a way of easing the movement of services and cargo across-borders. The findings here imply that, OSBPs bring about improved border management efficiency by streamlining cargo inspections, reducing export, import and cargo transit documents across-borders resulting into reduced border delays and transportation costs. This will definitely enhance performance. Majority of the respondents also indicated that harmonization of custom clearance procedures had improved logistic performance across the border with the second highest mean of 4.3. In an interview, one of the key informants also stated that,

“...Harmonisation of custom clearance documents has reduced a lot of paperwork. Currently, a single form is used to clear goods on both sides...”
(Key Informant interviewee, Field Data, Holili-Taveta OSBP, 14 May, 2021).

The findings show that harmonisation of customs clearance documents is essential for EAC to boost cross-border logistics performance since it involves benefits such as delivery time predictability, reduced costs and document adherence. World Bank (2018) indicated that simplifying and harmonizing customs clearance documents has the capacity to reduce the cost of transportation by averagely 10% leading to an increase in the flow of goods especially in developing countries dealing in perishable intermediate and agricultural goods that are sensitive to delays in delivery.

Lastly, the statement that logistics facilitation improved cross-border logistics performance, had a mean of 4.3 and standard deviation of 0.513. It is clear that respondents agreed with the statement. The findings indicate that cross-border logistics performance can increase highly if the obstacles to seamless logistics, such as poor infrastructure, cumbersome clearance procedures, and customs clearance delays are addressed. Oparanya *et al.* (2019) found that logistics facilitation among member

states reduced logistics costs by ensuring that shortest routes were used when shipping goods from one member country to another.

Theoretically the study findings relate to the theory of regional integration since the theory relies more on the impact of forming a customs union on both the participants and those outside the union. In regional integration theory, participants agree on elimination of tariffs and import quotas among themselves, a common market and free movement of factors of production (Balassa, 1961). Under the customs union, member states interconnect their customs systems to allow the flawless flow of information between customs stations as well as a payment system to manage transfers of revenues between EAC Partner States to guarantee reduced delivery times and costs involved resulting into better cross-border logistics performance.

4.3.2 Relationship between customs clearance procedures and cross-border logistics performance

This study had hypothesized that there is no significant relationship between custom clearance procedures, and cross-border logistics performance at the Malaba, Busia and Taveta-Holili OSBP. This hypothesis was tested using p-values generated from multiple linear regression model against six independent variables under custom clearance procedure namely; establishment of EAC-SCT, timely clearance, incoordination of border agencies, OSBP strategy, harmonisation of clearance and logistics facilitation as presented in equation 2.

$$Y = \alpha + \beta_1 EAC + \beta_2 TC + \beta_3 IBA + \beta_4 OSBP + \beta_5 HOC + \beta_6 TF + \varepsilon \dots \dots \dots \text{Equation 2}$$

Where;

Y= Cross-border logistics performance (D.V)

α =Intercept

β_1 - β_3 =Regression coefficient

EAC= EAC-SCT

TC = Time of clearance

CBA= Coordinated border agencies

OSBP = OSBP strategy

HOC = Harmonisation of clearance

TF = Logistics facilitation

A multiple regression analysis was conducted to find out whether custom clearance procedures through its sub independent variables; EAC SCT, OSBP and trade facilitation could significantly predict cross-border logistics performance. The results of the regression, in table 11 indicate that the model accounted for 65.6% of the variance in dependent variable. In addition, the regression also indicated that the model was a statistically significant predictor of cross-border logistics performance, $F(6,369) = 2631.57, p = 0.000$ in table 11.

From the model coefficients (table 11), it was discovered that EAC SCT ($\beta = 0.211, p < 0.05$), time of clearance ($\beta = 0.160, p < 0.05$), coordinated border agencies ($\beta = 0.261, p < 0.05$), OSBP strategy ($\beta = 0.333, p < 0.05$), harmonisation of clearance ($\beta = -0.196, p < 0.05$) and trade facilitation ($\beta = 0.245, p = 0.000$) significantly contributed to the model hence rejecting the null hypotheses.

Therefore, the final predictive model was as shown in equation 3.

$$CBL \text{ performance} = -0.032 + (0.211 * EAC) + (0.160 * TC) + (0.261 * CBA) + (0.333 * OSBP) + (-0.196 * HOC) + (0.008 * TF) + 0.13991 \dots \dots \dots \text{Equation 3}$$

From the model results in table 11, a unit increase in EAC single custom territory will lead to an increase in cross-border logistics performance by 21.1%. These findings imply that fully actualization of single custom territory can significantly improve cross-border logistics performance within the region. The findings are consistent with those published by EAC (2018) who reported that, the SCT has led to great improvement in trade by reducing the cost of doing business which has seen many shippers save on money and time while allowing final consumers to enjoy reduced commodity prices.

Therefore, the study concluded that EAC should put more effort to fully implement single custom territory since it facilitates faster clearance and improvement in cargo movement within the region. Full implementation of EAC-SCT is also in line with argument by regional integration theory that economic integration only occurs when countries are committed to eliminating trade barriers and achieving a levelled trading ground (Jovanovic, 1992).

Table 11: The statistical relationship between custom clearance procedures and cross-border logistics performance.

Model Summary					
Model	R	R ²	Adjusted R ²	Std. Error of the estimate	
1	0.810	0.656	0.652	0.24144	
ANOVA					
Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	309.053	6	51.509	2631.507	0.000 ^b
Coefficients					
Variable	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant	-0.032	0.062		-0.522	0.602
Establishment and use of the EAC-SCT	0.211	0.018	0.239	11.801	0.002
Clearance time	0.16	0.09	0.195	17.536	0.000
Coordinated of border agencies	0.261	0.013	0.363	20.848	0.001
Adoption of the OSBP strategy	0.636	0.023	0.631	27.407	0.005
Harmonisation of clearance	-0.196	0.046	-0.128	-4.221	0.013
Logistics Facilitation	0.245	0.025	0.187	9.687	0.004

Secondly, the model identified that a unit decrease in time taken for clearance at the border will lead to 16% increase in cross-border logistics performance. This finding signifies the importance of introducing initiatives of ensuring that cargos are cleared in the shortest time possible. This is consistent with a study by Cheruiyot and Rotich (2018), who reported that time taken at customs and border clearance points is used as a practical indicator of cross-border logistics performance since it influences the ability of logistics firms to meet customer delivery schedules.

Thirdly, the model also identified that a unit increase in coordinated border agencies will lead to 26.1% increase in cross-border logistics performance, holding other variables constant. The study implies that all border agencies should work together as a team to avoid duplication of procedures. Such an approach can significantly cut down clearance time at the border. Similar findings were reported by Lehtinen and Atkova (2013) who found multiple inspection by different border agencies to be costly and wasteful to logistics firm.

Fourth, the model indicates that a unit increase in OSBP strategy will lead to 33.3 % increase in cross-border logistics performance, holding other factors constant, within

EAC. This implies that the strategy of having cargoes only cleared once by all the authorities of the neighbouring countries instead of making two stops can increase the performance of cross-border logistics. These findings are consistent with a study by Ochieng (2018) who identified that OSBP strategy had greatly reduced waiting times and improved the coordination of border agencies within the EAC resulting into seamless flow of goods and better cross-border logistics performance. Similarly, Cheruiyot and Rotich (2018) also reported that OSBP had eliminated duplication of procedures particularly inspection of goods, significantly cutting down on transit times. In line with tenets of logistic performance theory, one stop border post strategy aims at increasing efficiency in border logistical operations. In regard, this study concludes that OSBP strategy is essential for improving logistic performance at border posts within the EAC region.

Harmonisation of border clearance documents was found to be negatively related with cross-border logistics performance. The model revealed that 1% increase in clearance documents harmonisation would lead to 19.6% decrease in cross-border logistics performance given no change in other variables. This finding contradicts a recent World Bank (2016) report which reported that harmonization of clearance documents reduced costs by 10%.

Lastly, the model also identified that holding other factors constant, for every unit increase in logistics facilitation efforts by member states will lead to 24.5% increase in cross-border logistics performance. These results imply that every logistics facilitation effort such as improving cross-border transport infrastructure, stable and favourable political relations have a moderate positive impact on cross-border logistics performance. This finding concurs with many previous studies which indicated that trade facilitation improved logistic performance within regional trading blocs. Oparanya *et al.* 2019 found that logistics facilitation improves cross-border logistics performance through timely flow of goods. Indeed, hostility among the administration of EAC member states has negatively affected regional trade. Unexpected closure of borders between member countries as witnessed between Uganda and Rwanda, Kenya and Tanzania, and trade embargos on importation of certain goods from members countries are still prevalent within the EAC region. This goes against the philosophy

of regional integration theory which reinstates that political and physical integration must precede economic integration (Jovanovic, 1992).

4.4 Influence of Customer Service on Cross-border Logistics Performance

The second specific objective of this study was to determine the effect of customer service on cross-border logistics performance. To achieve this, the study formulated a number of questions around some of the issues within customer service, that were capable of influencing the performance of cross-border logistics. In particular, questions were asked on timely document verification, timely response to inquiries, and communication materials tailored to special needs.

4.4.1 Perception of the influence of customer service and cross-border logistics performance

Various statements were presented on a Likert scale where respondents were asked to state their level of agreement or disagreement on a scale of 1 to 5 where '1' was strongly disagree, '2' disagree, '3' not sure, '4' agree and '5' strongly agree. The terms 'strongly disagree' and 'disagree' were assigned a mean of 1.0 to 2.5, to represent not agreed. The term 'neutral' was assigned the mean of 2.6 to 3.4, and it identified neutrality. While the assertion 'agree and strongly agree' were given the mean of 3.5 to 5.0 to represent agreed upon. As shown in table 12, the statement that clear and timely communication improves cross-border logistics performance, had a mean of 4.1 showing that respondents agreed that agreed with it. Furthermore, one of the key informant interviewees showed that timely communication improved cross-border logistics by stating that,

"...that most officers were responding promptly to their clearance inquiries through various communication channels such as toll-free phone calls while acknowledging and working out their complaints making it easy to have all the necessary documentation for clearance..." (Key Informant interviewee, Field Data, Busia OSBP, 12 June, 2021).

Cheruiyot and Rotich (2018), also found that clear and timely communication plays a key role in coordination, directing and controlling people involving immediate feedback which helps to avoid any misunderstanding that could bring about delays. This clearly indicates that clear and timely communication is paramount for the success of cross-border logistics performance within the EAC since it does not allow

occurrences of communication gaps that may in the long run bring about delayed deliveries.

