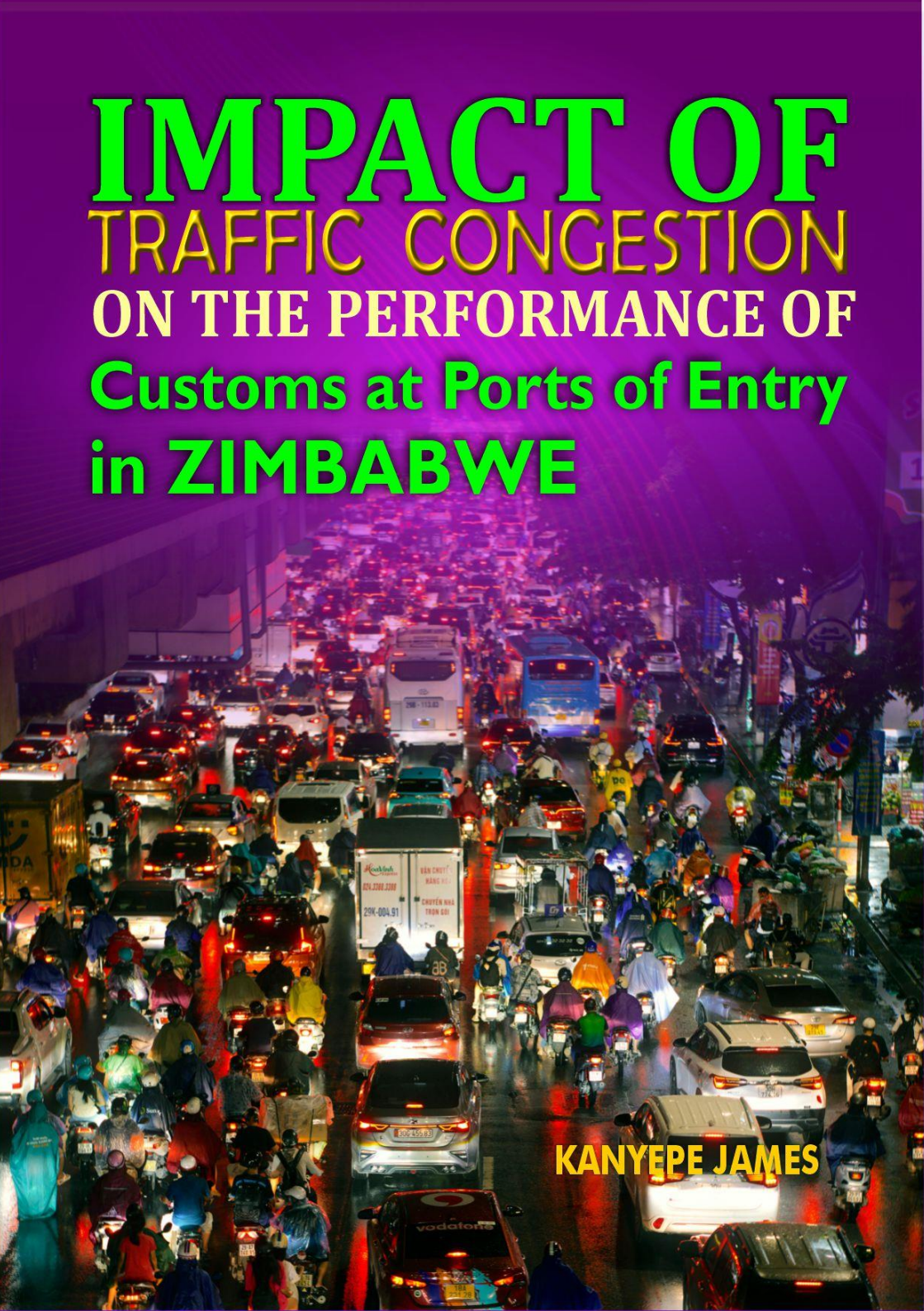
# IMPACT OF TRAFFIC CONGESTION ON THE PERFORMANCE OF Customs at Ports of Entry in ZIMBABWE



KANYEPE JAMES

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**ISBN** 978-1-77934-140-2
**EAN** 9781779341402



Published by the Zimbabwe Ezekiel Guti University (ZEGU) Press
Stand No. 1901 Barrassie Rd,
Off Shamva Road
P.O. Box 350
Bindura, Zimbabwe



**SUBSCRIPTION AND RATES**
Zimbabwe Ezekiel Guti University Press Office
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Off Shamva Road
P.O. Box 350
Bindura, Zimbabwe
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E-mail: zegupress@zegu.ac.zw
http://www.zegu.ac.zw/press

# Dedication

This book is dedicated to **God Almighty** for His infinite mercy. He who brought me out from land in clay, puts my feet on the rock to stay, makes me to a corner stone **(Psalms 118:22)** and puts a new song in my mouth to shout---------- HALLELUYAH. I also dedicate this work to my parents, Mr and Mrs Kanyepe for their unwavering love, care and inspiration. Without you two, I would not been here, and here we are!

# Acknowledgements

"It takes a village to raise a child" is a well-known African proverb embedded in African normative ethos and epistemological granary. However, one could substitute a graduate student for a child and still have an accurate statement. It is because of the love, sacrifice, advice, feedback, encouragement, and prayers of many that allowed me to reach this goal.

First and foremost, I give thanks to Jehovah-the omnipotent, omniscient and omnipresent God for his guidance, protection, divine provision and making this educational sojourn a reality. Without His endless mercy and care, I would not have been what I am today and achieved what I have now. The work of carrying out this study needed adequate preparation and therefore called for the collective responsibility of many personalities. The production of this research document has been made possible by the invaluable support of many people. While it is not possible to name all of them, recognition has been given to a few. I am greatly indebted to my supervisor Dr Tukuta for her professional guidance, advice and unlimited patience in reading through my drafts and suggesting workable alternatives, my profound appreciation to you.

A word of appreciation also goes to my parents, your immense support and prayers sustained me this far. Thank you both for giving me the strength to reach for the stars and chase my dreams. My siblings deserve my wholehearted thanks as well. To my friends, there is no better way to repay you for your unfailing support whenever I was stuck through this journey. Your friendship makes my life a wonderful experience. I cannot list all the names here, but you are always in my mind.

Thank you all. May the Almighty God bless you abundantly.

# Book Synopsis

This book sought to investigate, in a critical fashion, traffic congestion and its impact on the performance of Customs at Ports of Exit and Entry during the period 2013 to 2016. The research objectives were, *inter alia,* to examine the causes of traffic congestion at Ports of Entry; to identify the challenges faced by ZIMRA in traffic clearance at Ports of Entry; to examine the impact of delays in traffic clearance on the performance of Customs at Ports of Entry and to suggest strategies can be given to improve the performance of Customs at Ports of Entry to overcome traffic congestion. The literature review was carried out on the research topic and there was a gap in the literature on the impact of traffic congestion on the performance of customs at Ports of entry. The study employed a pragmatism research philosophical approach and grounding. A mixed-method research methodology and an explanatory sequential research design were used. The study was conducted at Beitbridge Border Post. Primary data was obtained using questionnaires, interviews and secondary data in the form of reports, customs journals, periodicals and publications. The study was comprised total of ninety-six respondents which included ZIMRA's managers and operational staff in the customs and excise division, clearing agents and commercial vehicles operators. The respondents were selected using stratified random sampling and simple random sampling. Descriptive statistics method was applied to analyse quantitative data where data were scored by calculating the percentages, mean and standard deviation. This was done using Statistical Package for Social Sciences (SPSS) computer software. It was therefore concluded that customs inefficiencies, inadequate and poorly managed infrastructure and lack of integrating activities of border management agencies were the causes of traffic congestion at Beitbridge Border Post. In addition, corruption, insufficient state of supporting infrastructure, illicit trade and customs, contribution of various agencies to customs delays and systems incompatibility were the challenges faced by ZIMRA in traffic clearance at Ports of Entry. Furthermore, increased corruption, reduced customs revenue, reduced trade volumes and increased clearance times were the impact of delays in traffic clearance on performance of Customs at Ports of Entry. Recommendations were therefore made in line with these findings. The recommendations made included streamlining commercial vehicle clearing processes, infrastructure improvement, adopting single window system, establishing one stop border post and motivating employees.

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## Acronyms

| | |
|---|---|
| ADB | African Development Bank |
| AFRODAD | African Forum and Network on Debt and Development |
| ASYCUDA | Automated System of Customs Data |
| COMESA | Common Market for East and Southern Africa |
| CPM | Customs Performance Model |
| ICT | Information and Communication Technology |
| IMF | International Monetary Fund |
| KPI | Key Performance Indicator |
| LAC | Latin America and the Caribbean |
| LPIs | Logistics Performance Indicators |
| OECD | Organisation for Economic Co-operation and Development |
| OSBP | One Stop Border Posts |
| NEPAD | New Partnership for Africa's Development |
| POE | Port of Entry |
| SADC | Southern Africa Development Community |
| TOC | Theory of Constraints |
| UNCTAD | United Nations Conference on Trade and Development |
| USAID | United States Agency for International Development |
| WCO | World Customs Organisation |
| WTO | World Trade Organisation |
| ZIMRA | Zimbabwe Revenue Authority |

# CHAPTER 1: Customs Administration at Ports of Entry: An Introductory Overview

The Zimbabwe Revenue Authority is the customs administration institution created by an Act of Parliament in 2001 under Statutory Instrument No 21B of 2001. ZIMRA started operating on 19 January 2001 and derives its mandate from the Revenue Authority Act (Chapter 23:11) and other subsidiary legislation and is responsible for the collection of import duties and other taxes for treasury use; customs clearance of goods for importation, exportation and transit to ensure compliance with all statutory conditions and requirement; collection of trade data for national trade statistical compilation (Shayanowako, 2013). This study seeks to critically explore traffic congestion and its impact on performance of Customs at Ports of Entry.

Customs administrations worldwide face a plethora of challenges which ultimately hinder their performance and have a negative impact on service delivery (Mpumela, 2015). Moya (2012) argues that long wait times for privately owned vehicles, pedestrians and commercial vehicles to cross Ports of Entry is not a recent problem. Till the last quarter of 2008, the world economy has been experiencing an unparalleled explosion which resulted in an exponential increase in the number of cross-border movement of people and goods (Caesar, 2010). Notwithstanding the increase in trade volumes and cross-border movements, there has been less corresponding to the level of soft and hard infrastructure at Ports of Entry resulting in congestion (Mpogolo, 2013). Ports of Entry are the nodal points in a supply chain and any delays because of congestion can have any impact on all other processes (Kotut & Mugambi, 2014; Peungpradt, 2010). Khumalo (2014) posits that the land borders are rated according to the level of service provided at the border post. The United States Customs and Border Protection documented a need for an extra six billion dollars of infrastructure investment at the United States-Canada border crossings and non-governmental studies show that the United States and Mexican economies lose on several billion dollars of economic growth each year because of excessive congestion at the border (Wilson & Lee, 2015).

Cross-border movements in many developing countries face unpredictable and inordinate delays because of congestion (Walsh, 2006). Adebajo (2010) argues that borders within the African continent were arbitrarily drawn because of European colonial expansion into Africa. As a result, the structural configuration of the border posts continues to impact the efficient flow of cross border traffic across border posts (Khumalo, 2014). Since African countries gained independence in 1960s, the situation of railroads, roads and ports in each country have

deteriorated due to inadequate skills and funds for maintenance and damage to road surfaces caused by overloaded trucks. The use of containers was introduced in the early 1990s in Africa but the development of roads and ports to handle the physical distribution of large containers has not kept pace (Matsushita, 2013). According to the World Bank (2012), excessive check points along the routes, complicated port paperwork, delays in introducing information technology and lack of information sharing systems prolong the time for physical distribution and cause congestion at border posts and delays cargo transportation especially in countries like Burundi, Central African Republic, Chad, Niger, Rwanda and Zimbabwe.

The holding time at ports is 2-3 days for regions with efficient physical distribution systems, less than 7 days for Asia, North Africa, the Middle East and Latin America but 14 days on average for sub-Saharan region (World Bank, 2012). In recent years Southern Africa has witnessed an increase in the volume of commercial and private cross-border traffic. This has put pressure on inland Ports of Entry and seaports resulting in massive congestion (Munyanyi, 2015). According to Woodrow Wilson School of International and Public Affairs (2011), the cumbersome documentation and procedures are one of the most worrisome issues in the SADC region. The World Bank (2012) reports that document requirements accompanying each Shoprite truck as it crosses a SADC border can be up to 1600 documents.

Zimbabwe's recent economic trajectory and recovery has resulted in an increase in the importation of raw materials and other goods (Munyanyi, 2015). Similarly, the Parliament of Zimbabwe (2011) reported that there has been an increase in cargo passing through border posts due to the deepening of regional trade. The increase in the volume of cargo which is physically examined however causes congestion at the border post, thus creating a conducive environment for smuggling and other corrupt practices. Despite increase in the volumes of imports, there has been no significant upgrade to physical and other infrastructure despite trade agreements to develop shared physical infrastructure (Munyanyi, 2015). Zimbabwe has 14 border posts varying in size in accordance with the volume of traffic passing through them (Shayanowako, 2013). The South African Institute of International Affairs (2014) reported that over 400 trucks cross the Beitbridge border post every day. These trucks experience average delays of approximately three days crossing the border and each delay is estimated to cost $400 per truck per day.

Khumalo & Chibira (2015) are of the view that congestion at the border post is made worse by the lack of hard and soft infrastructure and is further aggravated

by the fact that trucks share a lane with passenger buses. It is estimated that cross-border truck drivers must wait in queues at the border for 10 hours and then need to sleep the whole of the next day. The situation is aggravated by the fact that trucks share a lane with passenger buses. Border officials often let too many buses through at a time causing severe delays as each passenger needs to be cleared by immigration. The entrance to first customs checkpoint is a confusion of commercial and private vehicles, foot traffic, metered taxis and minibus taxis. Chirundu border post has not been resistant to sporadic episodes of dysfunction and the recent delays and successive chaos at the border were not isolated incidents. For example, In July 2013, the border post experienced congestion which resulted in queues of commercial trucks extending more than 5 kilometres. That occasion saw a brief demonstration by truck drivers, some of whom had forced to wait at the border for almost a week for clearance and necessitated a crisis meeting involving the Zimbabwe Revenue Authority, clearing agents and other border agencies (Woolfrey, 2013).

The level of traffic congestion at Ports of Entry is increasing and impairing the performance of Zimbabwe Revenue Authority. Traffic congestion at Ports of Entry in Zimbabwe has become a daily routing, delaying the movement of goods and people leading to massive losses. The loss is felt by all sectors in the form of wasted man hours, travellers and tourist getting stuck in traffic, excessive fuel consumption, and prolonged turnaround times for commercial vehicles which leads to various logistical inefficiencies for the Zimbabwe Revenue Authority. The level of transport infrastructure at Ports of Entry is no longer in keeping with the volumes of traffic. This has resulted in high cost of operation, reduced service levels and lost revenue leading to customer dissatisfaction and reduced productivity due to wasted man-hours. The Zimbabwean National Budget Statement (2016) reported that Beitbridge clears and average 450 000 travellers a month and there is no separation of commercial and non-commercial clearing points at the Border Post resulting in delays and traffic congestion. This has necessitated ZIMRA to focus on several other initiatives such as modernizing systems, separating lanes for commercial trucks from non-commercial freight flows and border expansion to increase efficiency and effectiveness of its services. However, the major bottleneck to the expansion programme at Ports of Entry is the lack of an appropriate transport infrastructure to facilitate cargo evacuation. If the current trends persist the performance of Customs at Ports of Entry will be severely compromised. This study therefore seeks to investigate traffic congestion and its impact performance of Customs at Ports of Entry.

The defined research objectives underlying and informing this study were:

1. To examine the causes of traffic congestion at Ports of Entry in Zimbabwe.
2. To identify the challenges faced by Customs in traffic clearance at Ports of Entry.
3. To determine the impact of delays in traffic congestion on performance of Customs at Ports of Entry.

The research questions were defined as follows:

1. What are the causes of traffic congestion at Ports of Entry in Zimbabwe?
2. What challenges are faced by Customs in traffic clearance at Ports of Entry?
3. How do delays in traffic congestion impact the performance of Customs at Ports of entry?

From a thorough review of publicly available relevant literature, this study is the first of its kind that examines the impact of traffic congestion on performance of Customs at Ports of Entry during the period 2013 to 2016. In addition, the research study will be expected to benefit the following stakeholder groups:

The study will assist ZIMRA in designing strategies to effectively and efficiently manage the flow of people and goods to reduce congestion at Port of Entry. This will play a crucial role in increasing revenue levels and creating a conducive environment to reduce smuggling and other corrupt practices at border posts.

The research will contribute to the ongoing discussions on traffic congestion which have become a canker in almost all Ports of Entries in developing countries. Researchers in all the universities and institutions in the country are gathering data to help propose policies to stakeholders and other interested agencies that are interested in improving the development of standards of the country.

This research work allows the researcher to assess the current condition and impact of traffic congestion on performance of Customs at Ports of Entry thereby building academic knowledge and provide base for further career improvement.

The research will be of great benefit to the ZIMRA and other customs authorities that have a similar problem of traffic congestion at Ports of Entry thus improving performance of Customs and Immigration Authorities.

The research findings will be of great importance to commercial vehicles operators in Zimbabwe as it will help them in policy formulation and efficient utilization of resources.

The assumptions underlie this study were:

- There is traffic congestion at Ports of Entry which therefore hinders the speed, simplicity and predictability of customs clearance procedures.
- The Zimbabwe Revenue Authority is generally dissatisfied with the level of traffic congestion at Ports of Entry and is likely to be increasingly dissatisfied if current trends persist.
- The questionnaire was validated by a pilot study and capture the required information.
- Data analysis does not lead to loss of required information.

The study was defined by its contextual rootedness, time and spatial contestations and geographical scope. The main subject covered was traffic congestion and its impact on performance of Customs at Ports of Entry. Geographically, the study was undertaken at Beitbridge Border Post which is the busiest regional transit link in Southern and Eastern Africa. The study covered respondents from ZIMRA's customs division, clearing agents and commercial vehicles. The study focused only on commercial vehicles covered under traffic heading 87:04 of the Statutory Instrument 154 of 2001. The study covered the period 2013 to 2016 with the year 2013 taken as the starting point because it is the period when the Beitbridge Border Post experienced excessive congestion because of an increase in cross-border movements.

This study was organised in five Chapters. Chapter 1 presented the background to the research problem, statement of the problem, research questions, research objectives, significance of the study, research assumptions, scope of the study, limitations, the definition of terms and the structure of the book. Chapter 2 focused on both theoretical and empirical literature related to the study area.

Chapter 3 explained the research methodology that was used for the study, which includes the research philosophy, research design, population and sample, data collection instruments, data collection procedures and the data presentation and analysis procedures. Chapter 4 contains presentation, analysis and interpretation of the study findings. In Chapter 5, a comprehensive summary of the entire study and with the conclusions and recommendation were made. This chapter was concluded by suggesting areas of future research.

This chapter gave an insight on the background of the study, statement of the problem, research questions, research objectives, and significance of the study,

assumptions, scope of the study, limitations and book structure thereto. The following chapter is going to focus on literature review related to the study area.

# CHAPTER 2: Traffic Congestion and Its Impact on Business Performance at Ports: A Review

Boulder (2015) is of the plausible view that a literature review serves as a compilation, classification, and evaluation of what other researchers have written on a particular topic with a view to ascertaining a research lacunae. Literature review afford a means for "validating assumptions" and opinions and "providing insight into the dynamics underlying the findings of other studies," and may offer more conclusive results than a single primary research study (Marshall, 2010). Aitchson (1998) argues that literature review allows the researcher to find out what has been done in terms of the problem being investigated to ensure that duplication does not occur.

This chapter examines the theoretical framework of the study and reviews previous empirical studies done on traffic congestion and its impact on the performance of customs at Ports of Entry. A detailed description of the main variables and how they interrelate from previous research findings is given together with identified research gaps. Finally, a discussion of the conceptual framework for the study is done showing the interrelationship of the variables.

An overview of current evidence on traffic congestion and its impact on performance of Customs at Ports of Entry. Goes & Simon (2015) postulate that defining important concepts is essential to ensure a common understanding of key concepts and how terminology is shared between the researcher and his or her audience, particularly if the term is unusual or not widely known.

A commercial vehicle is a vehicle that is authorized to be utilized for the transportation of goods or materials as opposed to travellers (Collins Dictionary, 2014). Similarly, Carkeys (2017) argues that the term commercial vehicle is used to recognize a vehicle which primary intention is to transport products or materials instead of travellers. A commercial vehicle will for the most part have the capacity to convey two, three or more travellers, however behind the seating will be something intended to convey materials or tow something extensive, and this component will make up most of the commercial vehicle. The European Union (1998) defines a commercial vehicle as any automated road vehicle, that by its kind of advancement and equipment is planned for, and fit for transporting, regardless of whether for installing or not: more than nine individuals, including the driver; merchandise and "standard fuel tanks". This suggests the tanks forever settled by the maker to each motor vehicle of an indistinct sort from the vehicle being alluded to and whose invariable fitting allows fuel to be used particularly, both for driving force and, where legitimate, to control a refrigeration system.

Gas tanks fitted to motor vehicles for the prompt use of diesel as a fuel are seen as standard fuel tanks.

According to Revolvy (2017), in the United States a vehicle is assigned "commercial" when it is titled or registered to an organisation. This is a broad definition, as commercial vehicles might be fleet vehicles, company cars, or different vehicles utilized for business. Vehicles that are intended to convey more than 15 travellers are viewed as a commercial vehicle. A vehicle might be viewed as a commercial vehicle if it belongs to an organisation or cooperation, is utilized for business, however is in a person's name, for example, a sole proprietor, is a rented vehicle and for the sake of the financial institution that possesses it, surpasses a specific weight or class and subsequently, is "arranged" as business despite the fact that it may not be economically utilized or financially claimed. A weight rating of 26,001 pounds or more is dependably considering business and is utilized to pull any dangerous material. A vehicle can be utilized for a business, if not solely, and remain secretly authorized, contingent upon the measure of time utilized for business.

Even though there are many definitions for commercial vehicle in the literature, this study will use a definition proposed by The Road Traffic Act of Zimbabwe Chapter 13:11 which defines a commercial vehicle as "any type of motor vehicle designed altered or added to for the transportation of goods and having a carrying capacity exceeding 1400 kg". In Zimbabwe, vehicles designed for the transportation of goods fall under traffic heading 87:04 according to Statutory Instrument 154 of 2001.

"If you can't define performance, you can't measure or manage it" (Armstrong & Baron, 1998). Performance is alluded to as being tied in with taking the necessary steps, and in addition being about the outcomes accomplished (Otley, 1999). Performance is a multidimensional construct, the estimation of which differs, depending upon a variety of elements that include it (Fitzgerald & Moon, 1996). Others contend that performance should be defined as the results of work since they give the most grounded linkage to the vital objectives of the organisation, consumer satisfaction, and economic contributions (Rogers, 1994). It is imperative to decide if the estimation objective is to survey performance results or conduct. In this manner, an organisation should distinguish between results (output), conduct (the process) and suitable performance measurement devices. Campbell (1990) subscribes to the preface that performance is conduct and should be distinguished from outcomes because they can be contaminated by system factors, which are outside the control of the entertainer. What is suggested in Campbell's contention is that performance measurement can only concentrate on

an individual/group's final output, if and just if, system factors are controllable. Conversely, Edis (1995) contends that performance is something that the individual abandons and that exists separated from the reason.

WCO (2011) asserts that performance in many customs administration is mainly based on the budget constraints they are facing. They are accordingly most keen on proficiency, for example, the relationship between costs and results of Customs houses or innovative means. Accordingly, they measure their organisational performance to drive their strategy of deploying human and material resources on the ground, develop transparency and user-oriented policies of organisations to comply with global democratic norms, fight against corruption since corrupt practices means weaker performance of customs functions. In this study, the researcher used a definition proposed by Wu (2009) who defines performance as the extent to achieving proposed objectives using resource economically in the face of internal or external environment. According to Olaja & Celebi (2015) performance of customs at Ports of Entry is measured in terms of speed, simplicity and predictability of customs procedures.

According to OECD (2015), simple, transparent and harmonised trade policies reduce administrative complexities, increase predictability, and reduce the incentives for market-distorting behaviour and corruption. Improvements in customs clearance performance are tied to overall trade policy environment. Even though the objectives, implementation capacities and resource availability differ greatly across countries, policies targeting customs performance basically cover efficient risk management, optimal use of information and communications technology, effective partnership with the private sector, including programmes to improve compliance, increased cooperation with other border control agencies and transparency through information on laws, regulations, and administrative guidelines (OECD, 2015).

Globally, customs performance is one of the two slacking parts of the Logistics Performance Index in 2014, particularly in low-income and lower middle-income countries, even after they have gained the fastest progress in this dimension (Arvis *et al.*, 2014). Customs and other border agencies, including improvements of transit regimes, represent areas where policymakers can adopt comprehensive reforms. Customs performance, therefore, needs to be examined in the context of trade policy reform (OECD, 2015). Olaja *et al.* (2015) argue that that the main determinant of the performance difference between two countries is the efficiency of processes in clearance and delivery of the shipments. Table 2.1 shows the key performance indicators for customs process efficiency and border clearance.