Table 12 : Perception of the influence of customer service and cross-border logistics performance (n=376)

Statement	Mean	Std. Deviation
Clear and timely communication improves cross-border logistics performance	4.1	0.865
Staff wearing customised uniforms provide high quality service	2.2	1.531
Polite and pleasant conduct by staff has improved cross-border logistics performance	3.8	1.286
Staff training on customer service has enhanced logistic performance	3.8	0.982
Teamwork among customer service staff improved cross-border logistics performance	3.6	1.197
Customer service staff provide quick responses on inquiries	4.2	0.547
Overall mean	3.63	

SD=Strongly disagree, D=Disagree, N= Neutral, A=Agree, SA=Strongly agree

Staff wearing customized uniforms provide high quality service hence improving cross-border logistics performance was not supported. The statement had a mean value of 2.2 and a standard deviation of 0.412 indicating that respondents disagreed with the statement. Similarly, one of the key informant interviewees found staff uniform to have less effect on performance stating that,

“... That although customized uniforms make staff to look smart, they have less effect on the performance because what matters is the ability of the staff to appear appropriate and do their work within the expected time frames...”

(Key Informant interviewee, Field Data, Holili-Taveta OSBP, 26 May, 2021).

The findings show that staff wearing of customized uniforms has little impact on cross-border logistics performance. However, these findings contradict those of Hutson and Rodriquez (2016) who reported that wearing uniform increased concentration on work, reduced number of mistakes committed and improved decision-making skills.

The findings in table 12 show that staff behaving politely and pleasantly had an influence on cross-border logistics performance with a mean value of 3.8 which shows in agreement with the statement. The findings correspond with those of Ndonga (2015) and Cheruiyot and Rotich (2018) who asserted that it is the duty of everyone involved in cross-border logistics to put in place clear, precise and easily understood procedures and endeavour to explain further for all those who may not find them relatively friendly. From the above findings it is clear responsive conduct from staff

was important in cross-border logistics performance since it instils confidence in the clients, reduces adherence costs for exporters and importers, lessens the cost of administration and reduces opportunities for corruption.

A majority of the respondents agreed with the statement that staff training had a positive impact on cross-border logistics performance gaining a mean 3.8 and a standard deviation of 0.892. This signifies that staff training improves cross-border logistics performance. In connection to these findings one of the key informant interviewees had emphasized that,

“... staff training as a gate way to making better logistical decisions and this has seen our firm clear all time-sensitive cargo without causing delivery delays...” (Key Informant interviewee, Field Data, Holili-Taveta OSBP, 20 May, 2021).

The findings align with those of Asfaw, Argaw, and Bayissa (2015) who stated that, staff training is an indicator to increase better skills, knowledge and employee understanding to bring about effective performance. Additionally, Salah (2016) asserted that staff training improves the quality and quantity of the organisations output bringing about an increase in profitability while minimising risks. These findings imply that staff training has a great contribution towards the performance of cross-border logistics since it enables employees to handle stress, tension and conflicts which may occur in the course working leading to faster clearance of goods.

The statement that teamwork among customer service staff improved cross-border logistics performance had a mean value of 3.6 and a standard deviation of 1.1197 showing that respondents agreed with the statement. The findings show that to a greater extent teamwork had a positive influence on cross-border logistics performance. The findings are in line with those of Kioko (2020) who argued that teamwork is the driving force that allows large organisations to deliver services with care and attentiveness hence reducing costly errors. The findings indicate that Team work plays a key role in cross-border logistics performance as it adds on staff efficiency while encouraging employees to work be more innovative and hard working.

Lastly, majority of respondents agreed with the statement that customer service staff provide quick responses on inquiries leading to a mean of 4.2 and standard deviation

of 0.567. This was also indicated in an interview with one of the key informant interviewees who reported that,

“...Although customs and clearing agents were doing their best to resolve complaints quickly there was need to continuously train them on how to handle people from diverse cultures including the need to teach them Kiswahili which is common to all EAC states so as to avoid language barrier issues currently faced...” (Key Informant interviewee, Field Data, Busia OSBP, 3 June, 2021).

These findings are in agreement with those of Cheruiyot and Rotich (2018) who asserted that the ability to respond to clients on time while carefully listening to their complaints boosts performance. Impliedly, quick responses are central to better cross-border logistics performance since these responses lower documentation errors that in the long run increase faster clearance and delivery resulting into low customs compliance costs.

4.4.2 Relationship between customer service and cross-border logistics performance

This study had hypothesized that there is no significant relationship between customer service, and cross-border logistics performance at the Malaba, Busia and Taveta-Holili OSBP. This hypothesis was tested using multiple linear regression model against three independent variables under customer service; effective communication, responsiveness and teamwork as presented in equation 4.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \epsilon \dots \dots \dots \text{Equation 4}$$

Where;

Y= Cross-border logistics performance (D.V)

a=Intercept

β_1 - β_3 =Regression coefficient

X₁= Effective communication

X₂= Staff uniforms

X₃= Responsiveness

X₄= Staff training

X₅= Teamwork

X₆ = Quick Responses

A multiple regression analysis was conducted to find out whether customer service through its independent variables; effective communication, responsiveness and

teamwork could significantly predict cross-border logistics performance. The results of the regression, in table 13 indicate that the model accounted for 58.1% of the variance in dependent variable. In addition, the regression also indicated that the model was a statistically significant predictor of cross-border logistics performance, $F(6, 369) = 2049.451, p = 0.000$ as shown in table 13.

From multiple regression model coefficients, all the sub variables of customer service significantly contributed to the model, effective communication ($\beta=0.422, p<0.05$), staff uniforms ($\beta=0.056, p<0.05$) and responsiveness ($\beta=0.177, p<0.05$), staff training ($\beta=0.099, p<0.05$), teamwork ($\beta=0.167, p<0.05$) and Quick responses ($\beta=0.028, p<0.05$) significantly contributed to the model as shown in table 13. Similarly, teamwork significantly contributed to the model ($\beta=0.167, p<0.05$) hence rejecting the null hypotheses (see table 13). The final predictive model became;

$$\begin{aligned} \text{Cross-border logistics performance} = & 0.117 + (0.422 * \text{Effective communication}) + \\ & (0.056 * \text{Staff uniforms}) + (0.177 * \text{Responsiveness}) + (0.099 * \text{Staff training}) + \\ & (0.167 * \text{Teamwork}) + (0.028 * \text{Quick responses}) + 0.15802 \dots \dots \dots \text{Equation 5} \end{aligned}$$

From the final predictive model, one unit increase in effective communication by customer service team at the border, will lead to 42.2% increase in cross-border logistics performance as shown in table 13. This implies that effective communication which ensures that all inquiries are responded to in time and to the right subjects can improve cross-border logistics performance. The findings are in agreement with those of Mlimbila and Mbamba (2018) who noted that in order to improve the effectiveness of logistic operations clear and timely communication is key to support monitoring and interaction with shippers so as to achieve greater utilization. Effective communication is also a key pillar towards realizing both economic and physical integration as emphasized by regional integration theory.

Logistics performance theory, also underscores the need for real-time sharing of information to enhance the quality of logistical services provided at the ports. The findings agree with those of Jeske (2015), who asserted that customer service and good relationships with service providers are two of the most important factors that influence logistical services.

Table 13: Relationship between customer service and cross-border logistics performance

Model Summary						
Model	R	R ²	Adjusted R ²	Std. Error of the estimate		
1	0.762 ^a	0.581	0.578	0.15802		
ANOVA						
Model	Sum of Squares		Df	Mean Square	F	Sig
Regression	307.061		6	51.177	2049.451	0.000
Coefficient						
Model	Unstandardized Coefficients		Standardised coefficient	T	Sig	
	B	Std.error				Beta
Constant	0.117	0.102		1.144	0.253	
Effective communication	0.422	0.021	0.397	20.065	0.004	
Staff uniforms	0.056	0.012	0.094	4.759	0.000	
Responsiveness	0.177	0.017	.248	10.439	0.001	
Staff training	0.099	0.013	0.153	7.364	0.000	
Teamwork	0.167	0.025	0.181	6.593	0.010	
Quick responses	0.028	0.034	0.018	0.834	0.023	

Customer service staff having uniforms was found to have the second least impact on cross-border logistics performance. The model revealed that unit increase in staff uniforms under constant conditions will lead to 5.6% increase in cross-border logistics performance. This finding implies that there is higher level of commitment that comes with wearing official work attire at borders posts within the EAC. A study by Hutson and Rodriquez (2016) also found that staff wearing uniforms had high level of concentration on their work and less likely to make errors. However, another study by Antonakis and Eubanks (2017) showed that, staff without official work attire were more productive and experienced less work-related stress than those in uniforms.

The model also identified that a unit increase in responsiveness from customer service team can lead to 17.7% increase in cross-border logistics performance. This finding implies that polite and pleasant staff positively and significantly contributes towards improving cross-border logistics performance. The findings agree with those of Lancaster (2020) who asserted that in logistics customers may not have a chance to see a firm's warehouses or trucks nonetheless, they will always remember their experience with the staff. Ndonga (2015) also found that willingness of staff at the border to tailor their services in accordance to customer needs reduced complaints, and increased cargo traffic at the borders.

The study, therefore, concludes that polite and pleasant staff is an important asset in a bid to have cross-border logistics perform better because by staff answering

everything and explaining what is happening it gives both shippers and end users a clear image of when to expect a delivery saving them the cost of stockouts. One of the major arguments by logistics performance theory is that improved quality of logistics services increases logistical performance of cross-border points. A such, have a competent staff that is responsive and sensitive to varying clients' needs improves the quality of logistics service, eventually improving cross-border logistics performance.

Staff training was also found to have a positive and statistically significant relation with cross-border logistic performance. The model revealed that a unit increase in staff training will lead to 9.9% increase in cross-border logistics performance. This finding concurs with existing literature which has shown staff training to have a positive and significant impact on performance (Kioko, 2020; Salah, 2016; Argaw and Bayissa, 2015). Particularly, a study by Kioko (2020) illustrated that staff who were trained in modern technology increased ports performance, citing the case of Mombasa port in Kenya. Salah (2016) found staff training to reduce the levels of stress among cross-border staff who work in volatile environment that require high interpersonal skills.

From the regression model, it was also revealed that a unit increase in teamwork could lead to 16.7% increase in cross-border performance, when other variables are controlled. These findings concur with other previous studies (Masudin, Safitri, Restuputri, Wardana and Amallynda, 2020; Sanyal and Hisam, 2018) who found teamwork to have a positive and significant effect on cross-border logistics performance. Masudin *et al.* (2020) found that teamwork in logistics service delivery cuts down costs by ensuring that mistakes are detected and corrected before they occur. In the same vein, Sanyal and Hisam (2018) found teamwork to improve organizational performance in a service-oriented firm.

This study concludes that it is essential for customer service staff to cooperate and enhance a teamwork spirit since it has a positive relationship with cross-border logistics performance. According to logistics performance theory (Fugate *et al.* 2010), a firm can differentiate itself, by providing efficient and effective logistics service. Teamwork can enable border points within the EAC to achieve both efficiency and effectiveness while improving cross-border logistics performance and enhancing economic integration.