**Table 2.1:** Performance indicators of customs process and border clearance *(World Bank, 2012)*

| Customs process | Description |
|---|---|
| Customs efficiency | The rate of efficiency of the clearance process(i.e. speed, simplicity and predictability of formalities) by border control agencies including customs |
| Quality and competence of service of customs agencies | The competence and quality of service delivered by customs agencies |
| Clearance and delivery of imports | Whether import shipments cleared and delivered as scheduled |
| Clearance and delivery of exports | Whether export shipments cleared and delivered as scheduled |
| Transparency of customs clearance | Transparent of the customs clearance process |
| Provision of adequate and timely information and regulations change | Receiving adequate and timely information when regulations change |
| Expedited customs clearance for traders with high compliance levels | Whether traders demonstrating high levels of compliance receive expedited customs clearance |
| Major delays due to solicitation of informal payment | How often do cross-borders experience solicitation of informal payments |
| Changes in customs clearance procedures | Have the customs clearance improved or worsened |
| Changes in solicitation of informal payments | Have the incidence of corruption improved or worsened |
| Number of agencies for imports | Government agencies involved in the clearance process do you typically deal with |
| Number of agencies for exports | |
| Number of documents for imports | The number of documents submitted for clearance |
| Number of Documents for exports | |
| Clearance time without physical inspection | For imports, estimate the average time taken between the submission of an accepted customs declaration and notification of clearance |
| Clearance time with physical inspection | |
| Physical inspection be automated risk assessment | The main methods for determining whether physically inspected by customs |
| Physical inspection by inspector discretion | |
| Physical inspections | Average percentage of import shipments that is physically inspected |
| Multiple inspections | Import shipments physically inspected as a proportion of shipments inspected more than once |

The above performance indicators helped the researcher in examining the causes of traffic congestion, identifying the challenges faced by Customs at Beitbridge Border Post, exploring the impact of delays in traffic clearance on performance of Customs at Beitbridge Border Post and in suggesting feasible strategies to improve the performance of Customs at Ports of Entry to overcome traffic congestion.

Beneke (2001) defines a ports-of-entry as point on a nation's fringe through which individuals and merchandise may enter or leave the nation. This incorporates land, ocean and air travel. Ports-of-entry are regularly kept an eye on by police authorities, home issues and security authorities who have their individual assignments to do to guarantee consistence with the laws of a nation as to merchandise and individuals entering a nation. The World Bank (2007) associates that a port of entry (POE) is an office that gives controlled section all through any nation – generally pleasing traditions and movement, and additionally other assessment organisations in charge of the implementation of that nation's laws. This view is strengthened by the United States Department of Border Protection (2012) which characterizes a port of entry as a formally assigned area (seaports, air terminals, and additionally arrive fringe areas) where Customs and Border Protection Officers or workers are doled out to acknowledge sections of stock, clear travellers, gather obligations, and implement the different arrangements of Customs and Border Protection and related laws.

This study used a definition proposed by the African Development Bank (2012) that a port of entry as an area where a large number of government organisations (such as Revenue Authority Customs; Immigration; Security Police; Ministry of Agriculture; Ministry of Health; Bureau of Standards) are associated with the different record and products controls, the computation and gathering of obligations and charges, and additionally migration.

In the same vein as other social terms, traffic congestion does not have a generally acknowledged definition. Subsequently, extraordinary researchers have offered distinctive definition to what they conceptualize as traffic congestion. As a physical phenomenon traffic congestion can be defined as a circumstance where interest for road space surpasses supply and is reflected by slower speed, longer outing circumstances and expanded engine vehicular lining (Institute of Transport Engineers, 1989). On the hand the Victoria Transport Policy Institute (2005) alludes traffic congestion to the incremental expenses coming about because of impedance among road users. Conversely, Mahesh & Lingaiah (2016) contends

that traffic congestion is a condition on street organises that happens as utilize increments, and is portrayed by slower speeds, longer excursion times, and expanded vehicular queuing. Congestion is the state of movement stream on a transportation facility described by high concentrations and low speeds, in respect to some picked reference state (with low densities and high speeds) (Bovy & Salomon, 2002). Varma (2016) agrees that traffic congestion is a circumstance on street systems that happens as its utilization increments, and is portrayed by slower speeds, longer outing circumstances and expanded vehicular queuing. Weisbrod *et al.* (2003) were of the view that traffic congestion is a state of movement delay (i.e., when movement stream is impeded underneath sensible rates) considering that the quantity of vehicles endeavouring to utilize a road surpasses the plan limit of the movement system to deal with it.

The definitions proposed by the Institute of Transport Engineers (1989); Bovy *et al.* (2002); Varma (2016); Mahesh *et al.* (2016) above are demand-capacity related whereas the definition provided by the Transport Policy Institute (2005) is cost-related. However, to address the impact of traffic congestion on performance of Customs at Ports of Entry, a delay time-related definition was adopted in this study. The study used a definition proposed by Cambridge Systematics and TTI (2005) that defines traffic congestion as a phenomenon which relates to an excess of vehicles on a segment of roadway at a specific time bringing about speeds that are slower sometimes much slower than typical or "free flow" speeds.

Defee *et al.* (2010) stated that good research should be grounded in theory. There are many theories that exist to analyse the movement of people and vehicles across borders. These theories are used to identify important aspects of policy and explain and predict policy and its consequences. To build the critical concerns of traffic congestion and its impact on performance of Customs at Ports of Entry this study borrowed from the Customs Performance Model, Queuing Theory and the Theory of Constraints.

Generally queuing theory begins in the early 1900's with the work A.K. Erlang on telephone traffic. In his work Elrang sought to answer such questions as what number of phone circuits and administrators are required to fulfil a given request (Erlang 1909, 1917). Queuing theory is the mathematical study of waiting lines, or the act of joining a line (queues). In queuing theory, a model is developed with the goal that queue lengths and waiting times can be predicted (Sundarapandian, 2009). Ozigbo (2000) specifies the following as the assumptions of queuing theory:

- Arrival are served on a first in, first out basis;
- Every arrival waits to be served regardless of the length of line;
- Arrivals are independent of preceding arrivals, but the average number of arrivals does not change over time;
- Service times also vary from one customer to the other and are independent of one another, but their average rate is known;
- Service times occur according to the negative exponential probability distribution; and
- The average rate is greater than the average arrival rate.

Altiok & Melamed (2007) stress the view that a queue occurs when service rendered is low compared to the high-level demand in a particular place and time. Waiting lines are probably going to form in all circumstances where customs are involved. Wherever there is competition for limited resources queuing is probably going to happen. The role of transportation in human life cannot be overemphasized. According to Intikhab *et al.* (2008), efficient transportation systems plays an important role in catering for the daily necessities in the lives of the citizens. Ordinarily any queuing system is made of units, alluded to as customers, requiring some sort of service and who arrive at a service facility, join a queue if service is not immediately available and, in the end, leave after receiving the service. A server refers to mechanisms that delivers service(s) to the customers. If upon arrival a customer finds the server busy, then he or she may form a queue, joint it or leave the system without receiving any service even after waiting for some time (Waters, 2008; Gupta, & Khanna, 2007).

The issue of queuing has been a subject of scientific debate for there is no known society that is not confronted with the problem of queuing. The mathematical discussion on queuing theory gained extensive ground in mid-1930s though the work of Pollaczk (1930, 1934), Kolmogrove (1931), Khintchine (1932, 1955), and others. Kendall (1951, 1953) gave a symmetric treatment of the stochastic process occur the theory of Queues and Cox (1955) analysed congestion problems statistically. Khinchive (1960) examined the mathematical methods in theory of queue. Morse (1958) discussed the wide variety of special Queuing problems and applied queuing theory was given by Lee (1958). A component of lining hypothesis with applications was given by Saaty (1961). On a few issues in lining and booking framework has given by Badoni (2001). Chime (1980) tended to the utilization of servers in a traditional Markovian (M=M=2) choice process where

the servers could be evacuated and portrayed the ideal approach by modifying the quantity of working servers. In research of comparable lining frameworks, Whitt (2007) took a gander at the staffing issue in lining administration frameworks with time-differing request. Cetin & List (2004) contends that when IT frameworks or assets are shared among different procedures or servers, the administration times of these procedures or servers wind up noticeably related. Ozigbo (2000) contends that the fundamental segments of queuing system are arrival, servers and waiting lines. Enwurum (2003) looks at it from more extensive point of view, as he outlines the queuing theory into four namely; an input source or calling population that generate customer, a service system that consists of one or more service facilities, a queue that indicates the number of customers waiting for service and a queue discipline or service discipline is the rule for service.

Usually, the interarrival times are independent and have a common distribution. In many practical situations customers arrive according to a Poisson stream (i.e. exponential interarrival times). Customers may arrive one by one, or in batches (Adan & Resing, 2015). An example of batch arrivals is the customs officer at the border where travel documents of commercial vehicles must be checked.

Customers may be patient and willing to wait (for a long time). Or customers may be impatient and leave after a while (Adan *et al.*, 2015). For example, commercial vehicles at Ports of Entry will wait too long before a ZIMRA officer is available for physical inspection or customs clearance.

Generally, the service times are independent and identically distributed, and that they are independent of the interarrival times. For example, the service times can be deterministic or exponentially distributed. It can also occur that service times are dependent of the queue length (Adan et al, 2015). For example, the customs clearance rate can be increased once the number of lanes is increased.

A queue discipline is a priority rule or set of rule for determining the order of service to customers in a waiting line. The rule selected can have a dramatic effect on the systems overall performance. The number of clients in the line, the average waiting time, the range of variability in waiting time and the efficiency of the service facility are some factors that could affect the choice of priority rules Probably, the most common priority rule is first to come, first to serve. This rule states that the customers in line are served on the basis of their chronological arrival (Onyeizugbe, 2011).The discipline could be last in, first out (LIFO). The

quality of service one receives could be judged, at least in part, by the length of time one waits in the queue for service, and this is very much influenced by what constitutes the configurations of the system (Gross & Harris, 1998; Forbs *et al.*, 2011).

This study used the Queuing theory to examine the causes of congestion at Ports of Entry. Arriving commercial vehicles at Beitbridge Border Post can be considered as the customers of a queuing system. Traffic congestion at Beitbridge Border Post may also occur due to an undue wait in service may be because of new employee. Delays in customs clearance may result in reduced trade volumes, corruption and illicit trade.

The CPM was produced considering a need to utilize a complete estimation model to evaluate the Key Performance Indicators' (KPI's) and grow new KPI's in customs organisation. It was likewise intended to be non-specific, with the goal that different customs administrations can utilize it to start the procedure of KPI definition and audit of existing pointers and measures. The model depends on benchmarks effectively created by the WCO, World Trade Organisation (WTO), World Bank (WB), International Monetary Fund (IMF), and other global and national associations. The CPM has been left at the vital level; nobody format exists, as customs administrations are at different levels of advancement as far as change and modernization. The model is adaptable and outlined as a guide; in any case, certain KPI's must be measured to decide a customs administration's advance in connection to its vital arrangement. The achievement of KPI execution is needy upon an association's senior level duty, great administration, and responsibility structure, as it denotes the start of a change administration process (Watts & Hekala, 2006; WCO, 2002).

The WCO has made various instruments and rules for use for or of measuring customs forms, for example, assertion handling, and in addition diagnostics to recognize regions for development and limit working in customs operations (WCO, 2002). Other WCO instruments and presentations give understanding into estimation, yet there is no comprehensive way to deal with measuring the performance of customs administrations (Watts *et al.*, 2006). These worldwide instruments generally do not portray how to quantify the "results" as they identify with customers, partners, and corporate administration, but instead concentrate primarily on customs forms, for example clearance times. Fig. 2.2 reflects the Customs Performance Model.

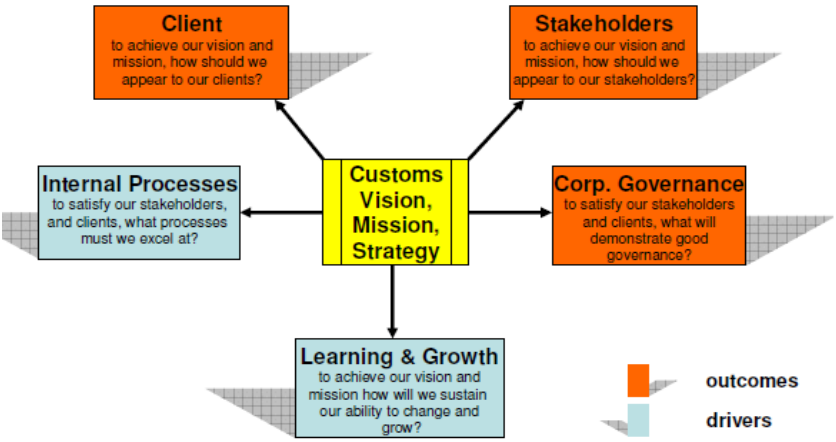


**Fig. 2.2:** Customs Performance Model *(Watts & Hekala, 2006)*

The CPM model comprises five sectors of measurement and comes from the Balanced Scorecard approach that is increasingly used by organisations as a strategy management and communication tool, and a means of ensuring that all aspects of performance are measured, hence a "Balanced" Scorecard. It is not a rigid set of measurement areas but can be adapted to suit organisations in both the private and public sectors. The CPM was developed to best represent the types of measures that customs administrations should use. The traditional BSC business model described in comprises four areas of measurement namely: financial, customer, internal business process and learning and growth perspective. This does not reflect the public service environment, where budgets are imposed, and the Minister of Finance and the public are key stakeholders. Customs organisations are also responsible to the Auditor General and Parliament for "good governance." The model with a defined vision, mission, and strategic goals and objectives for the customs administration is a starting point for defining performance indicators and measures (Watts *et al.*, 2006).

Outcome or Lagging Indicators are measured at the end of a process, a consequence of past actions (e.g. revenue collected, seizures, fines and penalties, client/stakeholder satisfaction, etc.). On the other hand, drivers or leading Indicators are measured during a process and show progress towards goals and targets (future performance). This type of indicator relates to business processes (e.g. cycle times, quality, effectiveness, and service delivery), and process development (e.g. AEO program, technology innovation) and employee competency (Watts *et al.*, 2006). The lagging indicators tend to be common to

most customs administrations, while the performance drivers, the lead indicators, would be unique to each administration. If the lead indicators are viewed in relation to the WCO Framework, then there are areas that cut across customs administrations (e.g. technology innovation; ASYCUDA and other processes relating to Integrated Supply Chain Management). A good Balanced Scorecard should have a mix of outcome measures and performance drivers. Outcome measures without performance drivers do not communicate how the outcomes are to be achieved. They also do not provide an early indication of whether the strategy is being implemented successfully. Conversely, performance drivers such as cycle times without outcome measures will fail to reveal whether the operational improvements have been translated into client satisfaction (Watts *et al.*, 2006).

To improve the quality and speed of the clearance cycle and hence client satisfaction, ZIMRA employees must possess the required competencies. The CPM is not just a collection of measures in five categories but a linked set of measures that define both long-term strategic objectives and the means for achieving those objectives. If jobs and accountabilities are not well defined and or employees are not motivated to perform for reasons of poor pay or lack of consequences for performance results, then the process becomes longer and more difficult resulting in congestion. The CPM model is used in this study to identify the KPI's used by ZIMRA and how they reflect its operations at Ports of Entry particularly in supply chain management. In addition, the model is used to help the researcher to examine the ways in which the ZIMRA's organisational structure better define its staff's authorities and accountabilities at Ports of Entry. Furthermore, the model was used examine ZIMRA's organogram and how tasks are delegated to facilitate greater decision-making responsibility to the customs officers at Ports of Entry.

TOC is a management framework defined by Goldratt (1990). It prescribes methods for controlling and overcoming constraints (also referred to as bottlenecks) that limit a system to achieve its goals. The framework prescribes, that the resources around a constraint are expanded until the system is relieved of a particular limitation, and then the new cycle of defining a new constraint and taking further action begins (Goldratt, 1994). Goldratt (1999) suggests that every system there exists for a purpose. In other words, all parts of the system strive towards the same goal.

Gupta & Boyd (2008) suggest that an organisation can be viewed as a chain, whereas Nave (2002) states that systems can be viewed as a chain. Either way, Nave (2002) suggests that the chains are independent links that are all working to

achieve the overall goal. In this sense, weak links represent constraints. Similarly, Şimşit, Günay, Vayvay (2014) argues that TOC views processes as they are rings of the same chain instead of thinking they are independent from each other. At the same time, the theory focuses on the weakest points which are bottlenecks for the entire company and try to determine the relationship of these bottlenecks. Therefore, this integrated management philosophy changes the way of thinking of managers and become an important tool for solving root problems. Additionally, Simatupang *et al.* (2004) argue that constraints can be physical and non-physical, internal and external (inside or outside supply chain).

The theory focuses on three areas, logistics, performance measurement and logical thinking (Cox & Spencer, 1997; Simatupang *et al.*, 1997). Logistics prescribe drum-buffer-rope, the method used for managing a system with respect to the constraint. Drum-buffer-rope is a scheduling technique, where drum prescribes the pace of production flow, buffer prescribes protection time in critical areas and rope as a mechanism for keeping all elements of the system working in the same pace (Schragenheim & Ronen, 1990). Performance measurements are used to verify whether the system is achieving expected outcomes and is on target to reach the goal. The measures include throughput, inventory and operating expenses. Although originally defined as financial measures, they are also used in other, non-financial contexts (Anderson, 2004; Motwani *et al.*, 1996).

The question that the performance measures answer is, "How do we know whether our constraint-breaking has had a positive effect on our overall system" (Dettmer, 1997). Goldratt (1994) asserts that effects of local actions taken to advance progress of the system can be gauged using these performance measurements. The concept of the goal is based on assumptions that the resources are limited and that the only way to maximise their utility is to direct their use towards the well-defined and focused goal (Weston, 1991). Although Goldratt (1999) defines the goal as "To make money now and in the future", it is not unusual for other authors to set the goal using other parameters. Kohil & Jaworski (2009) define the goal as "To recruit with integrity high quality men and women to meet Army mission recruitment requirements now and in the future […]" – the definition that clearly is not of a financial nature. Shoemaker & Reid's (2005) observation is that financial goals for government organisations are usually replaced by service goals.

In the throughput world, there are three dimensions namely organisational mind-set, performance measurements and decision making and methodology (Boyd & Gupta, 2004). The main assumption in the TOC is that every for-profit

organisation has the goal of making as much money as possible, now and in the future. However, while doing these certain conditions cannot be violated, such as satisfying the market demand and providing a good work environment for employees (Nieminen, 2014). The TOC suggests that traditional accounting measures are inappropriate with respect to the actual goal of the organisation and they do more harm than good since they distract plant managers from the true goal. The TOC has evolved into a continuous process, emphasizing that change should be embraced. This is important, since constraints tend to shift within the organisation as time goes by. These methodologies will be examined in more detail later. (Gupta & Snyder, 2009).

According to Goldratt (1999), identifying constraints also means focusing on their impact. In other words, prioritizing the constraints depending on how they impact the goal is important. The second step implies maximising the efficiency of the constraint and eliminating non-productive activities. Goldratt (1999) means that the other resources should supply what the constraints are consuming. Reid (2007) suggests that this step includes maximising the efficiency of the constraint. The third step, subordinating, implies organising the non-constraints in such a way that they are strategically aligned with the constraints and support the overall strategy. The fourth step, elevating the constraints, involves a capacity increase of the constraint, while last step implies preventing inertia by going back to step 1.

In this study, the researcher used the TOC to identify and outline bottlenecks in the customs clearance process of Customs at Beitbridge Border Post. These bottle necks are the root cause of traffic congestion at Beitbridge Border Post. Christopher & Holweg (2011) suggests that logistics processes, customs clearance in this case, can be perceived as a link of activities. He also states that all these activities belong to one of two categories, bottlenecks and non-bottlenecks. A bottleneck is considered the slowest activity, which determines the throughput time of the system. Another perspective on the same matter is introduced by Slack *et al.* (2010). They suggest that some parts of an operation might not operate to its full capacity, whereas other parts are. The part of the operations operating to its full capacity will then determine the performance of the whole operation. Therefore, this part can be called a constraint. In this study, the theory of constraints (TOC) was a useful theory and tool when identifying and locating constraints hindering the performance of Customs at Ports of Entry.

Traffic congestion is a phenomenon of increased disruption of traffic movement on an element of transport system. It is most visible when the level of demand for

movement approaches or exceeds the present capacity (Taylor, 1999). According to Downie (2008), traffic congestion occurs when the volume of vehicular traffic is greater than the available capacity. In the modern business environment of just-in time production and delivery, it has become ever more important that traders are guaranteed fast and predictable release of goods. Being the foremost agency at the border and a prominent player in the release of goods, Customs should therefore strive to reduce the complex clearance procedures and limit information requirements to the essentials (WCO, 2015). The major cause of traffic congestion at Ports of Entry includes customs inefficiencies, inadequate and poorly managed infrastructure and lack of integrating activities of border management agencies (Stantchev & Whiteing, 2005; Tanigichi & Thompson, 2007; Arvis *et al.*, 2007; World Bank, 2012).

Outdated, cumbersome systems and overly bureaucratic border clearance processes imposed by customs and other agencies delays the clearance of imports, exports, and transit goods. Border clearance processes are among the most troublesome links in the global supply chain. For example, it frequently takes three times as many days to import goods in poor countries as it does in rich ones. Imports to poor countries require nearly twice as many documents and six times as many signatures (World Bank 2006; Arvis *et al.*, 2007). Customs administrations in developing countries still inspect majority of cross-border traded cargo during their clearance processes at the borders (Geourjon & Laporte, 2004). They noted that, regional agreements in Africa are often times unwilling to forgo these systematic inspections due to fear of risking revenue loss. In line with this belief, they deliberately choose not to use selectivity techniques that allow for targeted inspections which in turn promote reduced delays and unnecessary border constraints. While they regard targeted physical inspections as a hindrance to maximising their revenue collections, in reality these approaches cause congestion and effectively impede rather than facilitate cross-border trade. The above situation is worsened by the nature of existing import and export procedures which are plagued by lack of transparency and predictability, insufficient application of automated systems and too many documentary requirements for a single transaction World Customs Organisation (2008) estimated that 100% inspection of every container would bring global trade to half. On the other hand, Hummels (2001), in his research linked restricted abilities of Customs ports and inefficient procedures with time cost. A day less in delivery times reduces landed costs of cargo by 0.5%. Table 2.3 presents the number of documents, days and cost required for import and export.

**Table 2.3**: Number of documents, Days and Cost required for Import and Export

| Region | Export | | | Import | | |
|---|---|---|---|---|---|---|
| | Number of documents | Required days | Cost (US$/container) | Number of documents | Required days | Cost (US$/container) |
| East Asia/ Pacific | 6 | 21 | 923 | 7 | 22 | 958 |
| East Europe/ Central Asia | 7 | 26 | 2134 | 8 | 29 | 2349 |
| South America/ Caribbean | 6 | 17 | 1268 | 7 | 19 | 1612 |
| Middle East/ North Africa | 6 | 19 | 1083 | 8 | 22 | 1275 |
| OECD High-income Countries | 4 | 10 | 1028 | 5 | 10 | 1080 |
| South Asia | 8 | 32 | 1603 | 9 | 33 | 1736 |
| Sub-Saharan Africa | 8 | 31 | 1990 | 9 | 37 | 2567 |
| World average | 6 | 22 | 1470 | 7 | 24 | 1742 |

**Source: Doing Business Report 2012, World Bank**

According to The World Bank Connecting to Compete 2010 indicators of red tape also illustrate a lack of coordination at the border and the burden this imposes on logistics operators. Operators in the lowest performance countries typically deal with around double the number of government agencies as operators in high performance countries. The question of simplifying documentation has always featured very high in the trade facilitation agenda, reflected in the many initiatives to create trade single window and simplified and harmonized transit procedures and documents. While COMESA has harmonized transit documentation, despite being explicitly targeted, it is still missing within the SADC region. From Durban to Malawi for example, the same information is declared seven times at different locations. Simplifying documentation and pushing forward single window initiatives heavily depend on the will of SADC Members for regional cooperation. They must come along with addressing weaknesses in both dimensions of border management, the soft and hard trade-related infrastructure (Feidieker, 2011). Fig 2.3 shows export and import agencies and documentation, averaged by LPI quintile.

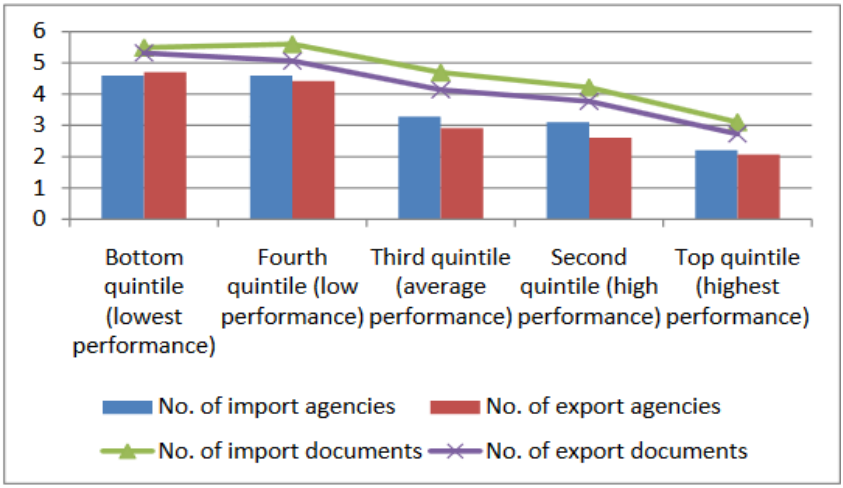


**Figure 2.3:** Export and Import Agencies and Documentation, Averaged by LPI Quintile *(The World Bank Connecting to Compete, 2010)*

Bugbilla & Asamoah (2016) argues that the causes of traffic congestion at Ports of Entry are largely attributed to physical examination, tariff classification, goods valuation and delay in receiving permits and exemptions from institutions. A Report by B&FT (2015), to the effect that excessive physical examination of goods at the Tema harbour, by 23 agencies was a major cause of congestion in clearing goods.