Lastly, the regression model also identified that quick responses on customer inquiries enhanced cross-border logistics performance. The model showed that 1% increase in quick responses was associated with 2.8% increase in cross-border logistics performance. Cheruiyot and Rotich (2018) found that quick responses prevented unnecessary waiting hence improving the ability of logistics firms to meet their customers delivery schedules. Giuffrida, Jiang, and Mangiaracina (2021) also revealed that quick responses in logistics help shipping companies to mitigate risks by planning ahead and ensuring their customs are cautioned against anticipated delivery delays.

4.5 Influence of Information Technology on CBL Performance

The third specific objective of this study was to determine the role of information technology on cross-border logistics performance. To achieve this objective, different questions were put together covering various elements of information technology such as electronic data flows and digitalization of logistic services, automated custom services, efficient customs surveillance and use of electronic scanners.

4.5.1 Perceptions of the influence of information technology on cross-border logistics performance

Various statements were presented on a Likert scale where respondents were asked to state their level of agreement or disagreement on a scale of 1 to 5 where '1' was strongly disagree, '2' disagree, '3' not sure, '4' agree and '5' strongly agree. The terms 'strongly disagree' and 'disagree' were assigned a mean of 1.0 to 2.5, to represent not agreed. The term 'neutral' was assigned the mean of 2.6 to 3.4, and it identified neutrality. While the assertion 'agree and strongly agree' were given the mean of 3.5 to 5.0 to represent agreed upon. The findings are summarized in table 14 showing the influence of information technology on cross-border logistics performance within the East African Community a case of Malaba, Busia and Taveta-Holili One Stop Border posts.

Table 14: Perceptions of the influence of information technology on cross-border logistics performance

Statement	Mean	Std. Deviation
Electronic data flows and digitalisation of logistic services improves cross-border logistics performance.	4.0	0.706
Automated customs clearance improves cross-border logistics performance	4.3	0.863
Regional Electronic Cargo Tracking system (RECTS) improves cross-border logistics performance	4.2	0.537
Regional Electronic Cargo and Driver Tracking System (RECDTS) improves cross-border logistics performance	3.5	1.241
Overall mean	4.0	

SD=Strongly disagree, D=Disagree, N= Neutral, A=Agree, SA=Strongly agree

The statement that electronic data flows and digitalisation of logistic services improves cross-border logistics performance, had a mean of 4.0 showing that respondents agreed with the statement. This was also indicated by one of the key informant interviewees that,

“... With electronic data flows now shipping companies can easily start clearance of cargo in its country of destination while monitoring the cargo movement, this has also reduced the burden of paper documentation and reduced on the time spent at the border clearance points...” (Key Informant interviewee, Field Data, Busia OSBP, 5 April, 2021).

The findings revealed that electronic data flows and digitalisation of logistic services improves cross-border logistics performance. The findings support those of Sung-Bou and Dungwook (2020) who asserted that electronic data flows and digitilisation of logistical services within different cross-border logistics activities gives countries an opportunity to avoid duplication of clearance documents and obtain logistics services effectiveness and efficiency.

A majority of respondents, agreed with the statement that automated customs clearance improves cross-border logistics performance. This led to a mean of 4.3 and a standard deviation of 0.863 showing that respondents agreed with the statement. The findings indicate that automation of customs clearance procedures can improve cross-border logistics performance. Similar findings were reported by Kilonzi *et al.* (2019) who argued that automated coding systems improve cross-border logistics efficiency. This clearly shows that there has been a reduction in the cost of moving goods within the EAC as well as reduced delivery times all because of customs automation hence resulting into better cross-border logistics performance.

The statement that regional electronic cargo tracking system had improved cross-border logistics performance had a mean of 4.5, indicating agreement with the statement. This was also identified by one of the key informant interviewees who noted that,

“...This RECTs is good because, you see people used to steal cargo in transit but now they cannot because cargo containers have seals which can only be removed after they reach their destination....” (Key informant interviewee, Field Data, Malaba OSBP, 18 April, 2021)

The findings agree with those of Kubai (2015) who stated that RECTs improves border efficiency by reducing transit time and the transactional cost of doing business within the region. This implies that for cross-border logistics to perform better EAC member states should not underestimate the role of RECTs because it secures goods in transit through high-speed response units strategically put alongside the transit route.

The findings in table 14 revealed that most of the respondents agreed with the statement that the use of RECDTS had improved cross-border logistics performance. This led to a mean of 3.5 showing agreed upon. A study by Amer *et al.* (2017) also reported that track-trace system helped to decongest borders and allow fast clearance of goods. The findings imply that RECDTS has been of great use in the elimination of reliance on manual COVID-19 certificates and delayed tests results which cause long delays at OSBPs hence contributing to better cross-border logistics performance.

4.5.2 Relationship between information technology and cross-border logistics performance

Multiple regression was used to measure the relationship between information technology and cross-border logistics performance at the Malaba, Busia and Taveta-Holili OSBP since it allows relationship modelling between variables making it possible to do predictions about what one variable will do in regards to the scores of some other variables. This was done to test the null hypothesis that there is no significant relationship between information technology and cross-border logistic performance. The hypothesis was tested against three independent variables of information technology namely online declaration, automated custom clearance and track and trace system shown in the equation 6.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \dots \dots \dots \text{Equation 6}$$

Where;

Y= Cross-border logistics performance (D.V)

α =Intercept

β_1 - β_3 =Regression coefficients

X_1 = Online declaration

X_2 = Automated Custom clearance

X_3 = Regional Electronic Cargo Tracking System (RECTS)

X_4 = Regional Electronic Cargo and Driver Tracking System (REDCTS)

A multiple regression analysis was conducted to find out whether information technology through its independent variables; online declaration, automated custom clearance and track and trace system could significantly predict cross-border logistics performance. The results of the regression, in table 15 indicate that the model accounted for 58.2% of the variance in dependent variable. In addition, the regression also indicated that the model was a statistically significant predictor of cross-border logistics performance, $F(4,371) = 1190.637, p = 0.000$ as shown in table 15.

From the model coefficients in table 15, online declaration negatively but significantly contributed to the model ($\beta = -0.264, p < 0.05$). However, both automated customs clearance ($\beta = 0.168, p < 0.05$), RECTS ($\beta = 0.500, p < 0.05$) and REDCTS ($\beta = 0.579, p < 0.05$) hence rejecting the null hypotheses and contributing significantly to the model. This led the final predictive model to become;

$$\text{Cross-border logistics performance} = 0.025 - (0.264 * \text{Online declaration}) + (0.168 * \text{Automated customs clearance}) + (0.500 * \text{RECTS}) + (0.579 * \text{RECDTS}) + 0.24821 \dots \dots \dots \text{Equation 7}$$

From the final predictive model, increasing online declaration by one unit was found to lead to a decline in cross-border logistics performance by 26.4%. The results contradict the existing literature by (Sung-Bou and Dongwook, 2020; Kioko, 2020) who reported that digital custom clearance procedures reduced cargo clearance time and costs, enhancing logistic performance at the ports. A study by Kioko (2020) concluded that technology acceptance and modernization programs had a significant and positive influence on the productivity of customs officers.

Nevertheless, it is fundamentally essential to interrogate why online declaration may fail to have a statistically significant relationship with cross-border logistics. Such questioning may call for understanding of the contextual conditions surrounding the use of the system. For instance, technological systems have been found to lack impact when the immediate service users lack the technological knowledge to use the system (Toots, 2019). Worse still, drastic shift to technological system and frequent system failures have been associated with decline in performance (Munim and Schramm, 2018). For instance, truck drivers who only learn of the system once they arrive at the border after completing paperwork may be reluctant to redo the process online. Given the debate surrounding this topic, this study by and itself finds it difficult to be conclusive.

Table 15: Relationship between information technology and cross-border logistics performance

Model Summary					
Model	R	R ²	Adjusted R ²	Std. error	
1	0.763	0.582	0.579	1.48213	
ANOVA					
Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	293.419	4	73.355	1190.637	.000b
Coefficient					
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	β	Std. Error	Beta		
Constant	0.025	0.166		0.151	0.880
Online declaration	-0.264	0.060	-0.203	-4.404	0.004
Automated customs clearance	0.168	0.038	0.158	4.428	0.001
RECTS	0.500	.042	0.293	11.810	0.003
RECDTS	0.579	0.040	0.782	14.426	0.000

Regarding automated customs clearance, the final predictive model indicated that a unit increase will lead 16.8 % increase in cross-border logistics performance. This finding was also supported by one of the key informant interviewees who noted that,

“...Using ICT to combine clearance of goods at the border has been good because it was very expensive. It was very expensive and time consuming...”

(Key informant interviewee, Field Data, Malaba OSBP, 24 April, 2021)

The findings imply that automated customs clearance has to a greater extent eliminated duplicated and long customs clearance procedures which hindered better cross-border logistics performance within the EAC. Munim and Schramm (2018), also reported a similar relationship between quality of port infrastructure and regional

logistics. According to Munim and Schramm (2018), ports with high quality technological infrastructure, attracted many cargos compared to those with low quality infrastructure. Since the results were statistically significant, the study concluded that automated customs clearance improves cross-border logistics performance.

Lastly, as an independent variable under information technology, track and trace system had the highest significant impact on cross-border logistic performance. The final predictive model revealed that a unit increase in RECTS and RECDTS will lead to 50% and 57.9% increase in cross-border logistic performance respectively. The study finding implied that the EAC member states are more likely to achieve more cost effective and less costly cross-border logistics by endorsing the use of RECTS and better ICT connectivity to avoid internet breakdown. The findings are in agreement with those of Syong'oh (2018) who asserted that the implementation and use of RECTS by the Kenya Revenue Authority was timely since its entrance improved customs administration while reducing illegal dumping of foreign goods into the country as well as reduction of cargo transit time from 11days to approximately 4 days. As argued by regional integration theory (Viner, 1950), there is need for EAC member countries to engage in practices that will lead to creation of more trading opportunities among them. RECTS is one such a tool that will minimize trade diversion among member states and boast economic cooperation within the region.

4.6 Influence of stakeholder co-operation on Cross-border Logistics Performance

The fourth specific objective of this study was to examine the effect of stakeholder co-operation on cross-border logistics performance. To achieve this objective, different questions were put together covering various elements including involvement of key stakeholders in all strategic decisions, resource mobilisation, planning, implementation and stakeholder participation in monitoring and evaluation.

4.6.1 Perception of influence of stakeholder co-operation on cross-border logistic performance

Various statements were presented on a Likert scale where respondents were asked to state their level of agreement or disagreement on a scale of 1 to 5 where '1' was strongly disagree, '2' disagree, '3' not sure, '4' agree and '5' strongly agree. The terms 'strongly disagree' and 'disagree' were assigned a mean of 1.0 to 2.5, to represent not agreed. The term 'neutral' was assigned the mean of 2.6 to 3.4, and it

identified neutrality. While the assertion ‘agree and strongly agree’ were given the mean of 3.5 to 5.0 to represent agreed upon. The findings are summarized in table 16.