Infrastructure includes road and truck parking bays, commercial offices, office space, inspection bays, bridge development, truck and baggage scanners, information and communication technology, surveillance technology are essential at Ports of Entry (Wilmott, 2007; Japan International Cooperation Agency, 2009). The World Shipping Council (2015) argues that border and port infrastructure need to be prepared for greater volumes and efficient ways to handle increased volumes of trade that pass through them. Markets accessibility and volume of trade are largely dependent on the quality of infrastructure and especially transport which facilitates the physical movement of people and goods (Muchori, 2015). Downie (2008) opines that traffic congestion occurs when the volume of vehicular traffic is greater than the available road infrastructure and capacity, a point commonly referred to as saturation. He describes many specific circumstances which cause or aggravate congestion. Most of such circumstances are concerned with a reduction in the capacity of the road at a given point or

over a certain length or increase in the number of vehicles required for the movement of people and goods.

The short-to-medium term effect of underinvestment in transport infrastructure is traffic congestion which serves as a compromising factor of logistics efficiency (Tanigichi & Thompson, 2007; Stantchev & Whiteing, 2005). This view was upheld by Trevor (2011) who argues that road traffic congestion has an adverse effect on border and port efficiency especially in developing countries where there is the lack of appropriate transport infrastructure composed of intermodal freight system to facilitate efficient cargo evacuation and integrated freight logistics systems. Agility Emerging Market Logistics Index (2015) argues that poor infrastructure result in lack of physical connectedness, increased transport cost and negatively impacts a country's overall trade development. Accordingly, to both investment in port infrastructure and the capital-intensity level are other factors that can explain the differences in performance and efficiency between ports, because without infrastructures or the ability to offer services, a port could not be able to handle an increasing number of vessels or cargo (Liu, 1995; Mussema, 2016). Inadequate transport infrastructure has been discussed in port literature as an impediment to port efficiency and supports this finding (Raballand *et al.*, 2012; Refas & Cantens 2011). This view correlates with Ojadi & Walters (2015) who postulate that transport infrastructure deficiencies on the sea and land sides of the port were identified as constituting a hindrance to the efficient flow of goods through the ports.

In Africa, ports and the land transport system serving inland areas were developed in the colonial era. As these African colonies gained independence in 1960s to 1980s, their transport infrastructure progressively degraded due to insufficient investment (Japan International Cooperation Agency, 2009). This view correlates with Millar (2014) who points out that Africa's transport infrastructure lags well behind that of the rest of the world and doing business in Sub-Saharan Africa has remained challenging due largely to weak transport infrastructure. This situation has greatly impeded logistics services, thereby driving cost of doing business even higher (Onyemejor, 2015). Acknowledging the seriousness of infrastructure deficit in Africa, Raballand *et al.*, (2012) puts the shortfall at about $48 billion per annum, pointing that the shortcomings impede competitiveness and economic growth in the region. Confirming the empirical findings by Hummels & Schaur (2012), demonstrating how longer travel time negatively impacts trade, Raballand *et al.* (2012), further stressed that infrastructure gaps and high transport cost hinders growth and poverty reduction in Sun-Saharan Africa.

OECD (2006) estimates that cross border infrastructure can increase trade, improve security, addresses the need of landlocked countries, save money, build on national and regional comparative advantage and strengthen natural resource management. An Interim Report of the Canadian Senate Committee on National Security and Defence (2005) announces that border congestion and infrastructure deficiencies cause delays at the Windsor-Detroit crossing and costs the Ontario economy $7 million in lost production. Many countries of the sub-Saharan region have a history of major ineffective infrastructure improvement due socio-economic problems. Infrastructure at Ports of Entry in the region reflects colonial legacy of the past which at the time restrict rather facilitate movement across the borders (Department of Transport South Africa, 2012; UN Policy Brief, 2007). According to Cross-border Operations Report (2016), SADC land borders are currently characterised by various infrastructure and operational constraints. The report also announces that impediments such as inadequate approach roads to border posts, inadequate parking for vehicles within the border precinct, no separation and freight and passenger traffic, limited cooperation and coordination amongst border post officials and complex documentation and inspection systems are examples of hard and soft infrastructure constraints that result in excessive delays and traffic congestion for cross-border road transport operators.

Traffic congestion at ports is exacerbated by inefficient rail services, for example Kenya and Uganda Railways Corporations were once incredible. Abidjan (Côte d'Ivoire) is proficient, yet costly. Land border crossings are overfilled. Incidentally, handling at air terminals, which is ordinarily anticipated that would be more productive because of the higher cargo charges and value of goods, is likewise no better as it routinely takes days to clear goods. The airports experience lack of inspection equipment like scanners. Capacity for perishable or dangerous goods may likewise be missing or simple (Waterman, Esscobedo *et al.*, 2009; Buyonge & Kireeva, 2008).

Another cause of traffic congestion at Ports of Entry is the lack of coordination between the government departments and agencies involved in controlling cross-border transactions. The multiplicity and diversity of sometimes uncoordinated data and document requests by different agencies increases transaction costs and the risk of making mistakes. The multiplicity of those agencies operating on both sides of the same border doubles the bureaucracy at border posts, which translates into congestion and delays (ESA BMO Network, 2010).

According to the Doing Business (2012) report most of the congestion and delays in the import export process are due to the time take it in the documents' preparation. Until the year 2011 the days it takes in Mexico to prepare the

paperwork were 14 days to exports and 17 days to imports with an average cost of 1470USD and 2050USD respectively. CRCI cites that UNCTAD estimates that on average, each single Customs transaction requires 20 to 30 different players, 40 documents, 200 data entities of which 30 of these are at least repeated 30 times and the re-inputting of 60 to 70% of all data at least once. On this same note, World Trade Organisation (1998) observed that in some nations, non-harmonization of systems and too many documentations all increase paperwork so involved to 4 times. This result in unnecessarily prolonged release waiting times accounting for 20% of total transport time and 25% transport costs. This is particularly true of Africa not only due to lack of adequate infrastructure in many countries, but also due to a past characterised by poor national governance structures. Imports to poor countries require nearly twice as many documents and six times as many signatures (World Bank and International Finance Corporation 2006).

In most African nations, there are two complete sets of controls to be completed– one on each side of the border post – with various types of documents to be filled and cleared. These authoritative obstacles raise trade costs (it is estimated that every day of delay at customs is comparable to an extra 85km between the trading nations) (African Development Bank, 2012). The customs environment in the Southern and Eastern African sub-region is characterized by a lack of coordination among the multiple government agencies on both sides of borders. This raises the common challenge of the duplication of procedures at each border, which increases the potential for risk management and fraud. While some countries in the sub-region have entered into agreements to standardize customs procedures and to coordinate government agencies, limited progress has been achieved in the integration of processes and cooperation between border checkpoints. Furthermore, the lack of computerized customs management systems results in lengthy and inefficient manual operations carried out by traders and officials at borders. In most cases where customs systems are not harmonized, the different government agencies at borders cannot interact or trade. Even when computerized systems are used, such as ASYCUDA. The incompatibility of the systems that are tailor-made to suit each country's specific needs, together with unreliability of the networks, pose additional threats to the cost of trade in the sub-region (AFDB, 2012).

Countries exercise their right to control the movement of goods, people and craft entering and exiting their territorial jurisdiction at Ports of Entry (World Customs Organisation, 2009). Customs administrations operate in dynamic and complex environment that deals with an array of traders, classification of goods, rules of origin, tariffs and valuation differences (Zake, 2011). The changes in the operating

environment pose challenges and affect the operations of customs administrations (Mpumela, 2015; World Bank, 2005). Customs administration worldwide face a plethora of challenges which eventually thwart their performance and have a significant impact on service delivery and perceptions of taxpayers (Cross-border Operations Report, 2016, World Customs Organisation, 2009; World Bank, 2005). A recent survey by Bugbilla & Asamoah (2016) revealed that obtaining permit and exemption, classification of goods and valuation of goods, were the most problematic confronting Customs in the clearance process, across the ports and borders. These findings were similar to those identified by APCF (2008), when they conducted a study on the challenges faced by Customs in developing Countries. Duval (2008) listed Customs valuation and tariff classification as factors militating against trade facilitation, while Bosche & Zdouch (2014) revealed that tariff classification, goods valuation and how to identify the country of origin of imported goods, are the factors hindering revenue collections.

The challenges faced by customs administrations in traffic clearance Ports of Entry include corruption, insufficient state of supporting infrastructure, illicit trade and Customs, Contribution of various agencies to customs delays, lack of coordination with border agencies and other stakeholders (Cross-border Operations Report, 2016; Khumalo, 2015; Munyanyi, 2015; OECD, 2009; World Bank, 2005). These challenges are discussed in the following sections:

The World Bank (2012) postulates that systems incompatibility is a hindrance to efficient management of customs clearance processes at ports and borders. Most of the customs offices in the different countries are not on Wide Area Network and again this is an obstacle in management of transit traffic as customs offices must rely on physical documents upon arrival of the truck at the port of exit. This view was reinforced by the World Bank (2012) which states that the lack of computerized customs management systems results in lengthy and inefficient manual operations carried out by traders and officials at borders. In most cases where customs systems are not harmonized, the different government agencies at borders cannot interact or trade. Even when computerized systems are used, the incompatibility of the systems that are tailor-made to suit each country's specific needs, together with unreliability of the networks, pose additional threats to the cost of trade between countries.

Mutombodzi (2007) argues that customs automated systems in most African regions are not interfaced and therefore this pose a serious challenge in ensuring that goods have left the country and accounted for in the next transit country and also those acquittals are genuine and authentic. Customs administrations run systems that are different and even those that run the same systems e.g. Asycuda,

their systems do not talk to each other. There is closer customs cooperation and consequent facilitation for countries within the more integrated regional economic blocs such as the Common Market for Eastern and Southern Africa (COMESA), the East African Community Customs Union (EACCU), the Southern Africa Development Community (SADC) and the West African Economic & Monetary Union (UEMOA, 2006). However, even within these economic blocs, there are variations. For example, Kenya adopted the SIMBA 2005 IT System, which is different from ASYCUDA, the most widely used customs IT System in Africa (USAID, 2008).

Infrastructure such as road and truck parking bays, commercial offices, inspection bays, office space, housing, bridge development, information and communication technology, surveillance technology, and truck and baggage scanners is essential at Ports of Entry (Matsushita, 2009; Wilmott 2007). Agility Emerging Market Logistics Index (2015) suggest that poor infrastructure result in lack of physical connectedness, increased transport cost and negatively impacts a country's overall trade development. Ports and transportation infrastructure need to be prepared for greater volumes and efficient ways to handle those volumes through ports regardless of ship size (World Shipping Council, 2015). Transport infrastructure deficiencies on the sea and land sides of the port were identified as constituting a hindrance to the efficient flow of goods through the ports (Ojadi *et al.*, 2015). Nyema (2014) argues that infrastructure is the necessary condition for efficient cargo handling operations and adequate infrastructure is needed to avoid congestion, foster trade development and securing connectivity for economies heavily dependent on international trade.

A study by Keceli (2011) found that despite the intense infrastructure investments and capacity enhancement efforts at ports in Turkey, ports are still restricted by hinterland transport facilities and connections between international ports and manufacturing sites. As port hinterlands are limited, increased throughput causes delays and congestion to the movement of goods and increased variability in handling times. According to Millar (2014), Africa's transport infrastructure lags well behind that of the rest of the world and doing business in Sub-Saharan Africa has remained challenging due largely to weak transport infrastructure at Ports of Entry. This situation has greatly impeded logistics services, thereby driving cost of doing business even higher (Onyemejor, 2015). Ports and the land transport system to serving inland areas were developed in the colonial era. As these African colonies gained independence in 1960s to 1980s, their transport infrastructure progressively degraded due to insufficient investment. Under the import substitution industry policy at the time, the public sector played a leading role in imports of raw materials and exports of agricultural products. As a result,

the transportation system, which was integrated into this industry policy, lost its efficiency. From the latter half of 1960s other industrialized nations rapidly underwent a transport revolution and containerization, and significantly improved their transport efficiency (Japan International Cooperation Agency, 2009).

Corruption at borders and ports involves various actors, including customs officials, border guards and port operators, with different powers and bureaucratic mandates, resulting in different discretionary powers and opportunities to extract bribes. For example, customs officials are responsible for collecting taxes on particular types of goods and for ensuring that import or export procedures are adhered to. In Customs, one of the major corruption risks is a high rate of duty to be paid. Sometimes it is easier and cheaper for businessmen to bribe a customs officer than to discharge all duties or to avoid paying customs duties by wrongly declaring goods at customs (Buyonge *et al.*, 2008). They also argues that wrong declaration of goods at customs brings risks, that customs officer might reveal the cheating during inspection of cargo.