Table 16: Perception of influence of stakeholder co-operation on cross-border logistic performance

Statement	Mean	Std. Deviation
There is involvement of key stakeholders in all strategic decisions at the border points.	3.9	0.921
Stakeholders are resource mobilization.	4.0	0.678
That stakeholders’ involvement in planning is fundamental and all stakeholders appreciate it.	3.9	0.678
Stakeholders are involved in implementation and accountability at the border points	4.0	0.774
Stakeholders are involved in monitoring and evaluation of cross-border logistics performance	3.5	1.287
Overall mean	3.9	

The statement whether there is involvement of key stakeholders in all strategic decisions at the border points had a mean of 3.8 identifying that respondent agreed with the it. The findings revealed that stakeholder participation in decision-making positively affects cross-border logistics performance. Although the findings had majority of the respondents agree, Soltani, Hewage, Reza, and Sadiq (2015) believe that the involvement of stakeholders in decision making leads to delays due to the existence of diverse ideas from different points of view hence delaying a project which would have taken off with only expert advice. The study concludes that although stakeholder involvement in decision making plays an important role it should be done with care to avoid delays due to personal interests and failure to concede. The findings above show that stakeholder participation enhances cross-border logistics performance since it allows them an avenue to have their views included building a sense of ownership and maximum support.

The stakeholders are involved in resource mobilization had a mean value of 4.0 which revealed agreement with the statement. This shows that involvement of stakeholders in resource mobilization can significantly impact the performance of cross-border logistics. These findings are in agreement with those of Gregory *et al.* (2015) who argued that stakeholders have the capacity to bring the project to its success or downfall. One of the key informant interviewees also added that,

“...Stakeholder participation has made our work easy since key stakeholders such as the EAC Governments were taking it upon themselves to educate truck

drivers and clearing agents...” (Key informant interviewee, Field Data, Holili-Taveta OSBP, 10th April, 2021).

The statement that stakeholders’ involvement in reaching agreement on the ground rules is fundamental and all stakeholders appreciate it, had a mean 3.9. This signifies that, respondents agreed with it. The findings show that stakeholder involvement in planning influence cross-border logistic performance. These findings are in agreement with those of Tengan and Aigbavboa (2017) who asserted that stakeholder involvement in project planning allows them an opportunity to share their ideas of how it should look as well as their desired means of achieving that desired state. This implies that stakeholder involvement in planning is important for the discussion of finer details such as ways of resource mobilisation and budget allocation while strengthening governance.

The statement that stakeholders are involved in implementation and accountability at the border points was also strongly supported with a mean of 4.0 showing that it was agreed upon. This was also confirmed in an interview with a customs duty official the at Malaba OSBP who stated that,

“...I was here during the construction of this OSBP (Malaba) and I remember how most of us were resistant because we feared that we would lose our lives due to insecurity that comes with demolition of some facilities, actually we even thought that OSBP is a threat to our businesses...” (Key informant interviewee, Field Data, Malaba OSBP, 3 May, 2021).

The findings relate with those of Ochunga and Awiti (2017) who stated that any form of contribution by stakeholder towards a project gives them a sense of ownership and births sustainable project results since stakeholders view it as their own initiative. The findings clearly show that stakeholder involvement in cross-border logistics project implementation is important since it allows stakeholders an opportunity to contribute towards the project.

Lastly, a mean of 3.5 identified that respondents agreed that stakeholders were involved in monitoring and evaluation of cross-border logistics performance. In fact, one of the key informant interviewees explained the importance of involvement in monitoring explaining that,

“... now if the work being done is to help local people and you refuse to put them in it, how do you expect people to sustain what they don't know...” (Key Informant interviewee, Field Data, Holili-Taveta OSBP, 12 May, 2021).

As such, there is low level of stakeholder involvement in assessing the performance of cross-border logistics within the EAC region. According to Tengan and Aigbavboa (2017) stakeholder involvement in monitoring and evaluation gives a sense of local ownership and commitment to project existence and its outcomes. The findings imply that stakeholder involvement in monitoring and evaluation which allows a mechanism for getting feedback on the right actions making a project adaptable while strengthening its ownership.

Logistics performance theory (Fugate *et al.* 2010) puts particular emphasis on achieving efficient, effective and differentiated logistics services. This can only occur when the key stakeholders are directly involved at every stage of decision making, and implementation. Engaging governments of member states can unleash the required funding for improving cross-border logistics services. The ultimate users such as truck drivers, clearing agents, and manufacturing companies in who use cross-border ports to achieve the three goals postulated by logistic performance theory ought to be consulted on the design of cross-border logistic services. Such a participative approach can enhance political, economic and physical integration among member states as elaborated by the regional integration theory (Viner, 1950), improving the performance of cross-border logistics.

4.6.2 Relationship between stakeholder co-operation and cross-border logistics performance

Multiple linear regression was used to measure the effect of stakeholder co-operation and cross-border logistics performance at the Malaba, Busia and Taveta-Holili OSBP since it allows relationship modelling between variables making it possible to do predictions about what one variable will do in regards to the scores of some other variables. This was done to test the null hypothesis that there is no significant relationship between stakeholder co-operation and cross-border logistic performance. The hypothesis was tested against three independent variables of stakeholder co-operation namely decision-making, planning and monitoring and evaluation as shown in the equation.

$$Y = \alpha + \beta_1 DM + \beta_2 RM + \beta_3 PL + \beta_4 IM + \beta_5 M\&E \epsilon \dots \dots \dots \text{Equation 8}$$

Where;

Y= Cross-border logistics performance (D.V)

a =Intercept

β_1 - β_3 =Regression coefficient

DM= Decision making

RM= Resource mobilization

PL = Planning

IM = Implementation

M&E= Monitoring and Evaluation

A multiple regression analysis was conducted to find out whether stakeholder through its independent variables; decision-making, planning and monitoring and evaluation could significantly predict cross-border logistics performance. The results of the regression, in table 16 indicate that the model accounted for 93.8% of the variance in dependent variable. In addition, the regression also indicated that the model was a statistically significant predictor of cross-border logistics performance, $F(5,370) = 1122.786$, $p = 0.000$) as shown in table 17.

From the model coefficient in table 17, involvement of stakeholders in decision-making was found to significantly contribute to the model ($\beta = 0.3650$, $p < 0.05$). Similarly, resource mobilization ($\beta = -0.147$, $p < 0.05$) and planning ($\beta = 0.184$, $p < 0.05$), implementation ($\beta = 0.269$, $p < 0.05$) and monitoring and evaluation ($\beta = 0.280$, $p < 0.05$) hence rejecting the null hypotheses and significantly contributing to the model. The final predictive model equation was;

$$\text{Cross-border logistic performance} = 0.250 + (0.365 * DM) + (-0.147 * RM) + (0.184 * PL) + (0.269 * IM) + (0.28 * M\&E) \dots\dots\dots \text{Equation 9}$$

Table 17: Relationship between stakeholder co-operation and cross-border logistics performance

Model Summary						
Model	R	R Square	Adjusted Square	R	Std. Error of estimates	
1	0.820	0.672	0.669		1.42166	
ANOVA						
Model	Sum of squares	Df	Mean Square	F	Sig.	
Regression	293.391	3	97.797	1589.718	0.000	
Coefficients						
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	
	B	Std. Error	Beta			
Constant	0.250	0.114		2.192	0.029	
Decision-Making	0.3650	0.034	0.366	10.629	0.000	
Resource mobilization	-0.147	0.060	-0.108	-2.458	0.014	
Planning	0.184	0.038	0.136	4.870	0.000	
Implementation	0.269	0.058	0.227	4.644	0.000	
Monitoring and evaluation	0.280	0.024	0.393	11.767	0.000	

The final predictive model revealed statistically significant relationship between stakeholders' involvement in decision-making and cross-border logistics performance. The model also indicated that an increase in stakeholder involvement in decision-making by 1% could lead to 25% increase in cross-border logistics performance when other factors are controlled. These findings are consistent with extant literature, which identifies that involving stakeholders in decision-making improves the performance of cross-border logistics. In particular, Saida *et al.* (2020) reported that involvement of manufacturing firms' owners in decision-making helped to streamline logistics activities at the border, by increasing compliance to all agreed procedures. It also created an avenue for open discussion of grievances and changing needs of business leading to responsive cross-border logistics services (Saida *et al.*).

The model indicated that involving stakeholders in resource mobilization would significantly reduce cross-border logistics performance by 14.7%. In real sense, the finding implies that involving government, logistics firms, manufacturing companies among other key stakeholders in developing cross-border logistics infrastructure can be detrimental to performance of cross-country logistics. While it is true that stakeholders have conflicting interests, improving quality of logistics service requires investment from all stakeholders. Shinya, MaSsashi, Tomoya and Russell (2019) found that progressive investment by stakeholders has improved logistics performance of northern and central corridors within the East African Community.

Involving stakeholders in planning was also found to have a statistically significant relationship with cross-border logistics performance. This indicated that holding other factors constant, a unit increase in stakeholder involvement in planning could lead to 18.4% increase in cross-border logistics performance. The findings imply that stakeholder involvement in planning is key in the success of cross-border logistics performance since it allows stakeholders an opportunity to share their feelings and thoughts on a cross-border activity as well as means of achieving it. The findings are in line with those of Ochunga and Awiti (2017) who asserted that effective results are achieved when stakeholder are involved in the planning process.

Stakeholder involvement in implementation of cross-border logistics was also found to increase its performance by 26.9% at one unit increase, when other factors are controlled. This implies that involving stakeholder in implementing new regulations, developing new infrastructure meant for cross-country transportation had a significant positive impact on intra-regional logistics. This finding was also supported by Ochunga and Awiti (2017) study, which found high level of support of cross-border logistics projects among stakeholders who were directly involved in their implementation than those who were not.

Involvement of stakeholders in monitoring and evaluation was found to have the second highest statistically significant impact on cross-border logistic performance after decision-making. The model indicated that increasing stakeholder involvement in monitoring and evaluation by one unit while controlling other variables will lead to 28% increase in cross-border logistics performance. In real sense, these findings imply that involvement of stakeholders in monitoring and evaluating the performance of cross-border points can reduce logistical costs and time by 28% increasing profit margins of companies by the same percentage. Tengan and Aigbavboa (2017) also stated that stakeholder involvement in monitoring and evaluation process increased the success of the project by enabling them to directly identify problem areas and make pertinent recommendations for improving the current and future programs. As a result, the study concluded that stakeholder involvement in monitoring and evaluation improves cross-border logistics.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter gives in depth details of the summary, conclusion and recommendations that arose from the study findings as well as contributions of the study, Limitations and areas for further research.