The discretionary power of customs officials and their monopoly over the flow of persons and goods, combined with weak accountability and difficult supervision are some of the reasons explaining the incidence of corruption in customs authorities. Corruption in border control and customs authorities most often manifests itself either as a collusive form of corruption to avoid taxes and tariffs (e.g. the company offers the bribe), or as coercion to speed up routine procedures (the public official requests the bribe) (Wickberg, 2013). Corruption has tragically hindered economic development and growth in African and most people live on less than $2 per day. Like a spider's web the tentacles of corruption are spread in every African country Transparency International (2013). This view was reinforced by Martini (2013) who argues that weak institutions, poor governance and under resourced customs services and police forces make many of Africa's borders porous and difficult to control. Customs and border officials often operate in remote posts that are geographically dispersed, and work around the clock with relatively few staff. They often lack adequate supervision, opportunities for corruption abound (Ferreira *et al.*, 2007). According to the 15th report by the Improved Road Transport Governance Initiative (IRTG), there are between 1.8 and 3.2 checkpoints per 100 km along corridors in West Africa and the bribes collected by customs, police, gendarmerie, and other uniformed services range from US$ 3 to US$ 23 per 100 km (close to US$ 200 per average trip) (World Bank, 2012).

While various border agencies have different missions at ports and borders, this has obviously posed challenges in smooth movement of transit traffic as each

agent endeavours to satisfy their requirements. Border agencies range from police officers, immigration, state security agents, Vehicle Inspection departments, health and customs officers (Mutombodzi, 2007). It is also found that the stakeholders involved in Customs clearance processes, in some way or others, are also responsible for delayed clearance. Such delays are mainly due to the coordination between the parties, among the government agencies, and between the government agencies and the stakeholders involved in the Customs clearance processes (World Customs Organisation, 2016). The array and variety of sometimes uncoordinated data and document requests by different agencies increases transaction costs and the risk of making mistakes. The array of those agencies operating on both sides of the same border doubles the bureaucracy at border posts, which translates into congestion and delays (ESA BMO Network, 2010). Where interaction with Customs is mediated by customs brokers, businesspeople usually get the impression that delays are largely caused by customs authorities (Buyonge *et al.*, 2008). This may be partly true in the case of delays caused by pre-shipment inspection companies sub-contracted by Customs to carry out verification of values, quantities and quality of goods. In other cases, customs usually have limited control over the activities of other government agencies responsible for checking goods standards, phytosanitary and health inspection. Unless reform and modernisation of Customs is done in tandem with modernisation in these agencies, the gains from Customs may not benefit businesses to the optimum (Buyonge *et al.*, 2008).

The customs environment in the Southern and Eastern African sub-region is characterised by a lack of coordination among the multiple government agencies on both sides of borders which, in turn, increases the potential for fraud and the need for risk management (Barka, 2012). Although some countries in the sub-region have entered into agreements to standardize customs procedures and to coordinate government agencies, limited progress has been achieved in the integration of processes and cooperation between border checkpoints (World Bank, 2012). Savage *et al.* (2013) point out the burdensome paperwork being the reason for holdups in customs.

O'Hare *et al.* (2014) define illicit financial flows as the unrecorded movement of capital out of the country in contravention of regulations. According to Mashiri & Mpofu (2015), illicit trade refers to 'any practice or conduct prohibited by law and which relates to the production, shipment, possession, distribution, sale or purchase of goods and services including any practice or conduct intended to facilitate such activity'. The key drivers of illicit trade include low chances of being discovered and prosecuted, weak legal and regulatory frameworks, and weak enforcement (Thornton, 2013).

Illicit trading or duty evasion at Ports of Entry include outright avoidance of official customs controls, under-declaration of goods, undervaluation of goods, misclassification of goods, falsification of documents, collusion with tax authorities and smuggling. Fishman & Wei (2004) found a one per cent increase in tax rates being associated with a three per cent increase in customs evasion, and mostly through misclassification of imports and underreporting of import values. The impact of these activities has negatively affected trade and had a devastating impact on the formal economy. For example, in Russia in 2004, the minister of the economy estimated lost revenue of about USD4.5 billion in duties on goods imported from Europe which could have been a result of false declaration. In Bangladesh in 2000, the foregone customs revenue traced to customs inefficiency was estimated to exceed five per cent of GDP (OECD, 2003).

Differences in national economic policies, regional resources, and monetary currencies make borders 'lucrative zones of exchange and trade, often illicit and clandestine' (Flynn, 1997). Flynn (1997) also points out that smuggling occurs across borders around the world, providing an important means of livelihood for border residents and prompting creative social networking and cross-border ties within borderland populations. Araia (2009) adds that customs officials are reportedly paid regular 'stipends', bribed on an ad hoc basis, and encouraged using improper influence, to make smuggling possible in various ways and to protect the smugglers from arrest and prosecution. Increased checks as a deterrent to smuggling often led to higher costs on compliant businesses. The phenomenon of illicit trade and counterfeiting has been estimated by the OECD to cost billions in lost profits to companies and revenue to governments and represents between 5 to 7 per cent of global trade (OECD 1998; Shapiro & Hasset 2005).

A study entitled 'Tackling the black market in Ireland', estimated that illicit trade at Ports of Entry in Ireland is costing the economy USD860 million per annum. The OECD (2009) has estimated the cost of illicit trade of physical goods to the global economy to be around USD250 billion whilst the International Anti-Counterfeiting Coalition estimates the figure to be USD600 billion per annum. According to WCO statistics, the discovery by customs officials of over 9.5 tonnes of illicit products, including cocaine and heroin, more than 360 tonnes of chemicals and 200 kilograms of methamphetamines is an indication of the magnitude of this illicit trade.

Although the WCO has formulated a Model Law on Intellectual Property rights incorporating measures expected to be implemented by customs officials at the border, this has not been adopted at the national level in many African countries

where counterfeiting is rampant (Trade and Development Report, 2004). Goods often enter the African market without payment of duties and taxes because of collusion between importers, customs brokers and Customs. This is particularly so in Western Africa. Another aspect of illicit trade is importation of counterfeited goods, which was cited in Benin, Tanzania, Togo and Zimbabwe. Anti-counterfeiting activities have had a significant impact in Kenya, Nigeria, Uganda and Zambia (1998). In 2001, Collier, Hoeffler & Pattillo estimated that if illicit outflow of funds was not taking place, GDP per capita in Africa would have been approximately 16 per cent higher. The researchers further argued — in line with the arguments by Ndikumana & Boyce (2011) — that illicit financial flows are a constraint to poverty reduction in Africa. According to the 'World Trade Report' (2013), the toxic and corrosive nature of illicit trade harms economic growth and job creation, challenges the rule of law, robs governments of the much-needed revenue and threatens human life and the quality of life and thus requires a strong internationally coordinated response. These findings were upheld by the African Forum and Network on Debt and Development (AFRODAD) (2014) which approximates that between 2009 and 2012 cash-strapped Zimbabwe lost USD2.79 billion through illicit financial flows, which represents nearly half of the country's national budget of USD4 billion. If these funds could find their way to the national coffers it could fund half of the national budget and be redistributed to all the citizens of the country through infrastructural developments, investments, and even poverty alleviation programmes.

A study conducted in Mozambique by Van Dunem & Arndt (2006) found a positive relationship between high tax rates and underreporting of import values and evasion. Some countries simplified their procedures and created a system which allows fewer contacts between staff and traders, while others upgraded IT systems and introduced the customs information systems software, ASYCUDA, to improve service delivery, increase transparency and shorten customs clearance time. In their reforms, Uganda and Peru employed measures such as cooperation with other authorities, private entities and police, expanded audits and preventative inspections to increase enforcement. However, these were not very effective in Mozambique and Bolivia.

The WCO revise Kyoto Convention, defines customs clearance as "the accomplishment of the customs formalities necessary to allow goods to enter home as to be exported or to be set under another customs procedure" and release as "the action by the customs to allow goods undergoing clearance to be at the disposal of the person connected. Customs clearance implies a responsibility for activities that are largely determined and undertaken by customs officers (Teweldeberhan, 2012). There are different roles of customs in different

countries, but the core function of customs administration is common for all states. There are four main areas that are covered ubiquitously; revenue collection, regulatory compliance, trade facilitation and security (Sokolova, 2017; De Wulf & Sokol 2004, 17; Truel, 2010). According to De Wulf & Sokol (2005), the overall objective of the existence of customs administrations is to provide security to the supply chain, prohibit illegal and unsafe imports with respect to commitments of WTO. Gopal (2007) explains the objective as smuggle checking and prevention of prohibited transactions. De Wulf *et al.*, (2005) also point out that customs administrations are expected to carry through its operations effectively and efficiently. Since Customs is the foremost agency at the border and pays a prominent role in the release of goods, Customs should strive to reduce the complexity of clearance procedures and to limit their information that is really necessary (Teweldeberhan, 2012).

In discharging their often-complex tasks of revenue collection, security, environmental and health protection and application of trade policy, Customs administrations need to have direct access to and temporary custody of (if necessary) export and import consignments. The time period for which Customs and/or other border agencies require these controls, thereby halting the overall movement of the goods, has gained great importance for all international traders and their customers. It is now a crucial operational or commercial concern for Governments, just-in-time business operators, intermodal carriers and the cargo industry, and providing for a focused opportunity to gain an invaluable insight into standards of Customs efficiency. Governments and the Trading community have a powerful common interest in this regard. Therefore, activities that relate to the calculating and recording of the time needed by Customs to release goods can provide pertinent information to guide any necessary process improvements or identify desirable regulatory changes to ensure the effective facilitation of trade (World Customs Organisation, 2011). Many global indexes such as the World Bank's Ease of Doing Business 2016 and Logistics Performance Index 2014 and the World Economic Forum's Global Enabling Trade Index 2014 and World Competitiveness Report 2014 reports that the impediments to on time clearance of traffic are cumbersome regulatory systems and bureaucratic clearing procedures; and Lack of communication between stakeholders (PMAESA Secretariat, 2008).Delays in traffic clearance increases corruption, reduces customs revenue, reduces trade volumes and increases clearance times (Ferreira *et al.*, 2007; Ndenga & Ayuma, 2013; Hummels *et al.*, 2001; Bugbilla *et al.*, 2016; Zamora-Torres *et al.*, 2013).

Delays in traffic clearance is one of the root causes of corruption at Ports of Entry (Ndenga *et al.*, 2013). A manifestation of corruption would typically encompass

customs officials delaying the initiation or conclusion of customs procedures until a bribe is offered to them (Hors, 2001). The techniques of creating such delays may involve officials promptly attending to files of operators who have paid bribes while making others (non-bribe-paying operators) wait; or the officials may pretend to be absent or engaged elsewhere when a requested action is much needed and only become available once a bribe is paid. For instance, Ferreira *et al.* (2007) report that despite being employed to work 24 hours a day, the customs officials in Cambodia's port of Sihanoukville would end their daily operations at 5.00 pm and could only be persuaded to work past that time through informal payments.

Another expression of routine corruption occurs when customs officials create or threaten to create unwarranted complications in the clearance process. This often takes the form of officials conducting examinations in extreme detail; or requesting documents that are difficult to adduce; or sending the cargo for further controls such as quarantine or any other unnecessary actions that may complicate the clearance process (Hors, 2001). Previously the task of risk assessment was manually handled by customs officials who would regularly misuse their discretion by delaying or threatening to delay shipment through unnecessary inspection unless a bribe was offered (Hors, 2001). According to the UNECE Trade Facilitation Guide (2016), administrations that do not use audit-based controls usually concentrate their controls entirely at the border and at the time of import, and often apply a 100 % physical examination approach. This leads not only to unnecessarily long delays at the border but is also a very ineffective and inefficient use of the limited control and inspection staff at the border. In addition, 100% physical examination creates an enabling environment for corrupt practices and fraud. A study conducted by the World Bank (2012) reports that the agricultural sector is one of the sectors affected by delays in traffic clearance.

The ability to deliver goods and services on time is an increasingly important determinant of export success (World Bank, 2007). This is mainly due to two significant changes in exports in recent years. Firstly, a greater share of exports is due to global production sharing, where stages of a firm's value chain are allocated in different countries (Hummels, 2001). Secondly, there has been an increase in competition among countries due to lower tariffs and non- tariff barriers. These changes mean that any delays that an exporter faces in its country of origin can have an important detrimental effect on its ability to remain competitive. This is reinforced by recent evidence that such delays can have a significant adverse effect on trade. Trade facilitation needs an integrated approach because it requires the combined effort and efficiency of many government agencies and private parties and individuals. The World Bank's Logistics

Performance Indicators (LPIs) suggest that customs authorities are only responsible for approximately one-third of the delays that the trading community encounters at the border, and that many other government institutions are responsible for most of the problems traders face at the border (McLinden *et al.*, 2011).

OECD (2014) research finds that Customs and administrative procedures have substantial effects on international trade. Cumbersome Customs and administrative procedures have been found to be a challenge for developing countries in exporting to developed and other developing countries (Wilson, 2007). Djankov *et al.* (2010) find that an additional day spent prior to shipment reduces trade by more than 1 percent. Similarly, Volpe Martincus *et al.* (2015) find that a 10 percent increase in customs delays lowers firm exports by 3.8 percent. For example, in Latin America, there are on average 15 to 30 agencies involved in border crossings transactions. Roughly 75 percent of delays at the border are due to inefficient processes, whereas the remaining 25 percent are due to inadequate physical infrastructure (Estevadeordal, 2017). This is particularly important for the Latin America and the Caribbean (LAC) region, where burdensome procedures, high costs, and delays are some of the biggest obstacles to trade. Currently, it takes an average 3.5 days for goods to clear customs in LAC, compared to just three days in East Asia and the Pacific, and less than a day in OECD countries (World Bank, 2012). The United Nations Conference on Trade and Development (UNCTAD) estimates that the average customs transaction involves 20–30 different parties, 40 documents, 200 data elements (30 of which are repeated at least 30 times) and the re-keying of 60–70 per cent of all data at least once. With the lowering of tariffs across the globe, the cost of complying with customs and trade related formalities have been reported to exceed in many instances the cost of duties to be paid. In the modern business environment of just-in-time production and delivery, traders need fast and predictable release of goods (World Trade Organisation, 2014).

Some recent studies have tried to determine how time delays affect international trade. Djankov *et al.* (2006) assert that on average, each additional day that a product is delayed prior to being shipped reduces trade by at least one per cent. Another important insight from that work is that the use of averages as indicators of trade facilitation in Africa can be very deceptive because of the large variations across African countries. For example, while it takes 16 days to get a product from the factory to the ship in Mauritius, it takes 116 days in the Central African Republic. On the other hand, Soloaga *et al.* (2006) evaluate the impact of changes in trade facilitation measures on trade for main industrial sectors in Mexico, using four indicators of trade facilitation: port efficiency, customs environment,

regulatory environment, and e-commerce use by business (as a proxy for service sector effectiveness) (Soloaga *et al.*, 2006). Finally, the Global Facilitation Partnership for Transportation and Trade conducted the Logistics Perception Index (LPI) in 2006. The LPI survey uses an anonymous, web-based questionnaire which asks the respondent to evaluate their country of residence, and eight countries they are dealing with on several logistics dimensions including domestic and international transportation costs, timeliness of shipments, transport and IT infrastructure, Customs and other border procedures, and logistics competence.

Customs revenue constitute a greater part of tax revenue for many countries. For instance, in Ghana, Customs revenue constitute about 50 percent of total tax collected (CEPS News, 2007); 49.8% in Sierra Leone, 44.5% in the Gambia, 18.4 percent in Burundi, 0.9percent in Israel, 71.5% in Kuwait and 20.2 percent in Panama (Wulf & Sokol, 2004). The WCO (2014) identified increase in cross border trade, improvement in border clearance procedures, transparency, and compliance by traders, as some of the factors that can help increase revenue collection. Delay in clearance partly contributes to an increase in smuggling, suppression of invoice or documents and corruption. These phenomena could lead to low revenue mobilization (Bugbilla et al, 2016).

Customs clearance includes clearance by customs authorities and all other border agencies involved (OECD, 2013). Delays in traffic clearance has a significant impact on performance of customs at Ports of Entry (Zamora-Torres *et al.*, 2013). The World Customs Organisation (2009) points out that if interventions and inspections are not properly managed, the result is slow clearance times. While border clearance processes are among the most troublesome links in the global supply chain, they are especially so in poor countries, where it frequently takes three times as many days to import goods as it does in rich ones. Imports to poor countries require nearly twice as many documents and six times as many signatures (World Bank, 2006).

In Africa, the difficulties are particularly great: excessive physical inspections are a major source of delays there, and the time between accepted customs declaration and customs clearance is four days, while in OECD countries it is one (Arvis *et al.*, 2007). For importing or exporting goods, landlocked countries face the time equivalent of at least three or four clearance processes, while coastal countries face only one. On the North-South corridor for example, it takes on average 39 hours to enter Zambia from Zimbabwe at Chirundu border-post (Curtis, 2009). Figure 2.5 shows, the time taken for clearance of goods through customs is highest in the bottom quintile, whereas clearance of imports in the bottom quintile is ten times higher than in the top performer quintile. Notably, in addition the

clearance time significantly increases when goods are physically inspected. Border management reforms, therefore, need to focus on the prevalence of physical inspection, proliferation of procedures, and red tape in low performance countries. The source of underperformance can be also of exogenous nature to the supply chain, the quality of service, or the speed of clearance of goods (World Bank, 2012). Figure 2.5 shows the median import lead time and average clearance time (in days) Averaged by LPI Quintile.

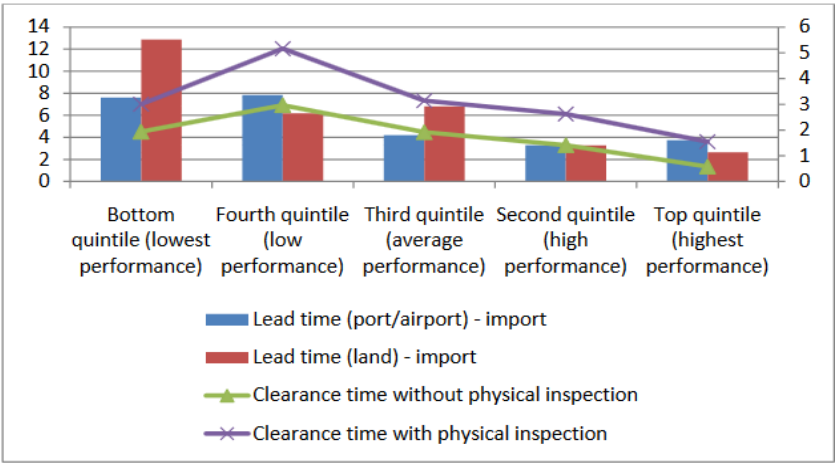


**Figure 2.5:** Median import lead time and average clearance time *(The World Bank Connecting to Compete, 2010)*

Muchori (2013) underscores the fact that there is need to improve the goods clearance process by implementing measures that will establish an elaborate risk management system that will remove bureaucracies, allow faster clearance for shippers and eliminate the need for physical inspection. Streamlining clearance process allows various regulatory controls (e.g. veterinary, phytosanitary, agricultural) to be managed through a single IT interface. This will eliminate red tape, saving time and money as goods will only be stopped once for checks (Meiren, 2016).

Kieck (2017) conceives a one-stop border post (OSBP) as the legal and institutional framework, facilities, and associated procedures that enable goods, people, and vehicles to stop in a single facility in which they undergo necessary controls following applicable regional and national laws to exit one state and enter the adjoining state. The OSBP concept calls for the application of joint controls to minimise routine activities and duplications. He also emphasized that through a

"whole of government" approach, the OSBP concept reduces the journey time for transporters and travellers and shortens the clearance time at border crossing points thus reducing traffic congestion.

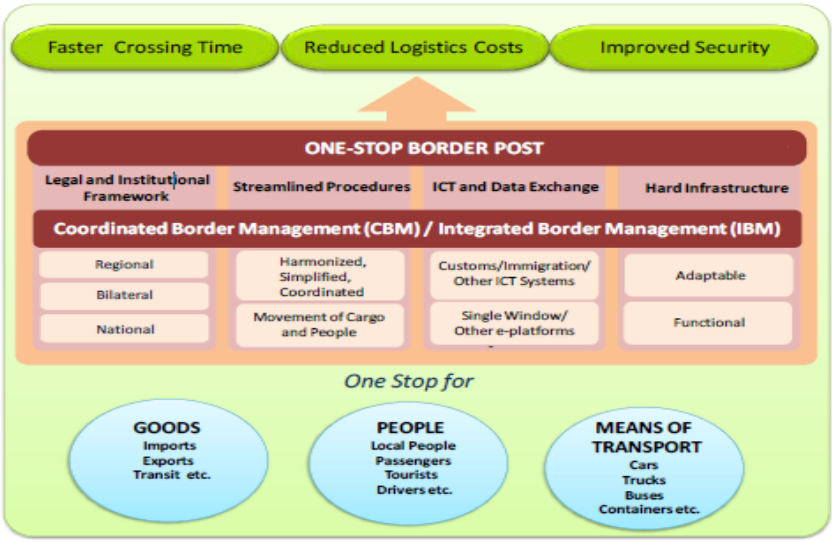


**Figure 2.6:** The OSBP Concept *(Nepad, 2017)*

The OSBP concept consists of four pillars:

New Partnership for Africa's Development (NEPAD) (2016) asserts that under international law, it is generally agreed that the application of national laws is limited to the territory of a state. Therefore, OSBPs rely on the principle of extraterritorial application of laws, which allows a state to extend the application of specific national laws outside its own territory. Implementation of OSBPs, therefore, demands that a detailed analysis of the legislative, regulatory and institutional framework governing the operations of border agencies is undertaken. At a typical border post, there are several government agencies that are responsible for border controls. For efficient and effective OSBP operations, these agencies need to operate in a coordinated manner to minimise duplications and redundancies (NEPAD, 2016).

According to NEPAD (2016), implementing an OSBP without simplifying and harmonizing border crossing procedures renders an OSBP ineffective. Whereas users would be required to stop once to undertake exit and entry formalities at a

border, subjecting such users to routine and redundant formalities would have little impact on reducing the time spent at the border. The process of reviewing and aligning procedures should be continuous to ensure that OSBPs operate with border crossing procedures that are not only effective but also facilitative and relevant to the prevailing circumstances. Joint operations and the need to observe jurisdiction in an OSBP environment require specific considerations when crafting OSBP procedures (NEPAD 2016).

NEPAD (2016) argues that information technology is a critical component of collaborative single window systems, simplification of documentation, border management, and modernization of customs, immigration, and related services. The increase in the number of travelers along with increases in volumes of vehicular traffic and cargo at borders requires a strategic balance between controls and facilitation. ICT allows for the efficient use of limited resources to manage borders by facilitating intra/interconnectivity of agencies for implementing responsive risk management systems and for understanding mobility and trade patterns.

According to NEPAD (2016), this includes OSBP facilities such as offices for border officials, operational equipment, warehouses, and parking. While all border posts require physical facilities for border operations, the level of facilities required depends on the type and size of operations at a border post. In principle, facilities for OSBP operations should be appropriately functional and not unnecessarily elaborate ("gold-plated") or inadequate (NEPAD, 2016).

The implementation of the Chirundu (Zambia/Zimbabwe) in Southern Africa project began in earnest in 2007 and the OSBP began its operation in 2009. Passengers cross the border in 15 minutes in passenger cars and less than an hour in buses. Final cargo clearance into Zambia, which used to average 3 days now takes one day. At a fixed daily truck cost of US$250-500, this represents a savings of US$500-1,000. Efficiency is also demonstrated by the fact that the commercial terminal, which cleared 150 trucks a day when Chirundu OSBP opened, now clears 400 a day (Muqayi & Manyeruke, 2012).

Malaba (Uganda/Kenya) in East Africa achieved the significant reduction by following soft component measures such as joint operation across both border agencies enabled by EAC law; verification of cargo (where necessary) is conducted by all agencies of both countries at the same time; interconnections of both customs IT systems that allows preparing the documentation process prior to the arrival of the trucks; and streamlined flow of trucks (World Bank, 2013).

The international trading system relies on the fast, low-cost movement of goods through global value chains. Combined with other transportation infrastructure, access to high-quality port infrastructure helps determine a country's integration with international trade flows. Moreover, ports can host a range of value-added services and thus provide significant direct economic benefits to host countries. Despite their importance, ports in many developing countries are characterized by underinvestment, low productivity, inefficient use of resources, high user prices, long delays, and ineffective services (United Nations Conference on Trade and Development, 2011). The short-to-medium term effect of underinvestment in transport infrastructure is traffic congestion which serves as a compromising factor of logistics efficiency (Tanigichi *et al.*, 2007; Stantchev *et al.*, 2005). The infrastructure-related strategies to curb traffic congestion at Ports of Entry are:

The term 'e-government' refers to the 'use of Information Technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees' while 'e-Customs' is the 'use of Information Technology to carry out customs compliance using electronic communications channels replacing paper format customs procedures, thus creating a more efficient and modern customs environment' (Granqvist *et al.*, 2010). Such an integrated system is essential because it integrates the operations of business and government departments and enables the detection of irregularities in business operations and fiscal declarations such as income tax, value-added tax and customs duty.

Wanyanya (2015) postulates that to ensure that there is minimal interaction between private and commercial importations, there is a need for clear demarcation of the two sections so that it is clear where the importer belongs. In addition, the parking bays for commercial vehicles need to be improved to enable effective surveillance. Disorganised and random parking encourages illegal activities through reduced visibility. There is also a need to emphasise to importers that transhipments conducted inside the customs yard should be authorised or supervised by an appropriate officer.