5.1 Introduction

The main objective of this research was to identify the determinants of cross-border logistics performance in East African Community concentrating on the Malaba – Busia and Taveta - Holili One Stop Border Posts. The study specific objectives were to examine the effect of the customs clearance procedures on cross-border logistics performance, to establish whether there is a relationship between customer service at the borders and logistics performance, to ascertain the role of Information technologies on cross-border-logistics performance and to ascertain the effect of stakeholder co-operation on cross-border logistics performance. This chapter provides the summary of findings, conclusion and recommendations of the research based on the specific research objectives

5.2 Summary of the Findings

The study aimed at examining the factors that influence cross-border logistics performance within the East African Community: A case study of Malaba, Busia and Taveta-Holili OSBP. The study used four major cross-border logistics variables namely customs and border clearance, customer service quality, information technology and stakeholder co-operation. The key findings of the study indicated that custom clearance procedures were considered moderate by the respondents.

5.2.1 Customs clearance procedures and cross-border logistics performance

The study sought to establish the effect of customs clearance procedures on cross-border logistics performance. Multiple regression results indicated that single customs territory, clearance time, incoordination of border agencies, customs clearance harmonisation and implementation of the One Stop Border Post strategy were found to be positive and significant predictors of cross-border logistics performance

5.2.2 Customer service quality and cross-border logistics performance

Concerning the second objective most of the respondents reported that clear and timely communication, staff wearing customised uniforms, polite and pleasant staff, staff training, team work and quick responses influence cross-border logistics performance. The respondents also noted that sometimes the customer care team would take long to respond to their queries leading to long lines and causing delays at the OSBP. Through multiple regression results revealed that effective communication, staff uniforms, responsiveness, staff training and teamwork were found to be positive and significant predictors of cross-border logistics performance

5.2.3 Information technologies and cross-border logistics performance

The third objective of the study intended to ascertain the role of Information technologies on cross border logistics performance. The respondents indicated that electronic data flows and digitalisation of logistic services, automated customs clearance, use of RECTS and RECDTS were effective in increasing timely delivery and aimed at reducing the costs involved hence resulting into better cross-border logistics performance. The multiple regression results revealed that online declaration, automated clearance, cargo track and trace and driver tracker had a significant influence on cross-border logistics performance.

5.2.4 Stakeholder co-operation and cross-border logistics performance

Concerning the fourth objective most of the respondents reported that stakeholder involvement in decision making, resource mobilisation, planning, implementation and monitoring and evaluation influenced cross-border logistics performance within the EAC. Multiple regression results revealed that stakeholder involvement in planning and stakeholders' involvement in decision making, planning, implementation and monitoring and evaluation were significant predictors of cross-border logistics performance. This clearly implies that there was a significant relationship between stakeholder co-operation and cross-border logistics performance within the EAC.

5.3 Conclusion

Based on the study objectives and findings the following conclusions were drawn in relation to the determinants of cross-border logistics within the EAC a case study of Malaba, Busia and Taveta-Holili OSBP.

5.3.1 Customs clearance procedures and cross-border logistics performance

The first objective was to examine the effect of the customs clearance procedures on cross-border logistics performance. The study concluded that the use of the EAC-SCT which involves connecting of regional customs systems to facilitates seamless flow of information between customs stations positively and significantly affects cross-border logistics performance. The study also revealed that adoption of the OSBP strategy had the greatest influence on CBL performance was statistically positive and significant. In addition, logistics facilitation which leads to a reduction in obstacles to seamless logistics was also significant and positively related to CBL performance. This study concluded that customs clearance procedures should not be under estimated when looking at the determinants of CBL performance.

5.3.2 Customer care services and cross-border logistics performance

The study concludes that customer service quality is a key determinant of cross-border logistics performance since it can facilitate seamless flow of information. With clear and timely communication shippers are able to know what is required to clear their goods. This makes it easy to have all the documents put together and presented on arrival hence reducing time spent at border clearing points and improving performance.

The study found that effective communication had the strongest influence on CBL performance with a positive and significant relationship. Responsiveness was also found to be significant and positively influenced CBL performance. The study also found that staff training which ensures that exceptional value is provided to transporters, was positive and significantly related to CBL performance. Therefore, customer care services to a greater extent determine CBL performance.

5.3.3 The role of information technologies on cross-border logistics performance.

The study revealed that REDCTS had the highest positive and significant influence on CBL performance. This was closely followed by RECTS a cargo trace and track device which makes it easy to monitor cargo movement and increase revenue

collection. RECTS was statistically significant and positively related to CBL performance. Therefore, the study concludes that it is important for data to flow smoothly as well as digitalization of logistic services through proper adoption and utilisation of information technologies as a key determinant of CBL performance.

5.3.4 Effect of stakeholder co-operation on cross-border logistics performance

The study also revealed that stakeholder co-operation has a positive and significant relationship on cross-border logistics performance. The study found that stakeholder Monitoring and Evaluation had the highest significant and positive influence on CBL performance. This was closely followed by stakeholder involvement in planning which was also statistically positive and significantly related to CBL performance. The study concluded that stakeholder co-operation is important in strategic decision making to reach beneficial agreements as far as cross-border logistics is concerned. The study concludes that stakeholder co-operation is an important determinant of CBL performance.

5.4 Recommendations

Therefore, in view of the summary and conclusions here in, the study has come up with the following recommendations to improve the performance of cross-border logistics within the East African Community

Regarding the findings relating to customs clearance procedures, the study calls for more harmonization and interconnection of the customs system through complete roll out of the EAC Single Customs Territory by the EAC. This will allow greater flow of information between customs authorities leading to faster and reliable clearance which in the long run will reduce time taken at the border and the costs involved. Hence improving the performance of cross-border logistics which has over the years been associated with high costs.

Basing on the findings relating to quality of customer care services, the study recommends provision of end customer real time updates to all those involved in cross-border logistics performance. This will enable them to stay informed with full tracking on the shipment and documents. Here customers can enter their cargo location, receive alerts on the current and expected delays, manage their local import operations on time, customs clearance, inland trucking, unloading and empty container return hence increasing satisfaction and reducing on the cargo clearance times

Basing on findings relating to information technologies, the study recommends EAC Governments to support cross-border logistics participants in the adoption of ICT systems through different ICT incentive packages which will help them to implement online tracking systems on the vehicles more widely to improve their utilization rate to higher level and manage their drivers' better hence increasing the number of vehicles round trip and bettering cross-border logistics performance. Furthermore, the EAC governments should push ahead the digital connectivity by fostering the fixed broadband and 4G coverage and a one network area which calls for uniform calling rates and elimination of roaming charges in the region. This will ease communication among those involved in logistics and enhance regional cross-border logistics performance.

Regarding the findings relating to stakeholder co-operation, the study recommends the EAC to consider the need for greater stakeholder involvement in all cross-border logistics activities. To be specific, private sector duty or role and civil society should be increased as well as exploration of the public-private partnerships cooperation leading to the attainment of the integration objectives which are key in achieving better cross-border logistics performance within the EAC.

5.5 Contribution of the study

The study findings highly contribute to cross-border logistics performance existing literature within the EAC and Africa as a whole. In regards to empirical evidence, the study adds on earlier studies that customs clearance procedures, customer care services, adoption of information technologies and stakeholder co-operation influence cross-border logistics performance in the EAC. Theoretically, the study acknowledges the role played by the regional integration theory in emphasising that integration among two or more countries will improve the welfare of the member countries provided the arrangement leads to trade creation.

All the four variables used in this study point us back to regional integration for a better cross-border logistics performance. The theory points out that as long as integration leads to more trade creation than diversion then cross-border logistics performance is bound to improve. The study also contributed to the final model of the logistics performance theory (Töyli *et al*, 2008) by empirically showing that logistical costs influence cross-border logistics performance

5.6 Limitations and areas for further research

The study aimed at examining the factors that influence cross-border logistics performance within the East African Community: A case of Malaba, Busia and Taveta-Holili OSBP, in so doing the study was limited to only Malaba, Busia and Taveta-Holili OSBP. Additionally, the study was limited to only customs clearance procedures, customer service quality, use of information technologies and stakeholder co-operation as the determinants of CBL performance. Thirdly the study focused on one landlocked country and did not make a comparison with other landlocked countries within the region

Basing on the above limitations the study recommends that future studies should expand their scope to include other OSBP. This will give a greater picture of the conclusions and give the perception of cross-border logistics performance at other OSBP. Secondly, given that this study looked at four independent variables, the study recommends that other factors should be examined in this regard particularly putting into consideration the Covid-19 pandemic, the economic and political landscapes in the member states of the East African Community. This will enrich existing literature on the impact of pandemics on CBL performance.

Finally, considering the fact that this study was under pinned by the theory of regional integration and the logistics performance theory, the study suggests that future studies should go an extra mile and employ other theories. This will add more value to the already existing literature on CBL performance.

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APPENDICES

Appendix I : Data analysis matrix

Objective	Hypotheses	Model	Measurement Scale
To examine the effect of the customs clearance procedures on cross-border logistics performance	<p>There is no significant relationship between customs clearance procedures and CBL performance.</p> <p>H_{01a}: Use of EAC-SCT H_{02b}: Time taken H_{03c}: Incoordination H_{04d}: OSBP strategy H_{05c}: Harmonisation H_{06d}: Logistics</p>	<p>Regression Equation $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon \dots \dots 1$ Y= Cross-border logistics performance $\beta_1 - \beta_6$= Regression co-efficient α= Intercept X₁=Establishment and use of the EAC-SCT X₂=Time taken at customs and border clearances (TC) X₃=Coordinated border agencies (CBA) X₄=Adoption of the OSBP strategy X₅=Harmonisation of documents (HOC) X₆=Logistics Facilitation (TF) ε= error term</p>	5-Point Likert scale
To establish whether there is a relationship between customer service at the borders and logistics performance	<p>There is no significant relationship between customer services and CBL performance</p> <p>H_{02a}: Communication H_{02b}: Staff uniforms H_{02c}: Pleasant staff H_{02d}: Staff training H_{02e}: Team work H_{02f}: Quick responses</p>	<p>Regression Equation $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$ $\beta_1 - \beta_6$= Regression co-efficient α= Intercept Y= Cross-border logistics performance X₁=Clear and timely communication X₂=Staff wearing customised uniforms X₃=polite and pleasant staff X₄=Staff training X₅=Team work X₆= Quick responses ε= error term</p>	5-Point Likert scale
To ascertain the role of Information technologies on cross-border logistics performance	<p>There is significant relationship between Information technology and CBL performance</p> <p>H_{03a}: Data flows H_{03b}: Automation H_{03c}: Surveillance H_{03d}: RECDTS</p>	<p>Regression Equation $Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$ Y= Cross-border logistics performance $\beta_1 - \beta_6$= Regression co-efficient α= Intercept</p>	5-Point Likert scale

	H_{03e} : RECDTS	X ₁ =Electronic data flows and digitalisation of logistic services X ₂ =Automated clearance X ₃ =customs surveillance X ₄ =Regional Electronic Cargo and Driver Tracking System (RECDTS ε= error term	
To ascertain the effect of stakeholder co-operation on cross-border logistics performance	There is no relationship between stakeholder co-operation and CBL performance H_{04a} : Decision making H_{04b} : Mobilisation H_{04c} : Planning H_{04d} : Implementation H_{04e} : Monitoring	Regression Equation $Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$ Y=Cross-border logistics performance β ₁ -β ₆ = Regression coefficient α= Intercept X ₁ =Stakeholder participation in decision making X ₂ =Involvement in resource mobilization X ₃ =Stakeholder involvement in planning X ₄ =Stakeholder involvement in implementation X ₅ =Stakeholders' involvement in monitoring and evaluation ε=error term	5-Point Likert scale

Appendix II : Questionnaire**Dear Respondent,**

My name is Asimwe Jonath, a Master's Student at Moshi Cooperative University in the United Republic of Tanzania. I am conducting an academic research project (dissertation) to examine the determinants of Cross-border Logistics Performance in East African Community. A case study of Malaba – Busia and Taveta – Holili One Stop Border Posts. I hereby kindly request for your input in this study since your views and opinions are extremely fundamental to the successful completion of this study. It should be noted that all information offered will be treated with extreme confidentiality.

Thank you for your cooperation and time.

SECTION A

Demographic Information of the Respondents

Please tick an appropriate answer in the box provided in each question.

A.1. Gender of the respondents

Male

Female

A.2 Age of the respondents

Less than 30 years

31 to 35 years

36 to 40 years

41 to 45 years

46 to 50 years

Above 51 years

A.3. Education level of the respondents

Certificate

Diploma

Bachelor's degree

Master's degree

PhD

Other

A.4. For how long have you been participating in Cross-border Logistics?

Less than a year

1 to 4 years

5 to 7 years

8 to 10 years

Above 10 years

A.5 What is the nature of your business?

Exporting

Importing

Exporting and Importing

Agency

Transporters

Customs Officers

SECTION B: CROSS-BORDER LOGISTICS PERFORMANCE

Please select an appropriate answer regarding Cross-border Logistics Performance in the statement below based on scale; SD-Strongly disagree, Disagree, Neutral, A-Agree & SA-Strongly Agree

Statement	SD	D	N	A	SA
There is delivery timeliness and flexibility which has resulted into growth of cross-border logistics performance					
There are good customs clearance procedures which have reduced waiting time					
There are high quality logistics and competence services which increase logistics performance					
There is tracking and tracing which has increased timely delivery					
There are developed transport infrastructures which have facilitated better cross-border movement					
There are EAC trade protocols which have led to an increase in trade volumes					
There are high logistical costs which hinder coss-border logistics performance					

SECTION C: CUSTOMS CLEARANCE PROCEDURES ON CROSS-BORDER LOGISTICS PERFORMANCE

Please select an appropriate answer to show whether the different customs clearance procedures have effect on cross-border logistics performance the statement below based on scale; SD-Strongly disagree, Disagree, Neutral, A-Agree & SA-Strongly Agree

Statement	SD	D	N	A	SA
The establishment and use of the EAC-SCT has facilitated CBL performance					
The time taken at customs and border clearances has an impact on CBL performance					
The presence of incoordination among border agencies has an effect on CBL performance					
Adoption of the OSBP strategy has led to an improvement in CBL performance					
The harmonisation of customs clearance documents has reduced waiting time at the border points					
Logistics Facilitation by member countries has led to a reduction in logistical costs					

SECTION D: DIRECT RELATIONSHIP BETWEEN CUSTOMER SERVICE AT THE BORDERS AND LOGISTICS PERFORMANCE

Please select an appropriate answer regarding whether there is a direct relationship between customer service at the borders and logistics performance below based on scale; SD-Strongly disagree, Disagree, Neutral, A-Agree & SA-Strongly Agree

Statement	SD	D	N	A	SA
Clear and timely communication has made it easy for clients to know what they need at the clearing points hence reducing waiting time					
Staff wearing customised uniforms has eased identification and made it easy for clients to approach the right team and get right assistance hence reducing waiting time					
polite and pleasant staff have made it easy to access necessary information hence reducing errors and subsequently waiting time					
Staff training has made all staff knowledgeable on how best they should handle clients hence increasing performance					
Team work has made it easy for clients to be handled with ease through sharing of tasks					
Quick responses in regards to client queries have reduced the cost of logistics and waiting times at the border					

SECTION E: THE ROLE OF INFORMATION TECHNOLOGIES ON CROSS-BORDER LOGISTICS PERFORMANCE

Please select an appropriate answer regarding the role of Information technologies on cross-border logistics performance in the statement below based on scale; SD-Strongly disagree, Disagree, Neutral, A-Agree & SA-Strongly Agree

Statement	SD	D	N	A	SA
Electronic data flows and digitalisation of logistic services have reduced the cost of physical deliveries					
Automated customs clearance has reduced time spent at border clearance points					
Efficient customs surveillance through use of RECTS has reduced delivery times					
Regional Electronic Cargo and Driver Tracking System (RECDTS) has reduced the burden of long lines and multiple COVID-19 tests					

SECTION F: EFFECT OF STAKEHOLDER CO-OPERATION ON CROSS-BORDER LOGISTICS PERFORMANCE

Please select an appropriate answer regarding effect of stakeholder co-operation on cross-border logistics performance in the statement below based on scale; SD-Strongly disagree, Disagree, Neutral, A-Agree & SA-Strongly Agree

Statement	SD	D	N	A	SA
Involvement of key stakeholders in all strategic decisions at the border points has increase CBL performance					
Stakeholder involvement in implementation of cross-border activities increases CBL performance					
Stakeholders' involvement in resource mobilisation is fundamental in increasing cross-border logistics performance					
Stakeholders are involvement in planning of logistics activities has increased cross-border logistics performance					
Stakeholders' involvement in monitoring and evaluation has led to sustainability and increased CBL performance					

THANK YOU FOR YOUR TIME AND COOPERATION

Appendix III : Interview guide

1. In your opinion has the East African common market had a positive bearing on cross-border business?

Yes

No

Not sure

None of the above

2. Is the East African market an added advantage or a disadvantage to the Cross-Border businesses?

It is an advantage

It is a disadvantage

None of the above

Not sure

3. Has One Stop Border Post strategy led to timely deliveries within the East African Community?

.....
.....
.....

4. Has the East African Community Single Customs Territory simplified customs clearance at the border?

.....
.....
.....

3. In your opinion how may Cross-border logistics be improved in East Africa?

.....
.....
.....

Appendix IV : Data collection permit



UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

**MOSHI CO-OPERATIVE UNIVERSITY (MoCU)
CHUO KIKUU CHA USHIRIKA MOSHI**


DIRECTORATE OF RESEARCH AND POSTGRADUATE STUDIES

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Our Ref. No: MoCU/UGS/3/41

Date: 15th March, 2021

Your Ref. No:

 Immigration Department
 One Stop Border Point, Holili/
 Tareta/Malaba/Busia
RE: RESEARCH ASSOCIATES, STAFF AND STUDENTS CLEARANCE

The purpose of this letter is to introduce to you Ms. Asiimwe Jonath who is a Student of the Moshi Co-operative University (MoCU). The person mentioned above is planning to undertake research activities in your areas as part of the requirements for his/her studies at this University.

This request is in accordance with the Government Circular No. MPEC/10/1 of 7 July, 1980 read together with Article 5(2) (e) of the Moshi Co-operative University (MoCU) Charter, which empowers the Vice Chancellor of the Moshi Co-operative University (MoCU) to issue permit(s) for undertaking research in the country to University students, staff, and research associate(s) on behalf of the Government and Commission for Science and Technology in Tanzania.

I, therefore, request that the student/visiting scientist/researcher mentioned above be given the necessary assistance so that he/she can accomplish his research undertakings. The main assistance he/she needs is permission to meet different people from your area so that he can interview them.

The main objective of the research is: **"DETERMINANTS OF CROS-BORDER LOGISTICS PERFORMANCE IN EAST AFRICAN COMMUNITY: A CASE STUDY OF MALABA – BUSIA AND TAVETA – HOLILI ONE STOP BORDER POSTS"**

The areas selected for conducting the research is MALABA – BUSIA AND TAVETA – HOLILI ONE STOP BORDER POSTS. If there are restricted areas, it is upon you to restrict the researcher from visiting them.

The expected date of commencement is 15/03/2021 up to 15/03/2022. If there are any queries, please contact the undersigned.

Looking forward to your kind co-operation.

Sincerely yours,

Prof. Alfred S. Sife
VICE CHANCELLOR

c.c. Researcher

Appendix V : Publishable Manuscript

**DETERMINANTS OF CROSS-BORDER LOGISTICS PERFORMANCE IN
EAST AFRICAN COMMUNITY: A CASE OF MALABA, BUSIA AND
TAVETA - HOLILI ONE STOP BORDER POSTS**

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Intended Journal of Publication: Journal of International Logistics and Trade

EFFECT OF CUSTOMS CLEARANCE PROCEDURES ON CROSS BORDER LOGISTICS PERFORMANCE: A CASE OF MALABA-BUSIA AND TAVETA HOLILI ONE STOP BORDER POST.

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ABSTRACT

Efficient and reliable cross-border logistics performance is central for economic integration of regional trading blocks, particularly the East African Community (EAC) with three landlocked countries. Despite the economic growth in individual member countries, an optimum level of economic integration is yet to be achieved, with the region incurring some of the highest cross-border logistics costs in the world, largely due to inefficient custom clearance procedures. This study sought to determine the effect of custom clearance on cross-border logistics performance a case of Malaba-Busia and Taveta-Holili OSBP. Based on a cross-sectional design, using data from 376 respondents at Malaba, Busia and Taveta-Holili one stop border posts through closed ended questionnaire and key informant interviews. Descriptive analysis and multiple regression model were used in data analysis. The findings reveal that there is a positive and significant relationship between OSBP strategy, coordinated border agencies, logistics facilitation and single customs territory. The findings concluded that efficient customs clearance procedures improve cross-border logistics performance. The study, therefore, recommends that the EAC secretariat should work towards more harmonization and interconnection of the customs system through complete roll out of the EAC Single Customs Territory by the EAC.

Keywords: Single customs, customs clearance, cross-border logistics, customs union

1.0 Introduction

With increasing globalization and regional integration, the level of cross-border trade is constantly rising with countries around the world keen to exploit their economic comparative advantage. It is predicted that continents are moving towards a borderless village with main aim of spurring economic development through increased trade cooperation (Tang and Abosedra, 2019; Lowitt, 2017). One of such a move includes the recent initiative by African countries to form Africa Continental Free Trade Area (AfCTA), continent-wide regional trading block (Bavier, 2021). Although such initiatives are common in Africa, many of them have not been able to achieve their objectives. According to Tang and Abosedra (2019), success in regional trade not only requires the willingness of neighbouring countries to trade, but also facilitative tangible infrastructure and policies. Lowitt (2017), notes that effective cross-border logistics is the bedrock of cross-border trade and regional integration. Kamau and Odongo, 2020 also asserts that the world has become more interdependent as a result of growth in cross-border logistics, investment and finance. As such, regional integration requires effective cross-border logistics facilitated by clear and harmonised custom clearance procedures.

In Europe logistics contribute a huge chunk of both business and consumer spending. Efficient and enhanced logistics can have a tangible impact on people and companies given that logistics costs make up approximately 13% of the overall final consumer in the European Union (EU) for households (De Oliveira, 2014). In North America, there are common cross-border difficulties regarding minute details of customs paperwork now done electronically, constantly changing customs compliance issues calling for a need to create efficient distribution networks, reduce waiting time and a variety of other problems related to strong border clearance procedures (Schulz, 2020).

Nugent and Soi (2020) state that One-Stop Border Posts (OSBPs) have continued to be rolled out across Africa as part of the initiative of the regional integration agenda in a bid to enhance the movement of people and goods thus bettering stakeholder co-operation and cross-border logistics. According to Lowitt (2017), the biggest hinderance for all cross-border logistic firms is physical inspections which causes major transfer delays with clearance times frequently double or four times longer at a South African Development Community (SADC) border post. These delays occur at

such a high financial and compensation cost for cross-border logistic operators since a day spent waiting at a border post costs each truck an average of US\$350.

In SADC (South Africa, Tanzania, Namibia, Zambia, Angola, Zimbabwe and Lesotho), infrastructure has a higher Logistics Performance Index (LPI) score than customs which indicates that customs clearance is a bigger regional bottleneck than infrastructure as we would have predicted (World Bank [WB], 2016). As a result of customs bottlenecks, a shipment of items moving across West Africa can expect significant delays, varying between 18 to 29 minutes per 100 kilometres or 7 hours every trip (Torres and Seters, 2016). Torres and Seters (2016) reveal that this is caused by long inspection of goods and vehicles by plain clothed officials at border posts, lack of standardised travel documents, institutional corruption along corridors and non-cooperation among border operatives. Generally, transportation costs represent between 50% and 75% of the retail price of the goods in Africa (Muogboh and Ojadi, 2018). Such soaring costs should amplify the demand for long-term strategies to address African cross-border logistics challenges.

Within the East African Community, Cross-border logistics plays a significant role and the World Bank LPI indicates a significant improvement in the logistics of all EAC countries (Kumar and Abhishek, 2020). However, logistics costs in East Africa are still high accounting for about 42% of the total imports value and causing it to be ranked as the region with soaring transport and logistics costs in the world due to several complex and time-consuming logistical transactions at the border (Arvis et al. 2018). In response, the EAC secretariat introduced the OSBP strategy and the EAC-Single Custom Territory. This has slightly eased cargo movement within the region. Nonetheless an optimum level of cross-border logistic performance has not been achieved (Kamau and Odongo, 2020). Several studies have been done on cross-border logistics such as (Torres and Seters, 2016; Muogboh and Ojadi, 2018; Nugent and Soi, 2020; Hwang, Hong and Lee, 2017). These studies mostly covered cross-border logistics and organizational performance. Some studies have also looked at OSBP strategy against OSBP performance. However, there is still an empirical research gap in the whole area of custom clearance procedures and its effect on Cross-border logistics performance particularly in the contextual area of EAC. This study bridged the gap by examining the effect of customs clearance procedures on logistics performance within the EAC

2.0 Theoretical Review

This paper was guided by two theories, that is the theory of regional integration as the guiding theory assisted by the logistics performance theory.

The theoretical linkage of customs clearance procedures and cross-border logistics performance is best explained using the theory of regional integration which concerns itself with the customs union (Viner,1950). Due to the complicated nature of cross-border logistics only countries which have formed a customs union will be able to benefit (Balassa,1961). The regional integration theory also spells out the need for coordination among border agencies through customs union (Jovanovic,1992). This is so because all customs clearance procedures must be taken into consideration every time goods cross from one border to another (Parshotam and Balongo, 2020). Regardless of the cargo volume, the transporter ought to have all relevant forms filled and stamped. This can result into unexpected costs if border agencies are not coordinated (Parshotam and Balongo, 2020). To supplement the aims of the customs union, the theory of regional integration emphasises the need for a single customs territory. Through this clearance of goods can be successfully done in the country of destination with goods at the first point of entry hence saving on time and costs that come with delays (Calabrese and Eberhard-Ruiz, 2017). This is best achieved via implementation of the OSBP strategy which decreases border crossing stops through having both countries exit and entry requirements housed under one facility with eased processes and better cooperation among border agencies (World Bank [WB], 2019). However, the theory was rigid and unable to lend itself to the ever-changing ways of thinking making developing countries to focus more on reallocation of their existing resources causing them to suffer real income loss as a result of trade diversion (Bahadir ,1978). This has led to the adoption of the logistics performance theory which is flexible and emphasises that cross-border logistics could create value through cost-effectiveness, competence and differentiation (Töyli, Ojala and Naula, 2008). For example, value can be obtained using customer service variables such as timeliness and flexibility of delivery (Fugate, Mentzer and Stank, 2010).

The logistics performance theory explains logistics facilitation as a way of easing hectic customs procedures to allow faster movement cargo across-borders. If logistics facilitation is in anyway underestimated it could result into time delays which according to the logistics performance theory birth costs as a result of unclear delivery

times (Cheruiyot and Rotich, 2018), resulting into shipper inability to compete globally. Time spent at clearance points is also important in a way that every time goods are to cross borders all procedures must be followed and unless harmonised, they could result into high logistical costs.

2.1 Empirical Review

Cheruiyot and Rotich (2018) conducted a study with the aim of examining the implementation of one stop border post strategy and its resulting effect on the Kenyan border. The study adopted stratified random sampling technique and open and close ended questionnaires for primary data collection. The study found out that improvement in the effectiveness and efficiency of customs services as well as other government agencies through avoiding unwanted duplication of clearance procedures and increasing cooperation has impacted implementation of OSBP. The study concluded that it is important that government agencies join hands and carry out inspections as one body to reduce on cross-border logistics costs and time. Similar finding was reported by Uzzaman and Yusuf (2016) who examined how customs and other agencies facilitated trade in Bangladesh. The study reported that too many procedures in custom clearance were the main causes of delays at Bangladesh customs and ports authority. The study further revealed that inaccurate documentation differing from one file to another caused unnecessary border delays. Although Uzzaman and Yusuf findings are very informative, their study was geographically limited within Bangladesh. On another hand Cheruiyot and Rotich (2018) findings though timely, do not demonstrate whether there is an improvement in cross-border logistics performance when custom clearance procedures are harmonized or not. As such, this led to the first hypothesis and second hypothesis that,

H₀₁: There is no significant relationship between harmonisation of custom clearance procedures and cross-border logistics performance.

H₀₂: There is no significant relationship between time of clearance and cross-border logistics performance.

The adoption of one stop border post (OSBP) strategy was seen as panacea to all cross-border logistics performance problems. This was held so since the sole purpose of OSBP was to eliminate duplication of procedures. A number of studies have been conducted around this topic and the findings are inconclusive. First, Cheruiyot and

Rotich (2018) found that many cross-border users were not aware of the new requirements of OSBP strategy. The study also found the implementation of OSBP strategy was quite ambitious and unrealistic. To this end, the effect of OSBP strategy was not clear. Other studies that have been done after implementation of OSBP strategy still report pre-OSBP challenges. In particular, Lehtinen and Atkova (2013) qualitative study in the Murmansk region and northern Finland reported that customs operations and bureaucracy are the most pronounced hinderances in cross-border operations. Unsatisfied with the results, Lehtinen and Atkova (2013) called for further research emphasizing the role of institutional factors. However, Ochieng (2018) reported positive results showing that OSBP strategy had greatly reduced waiting times and improved the coordination of border agencies within the EAC. Thus, basing on these contradictory results, the study sought to determine the effect of OSBP strategy on cross-border logistics performance. This led to the third null hypothesis that,

H₀₃: There is no significant relationship between OSBP strategy and cross-border logistics performance.

While many African countries including EAC countries are quick to create regional trading blocks, very few are committed to making it work. National protectionism, lack of investment in infrastructure, and political mistrust are particularly common in East African Community. A study by Uzzaman and Yusuf (2016) reported that lack of testing facilities at the ports contributed to delays in clearance of cargos. Another study by Lehtinen and Atkova (2013) found poor road infrastructure connecting neighbouring countries a challenge to effective cross-border trade. National protectionism was also reported by Cooksey (2016) to be frustrating cross-border trade between Kenya and Tanzania. Moreover, other studies have also shown that lack of coordinated management of border posts among various intergovernmental agencies were affecting cross border trade. Uzzaman and Yusuf (2016) reported that customs department was the only one working towards facilitating trade. The study found custom department inadequate to single handedly facilitate trade and recommended integrated approach that involved multi-government agencies. Looking at cross-border trade within SADC region, Torres and Seters (2016) identified that corruption along cross-border transit corridors and lack of non-cooperation among border operatives was hurting regional trade. In a nutshell, the extant literature shows

that lack of trade facilitation can affect cross-border trade. This study attempts to extrapolate these empirical findings by hypothesizing that;

H₀₄: There is no significant relationship between coordinated border agencies and cross-border logistics performance.

H₀₅: There is no significant relationship between logistics facilitation and cross-border logistics performance.

The logic behind having a single customs territory is to remove all cross-border trade barriers. This is usually achieved through elimination of cumbersome customs clearance procedures and harmonization of customs documents among trading countries. The East African community adopted a single customs territory in 2013 and over the years the results have been inconsistent. A report by the World Bank showed that through EAC-SCT, the time to export goods has significantly improved from 72.96 hours in 2015 to 62.5 hours in 2020 (WB, 2018). Nonetheless, a recent study, showed that the reduction in costs and time was not uniform across all the EAC member states (Kamau and Odongo, 2020). As such, this study intends to examine further the effect of single custom territory on cross-border logistics performance in EAC by hypothesizing that,

H₀₆: There is no significant relationship between EAC-SCT and cross-border logistics performance.

3.0 Methodology

The study adopted a cross-sectional research design since its intention was to collect data at a single point in time over a large sample size. A mixed method approach was used to collect both qualitative and quantitative data from 376 respondents involving truck drivers, clearing agents and custom duty officials by use of questionnaire, and key informant interviews. The data was collected at three One Stop Border Posts along Kenya-Uganda and Kenya-Tanzania borders namely Malaba OSBP, Busia OSBP and Taveta-Holili OSBP. The study areas were chosen because the three were among the first to adopt the rationale that immigration and customs formalities for the two countries sharing a border post ought to happen once at the entry point (World Bank [WB], 2016). The survey questionnaire was pretested for internal consistency reliability using Cronbach's Alpha coefficient. The results shown in table 1 indicate that the questionnaire was highly reliable with Cronbach's Alpha coefficient of 0.926

which is way above the acceptable limit of 0.7 (Creswell,2018). The questionnaire was distributed through convenience sampling technique since most of the respondents such as truck drivers were on transit and lacked a specific physical location for future reference

Table 1: Reliability test

Cronbach's Alpha Coefficient	No of Items	Comment
0.926	6	Highly acceptable

Qualitative data collected through key informant interviews was analysed using content analysis while descriptive analysis was used to analyse data collected through closed ended questionnaire. Multiple regression model was applied for inferential analysis to test the null hypotheses against the six sub variables of custom clearance procedure namely establishment of EAC-SCT, timely clearance, incoordination of border agencies, OSBP strategy, harmonisation of clearance and logistics facilitation as shown in equation 1 below.

$$Y = \alpha + \beta_1 EAC + \beta_2 TC + \beta_3 IBA + \beta_4 OSBP + \beta_5 HOC + \beta_6 TF + \varepsilon \dots \dots \dots \text{Equation 1}$$

Where;

Y= Cross-border logistics performance (D.V)

α =Intercept

β_1 - β_3 =Regression coefficient

EAC = EAC-SCT

TC = Time of clearance

CBA= Coordinated border agencies

OSBP = OSBP strategy

HOC = Harmonisation of clearance

TF = Logistics facilitation

4.0 Findings and Discussions

4.1 Descriptive Analysis

Various statements were presented on a Likert scale where respondents were asked to state their level of perception on a scale of 1 to 5 where '1' was strongly disagree, '2' disagree, '3' not sure, '4' agree and '5' strongly agree. The terms 'strongly disagree' and 'disagree' were assigned a mean of 1.0 to 2.5, to represent not agreed. The term

‘neutral’ was assigned the mean of 2.6 to 3.4, and it identified neutrality. While the assertion ‘agree and strongly agree’ were given the mean of 3.5 to 5.0 to represent agreed upon.

Table 2: Perceptions of the influence of customs clearance procedures on cross-border logistics performance (n=376)

Statement	Mean	Std. Deviation
Harmonisation of customs clearance documents has improved logistic performance.	4.4	0.601
Reducing time taken at customs and border clearances affects logistics performance.	2.4	1.120
Adoption of the OSBP strategy has improved logistics performance.	4.4	0.659
Coordination among border agencies hinders service delivery.	3.8	1.278
Logistics Facilitation has improved logistics performance.	4.3	0.702
Establishment and use of the EAC-SCT has improved cross-border logistics performance.	4.1	1.040
Average	3.9	0.687

As shown in table 2 the average mean and standard deviation of the elements of custom clearance procedure is 3.9 and 0.687. This is an indication that respondents agreed that custom clearance procedure affects cross-border logistics performance. One of the key informant interviewees also expressed similar sentiments on custom clearance harmonization stating that, “...*Harmonisation of custom clearance documents has reduced a lot of paperwork. Currently, a single form is used to clear goods on both sides...*” (Field Data, Holili-Taveta OSBP, 14 May, 2021). This finding corroborates with previous studies which reported significant improvement in cross-border logistics performance through coordinated custom clearance procedures. For instance, a study by Calabrese and Eberhard-Ruiz (2017) reported that establishment and use of the EAC-SCT has led to a reduction in the cost of moving goods within the EAC by around (10-18) % hence increasing cross-border logistics performance within the EAC. Furthermore, EAC (2018) revealed that the use of the EAC-SCT had cut the required time for moving goods along the EAC main transport corridors by almost half of the time taken before facilitating cross-border logistics performance. The findings imply that the Implementation and use of the EAC-SCT is very key in boosting the performance of cross-border logistics through time and cost reduction which are among the top challenge that hinder cross-border logistics performance within the EAC.

4.2 Inferential Analysis

This study had hypothesized that there is no significant relationship between custom clearance procedures, and cross-border logistics performance at the Malaba-Busia and Taveta-Holili OSBP. This hypothesis was tested using multiple linear regression model against six independent variables under custom clearance procedure namely;

Table 3: The statistical relationship between custom clearance procedure and cross-border logistics performance

Model Summary					
Model	R	R ²	Adjusted R ²	Std. Error of the estimate	
1	0.810	0.656	0.652	1.14144	
ANOVA					
Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	309.053	6	51.509	2631.507	0.000 ^b
Coefficients					
Variable	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant	0.032	0.062		0.522	0.602
Establishment and use of the EAC-SCT	0.211	0.018	0.239	11.801	0.002
Clearance time	0.16	0.09	0.195	17.536	0.000
Coordinated of border agencies	0.261	0.013	0.363	20.848	0.001
Adoption of the OSBP strategy	0.636	0.023	0.631	27.407	0.005
Harmonisation of clearance	-0.196	0.046	-0.128	-4.221	0.013
Logistics Facilitation	0.245	0.025	0.187	9.687	0.004

A multiple regression analysis was conducted to find out whether custom clearance procedures through its sub independent variables; EAC SCT, OSBP and trade facilitation could significantly predict cross-border logistics performance. The results of the regression, in table 3 indicate that the model accounted for 65.5% of the variance in dependent variable. In addition, the regression also indicated that the model was a statistically significant predictor of cross-border logistics performance, $F(6,369) = 2631.57, p = 0.000$ in table 3.

From the model coefficients (table 3), it was discovered that EAC SCT ($\beta = 0.211, p < 0.05$), time of clearance ($\beta = 0.160, p < 0.05$), coordinated border agencies ($\beta = 0.261, p < 0.05$), OSBP strategy ($\beta = 0.333, p < 0.05$), harmonisation of clearance ($\beta = -0.196, p < 0.05$) and trade facilitation ($\beta = 0.245, p = 0.000$) significantly contributed to

the model hence rejecting the null hypotheses. Therefore, the final predictive model was as shown below.

$$\text{Cross-border logistics performance} = -0.032 + (0.211 * \text{EAC}) + (0.160 * \text{TC}) + (0.261 * \text{CBA}) + (0.333 * \text{OSBP}) + (-0.196 * \text{HOC}) + (0.008 * \text{TF}) + 0.13991 \dots \text{Equation 2}$$

Harmonisation of border clearance documents was found to be negatively related with cross-border logistics performance. The model revealed that 1% increase in clearance documents harmonisation would lead to 19.6% decrease in cross-border logistics performance given no change in other variables. This finding contradicts a recent World Bank (2018) report that harmonization of clearance documents reduced costs by 10%.

Secondly, the model identified that a unit decrease in time taken for clearance at the border will lead to 16% increase in cross-border logistics performance. This finding signifies the importance of introducing initiatives of ensuring that cargos are cleared in the shortest time possible. This is consistent with a study by Cheruiyot and Rotich (2018), who reported that time taken at customs and border clearance points is used as a practical indicator of cross-border logistics performance since it influences the ability of logistics firms to meet customer delivery schedules.

Thirdly, the model indicates that a unit increase in OSBP strategy will lead to 33.3 % increase in cross-border logistics performance, holding other factors constant, within EAC. This imply that the strategy of having cargos only cleared once by all the authorities of the neighbouring countries instead of making two stops can increase the performance of cross-border logistics. These findings are consistent with a study by Ochieng (2018) who identified that OSBP strategy had greatly reduced waiting times and improved the coordination of border agencies within the EAC resulting into seamless flow of goods and better cross-border logistics performance. Similarly, Cheruiyot and Rotich (2018) also reported that OSBP had eliminated duplication of procedures particularly inspection of goods, significantly cutting town on transit times. In line with tenets of logistic performance theory, one stop border post strategy aims at increasing efficiency in border logistical operations. In regard, this study concludes that OSBP strategy is essential for improving logistic performance at border posts within the EAC region.

Fourth, the model also identified that a unit increase in coordinated border agencies will lead to 26.1% increase in cross-border logistics performance, holding other variables constant. The study implies that all border agencies should work together as a team to avoid duplication of procedures. Such an approach can significantly cut down clearance time at the border. Similar findings were reported by Lehtinen and Atkova (2013) who found multiple inspection by different border agencies to be costly and wasteful to logistics firm.

The model also identified that holding other factors constant, for every unit increase in logistics facilitation efforts by member states will lead to 24.5% increase in cross-border logistics performance. These results imply that every logistics facilitation effort such as improving cross-border transport infrastructure, stable and favourable political relations have a moderate positive impact on cross-border logistics performance. This finding concurs with many previous studies which indicated that trade facilitation improved logistic performance within regional trading blocs. Facilitation of trade was also found to improve cross-border logistics performance through timely flow of goods (Uzzaman and Yusuf, 2016). Indeed, hostility among the administration of EAC member states has negatively affected regional trade. Unexpected closure of borders between member countries as witnessed between Uganda and Rwanda, Kenya and Tanzania, and trade embargos on importation of certain goods from members countries are still prevalent within the EAC region. This goes against the philosophy of regional integration theory which reinstates that political and physical integration must precede economic integration.

Lastly, a unit increase in EAC single custom territory will lead to an increase in cross-border logistics performance by 21.1%. These findings imply that fully actualization of single custom territory can significantly improve cross-border logistics performance within the region. The findings are consistent with those published by East African Community (2018) who reported that, the SCT has led to great improvement in trade by reducing the cost of doing business which has seen many shippers save on money and time while allowing final consumers to enjoy reduced commodity prices. Therefore, the study concluded that EAC should put more effort to fully implement single custom territory since it facilitates faster clearance and improvement in cargo movement within the region. Full implementation of EAC-SCT is also in line with argument by regional integration theory that economic

integration only occurs when countries are committed to eliminating trade barriers and achieving a levelled trading ground (Jovanovic, 1992).

5.0 Conclusion and Recommendation

As countries move towards regional integration, the role of an effective and efficient cross-border logistics cannot be undermined. Regional trading becomes desirable only when transactional costs are attractive and competitive. This study has shown that custom clearance procedure particularly OSBP strategy, single customs territory, reduction in clearance time, logistics facilitation and coordinated boarder agencies significantly affects cross-border logistics. The study, therefore, recommends to the EAC secretariat to work towards more harmonization and interconnection of the customs system through complete roll out of the EAC Single Customs Territory by the EAC. This will allow greater flow of information between customs authorities leading to faster and reliable clearance which in the long run will reduce time taken at the border and the costs involved. Hence improving the performance of cross-border logistics which has over the years been associated with high costs.

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