Accompanying the growth of the Internet has been the ability for people, businesses and governments to change the way data is collected, shared and used. In particular, the Internet has enabled cross-border data flows to happen in a networked, dynamic fashion and in real-time (Schwartz, 2010). According to the World Bank's Doing Business 2013 Report, the average number of documents that developing countries take to export have decreased from 9 in 2006 to 8 in 2014 whilst for importing from 11 to 10. The average time taken by developing countries to complete export formalities has decreased from 48 days to 42 and to

import from 57 to 47 days. However, when compared to transit developing countries where the average days to export is 22 days and 27 days to import, the developing countries need to do more to reduce delays in exporting and importing. The broad application of ICT in reducing paperwork, customs clearance, border crossing, and tracking of shipment that is in transit would have a major role to play to reduce traffic congestion and delays in border and transit procedures and formalities, reduce trade transaction costs, and promote further international trade. The use of ICT in terms of e-payments would assist in trade facilitation by eliminating the need to use cash in payments of customs duties, taxes and fees and reduce time at borders and unnecessary costs. Use of the Single Window Concept and the Automated System for Customs Data (ASYCUDA) which use ICTs have greatly improved customs clearance and procedures. This result in improvement in efficiency and competitiveness of LLDCs' exports which is crucial for enhancing their export performance and thereby improved economic growth (Meltzer, 2013).

Organisations, regardless of industry and size, strive to create a strong and positive relationship with their employees. However, employees have various competing needs that are driven by different motivators. For example, some employees are motivated by rewards while others focus on achievement or security. Therefore, it is essential for an organisation and its managers to understand what really motivates its employees if they intend to maximise organisational performance (Lee & Raschke, 2016). According to USAID (2004) more than 40 percent of many developing countries' government revenue comes from Customs collections, and expanded trade can more than offset the revenue impact of lowered tariff rates. To streamline border processing and to collect the maximum due, governments must try to achieve the goal of a well-trained, highly motivated, and productive border control workforce. An effective incentive awards program for Customs and other border control personnel can help achieve this goal. Wanyama (2017) suggested that employees at ports of entry should be trained on customer service and operation handling, handling machines should be increased, employees need to be motivated by paying them extra hours worked i.e. overtime or bonus, documentation process should be shortened, and corruption be stopped.

In most countries, companies engaged in international trade regularly must submit large volumes of information and documents to governmental authorities. This information and documentation often must be submitted through several different agencies, each with its own specific system and paper forms. These requirements constitute a burden both to Governments and to the business community particularly in developing countries. Establishing a Single Window

facility is one means of addressing this problem (Abeywickrama & Wickramaarachchi, 2015). According to World Customs Organisation (2011), the single window concept grew out of efforts to simplify border formalities for traders and other economic operators by arranging for a single electronic submission of information to fulfil all cross-border regulatory requirements. UN/CEFACT (2003) a single window can be described as a system that allows traders to lodge information with a single body to fulfil all import or export related regulatory requirements. In practical terms single window environment provides one entrance, either physical or electronic, for the submission and handling of all data and documents related to the release and clearance of an international transaction. This entrance is managed by one agency, which informs the appropriate agencies and direct combined controls. In a "single automated system" trader can submit electronic trade declarations to the various controlling authorities for processing and approval of a single application thus reducing congestion (Abeywickrama *et al.*, 2015).

This chapter critically reviewed the work done by different authors on traffic congestion and its impact on the performance of customs at Ports of Entry. The chapter presented empirical evidence on conducted case studies and surveys relating to the study. With reference from the above literature, it is clear that there is need to accost more data concerning traffic congestion and its impact on the performance of customs at Ports of Entry to fill the gap and bring more light and understanding on whether traffic congestion is impacting the performance of customs authorities at Ports of Entry.

# CHAPTER 3: Study Design and Methodology

In this chapter, the researcher presents the methodological framework and paradigm used to collect primary data to achieve the research objectives. The chapter critically presents the research philosophy, research design, research method, study population and sample, data collection instruments, data reliability and validity, data collection procedures that the researcher used, data presentation and analysis and ethical considerations.

The researcher used pragmatism research philosophy. The rationale behind the choice of approach is the research questions, where the use of either quantitative or qualitative approaches does not completely address the research problem, whilst a combination of approaches does (Creswell & Plano Clark, 2011). Instead of the method being important, the problem is the most important and researchers should use all approaches to understand the problem statement (Tashakkori & Teddlie, 1998; Rahi, 2017). The pragmatic approach emphasises that multiple realities exist in any given proviso, and that, the researcher's choice of paradigm is dependent on the research question the study is trying to solve (Saunders *et al.*, 2009). The pragmatic approach provides for the use of both qualitative and quantitative research methodologies to collect information and make inquiry into complex phenomenon of social and natural contexts (Creswell, 2009; Morgan, 2007). In addition, the pragmatic research approach is multi-purpose in nature; and therefore, a good tactic that will allow questions to be addressed that do not sit comfortably within a wholly quantitative or qualitative approach to research design and methodology. Saunders *et al.* (2009) contended that pragmatism provided a basis for practical research by integrating different perspectives which help to elucidate the data interpretation process in research. Therefore, a pragmatic approach helps to understand the assumptions that underpin the knowledge and inquiry.

The study used mixed methods approach which is a combination of quantitative and qualitative research methods. This helped researcher to balance between statistically significant findings and socially significant findings of the research study. Questionnaires and interview guides were used to collect quantitative and qualitative data from respondents, this data was then qualified, quantified and statistically analysed to draw meaningful conclusions and recommendations. Quantitative method works on objectives and measure it through actions and opinions which helps the researcher to describe data rather to interpret the data (Rahi, 2017). The qualitative method of data collection was used in this study because according to Moyo (2010), it is descriptive and explanatory. This enabled

the researcher to carry out text analysis of the respondents' verbal narratives. Ihuah *et al.* (2013) argue that the qualitative method appears to be invaluable for the in-depth exploration of a subject area while the quantitative method is recognized to facilitate the discovery of quantifiable information about the area. The indispensable premise of mixed method was that the use of qualitative and quantitative, in rapport would provide a better understanding of the research problem than the use of either one method in a study (Creswell & Clark, 2011). According to Tashakkori *et al.* (2003), this is most of the central premise of the pragmatic philosophical reasoning in research today.

The researcher used an Explanatory Sequential research design. The Explanatory Sequential Design is a type of mixed-methods research design that involves the sequential collection and analysis of quantitative and qualitative data. The key idea behind this design is to use qualitative data to further explain or build upon the initial quantitative results. This design is particularly useful when you want to explore in-depth the reasons behind the patterns observed in the quantitative data. Population is described as all people or items that one wishes to understand (Rahi, 2017). The research site was Beitbridge Border Post. The target population was made up of 170 people. The target population includes customs officials, business owners, truck drivers, freight forwarders, and officials from the Zimbabwe Revenue Authority (ZIMRA) and other relevant agencies operating at the ports of entry. These were selected because they are directly involved in the movement and clearance of commercial vehicles at Beitbridge Border Post.

Muchori (2015) describes sampling as the process of selecting individuals or objects from a population so that the selected group contains elements representative of the characteristics found in the entire group. Due to time and financial constraints, it was not logistically possible to include all the accessible population in the study therefore a sample representative of the population was used. The study used stratified random sampling simple random sampling. Stratified random sampling is a probability sampling method whereby each subgroup called strata is given an equal opportunity to be selected randomly while simple random sampling is whereby each unit of the population has an equal probability of inclusion in the sample (Rahi, 2017). Stratified was used in this study because it helped the researcher to divide the target population into homogeneous groups or strata so that all the groups from the population are represented in the sample. The strata were comprised of managers, supervisors, officers, clerks and drivers. Simple random sampling was then used to select the subjects from each group.

Muchengetwa (2005) highlights that there are several reasons for drawing samples from the study population including cost, timeliness, accuracy and predictability. The sample size for this study was calculated using Krejcie &Morgan (1970);

$$S = x^2NP(1 - P) \div [d^2(N - 1) + x^2P(1 - P)$$

Where:

$x^2$ = the table value of chi-square for one degree of freedom at the desired confidence level (3.841);

N = the population size;

P = the population proportion (assumed to be 0.50 since this would be the maximum sample size); and

d = the degree of accuracy expressed as a proportion (0.05)

S=3.841 (170) (0.5) (1-0.5) ÷ [0.05(170-1) +3.841(0.5) (1-0.5)]

S=118

The sample size for this study was 118 people comprised of managers and operational staff in the Customs and Excise division, commercial vehicle operators and customs clearing agents at Beitbridge Border Post. Kwesu *et al.* (2002) argue that a large sample should comprise at least 30 subjects from the entire population. They further argue that when a researcher is sampling from a large population, a sample of about 10% of the entire population is regarded as an acceptable sample size. According to this view, the sample for this study was representative of the target population.

The researcher used questionnaires and interviews for data collection. According to Muchengetwa (2005), a questionnaire must contain must specific, factual questions carefully crafted to probe and gather data buried deeply in the minds, attitudes or feelings of respondents. The researcher translated the research objectives into themes and specific questions for inclusion in the questionnaire. The items on the questionnaire were aligned with the research objectives, research questions articulated in Chapter 1 and the related literature under Chapter 2 of the study.

A self-administered questionnaire was used to collect large amount of quantitative and qualitative data from respondents with a short period of time. The questionnaire was designed to enable the collection of data for achieving research objectives and answering research objectives. The questions on the questionnaire

were organised logically with easier, opening questions being asked first to stimulate the respondent's interest. General questions preceded specific search questions to minimise the conditioning of respondents. Similar questions were grouped into sub-sections.

The questionnaire was used as a data collection instrument in this study because it is less expensive to administer in terms of money and time spent collecting quantifiable data from respondents. The questionnaire was anonymous thereby resulting in more honest responses being gathered. It was also possible to reach many respondents who were geographically dispersed within a short period. Relevancy and accuracy were key elements of the effectiveness of the questionnaire instrument. No unnecessary information was gathered by the questionnaire thus all the information that was collected was relevant and useful for the current study. Hence no information had to be omitted. The questions on the questionnaire were worded in a manner which ensured the collection of correct information.

The questionnaire was anonymously completed to ensure confidentiality of the responses and to protect the identity of the respondents. The questionnaire was pilot tested on a small scale to determine the clarity of the instructions, questions and these were improved before the actual study was carried. A self-administered questionnaire provided limited possibilities of probing respondents to qualify their responses. Voluntary or involuntary non-return of questionnaire was attributed to respondents being away on leave, holiday, off-duty and visiting friends and relatives. Bias could have been introduced by forcing respondents to choose responses from a given set of alternatives. Confidentiality of responses was therefore strongly stressed to improve the response rate.

The researcher used semi-structured interviews. The researcher developed a list of questions and themes in line with the research objectives and questions. Semi-structured interviews were used because according to Tashakkori *et al.*, (1998), they could be used to explore and explain themes that emerged from prior interviews. Semi-structured interviews enabled comprehensive interviews with selected respondents to be done to ascertain their perceptions on the study at hand. Semi-structured interviews were used because they are useful in providing more detailed information in a conducive environment (Boyce & Neale, 2006). In addition, semi-structured interviews were used because the allowed the researcher to probe interviewees and to acquire more meaningful and informative responses from the interviewee's experiences. The interviews were also recorded for interviewees who were willing to be recorded and handwritten notes were also taken down during the interview.

A total of 23 respondents were targeted for the interviews. Of this figure 9 were ZIMRA employees in the Customs division, 7 were commercial vehicle operators while 7 were clearing agents. The researcher was able to use data from interviews to extrapolate more meaningful information from subsequent interviewees based on the themes that were prominent in the findings and this enabled the researcher to corroborate findings and detect areas of discrepancies.

Morris (2001) describes data collection procedure as the process of gathering pieces of information that are necessary for research process. The study collected both primary and secondary data. Hair *et al.* (2008) argues that primary data is raw data and data structures that have not had any type of interpretation. Primary data for this study was gathered directly from research questions to achieve research objectives. Primary data was obtained through use of self-administered questionnaires and semi-structured interviews. The questionnaires were self-administered to a total of 118 respondents and later picked for analysis. In collecting primary data for this study, the researcher was guided by ethical considerations such as voluntary participation, consent of participation, privacy issues, confidentiality and reaction of participants. Collis & Hussey (2009) describes secondary data as data which is collected from existing sources such as internal records, publications and databases. The researcher obtained data from secondary sources such as academic journals, publications, articles on traffic congestion, newspaper articles, reports and institutional documents. Secondary data was used because it is readily accessible, inexpensive to collect, provides corroborative material and a reference point to enhance the credibility and reliability of the study. The researcher observed ethics in the collection of secondary data by acknowledging and referencing all the used sources.

Research limitations are certain features or aspects of the design or methodology that influenced or had an impact on the interpretation of one's research findings. The following limitations were encountered. There was limited prior research in existence on the topic understudy especially in the form of scholarly work which gave a critical view of traffic congestion and its impact on the performance of customs at Ports of Exit and Entry to help lay a more solid foundation for a balanced critique of the problem that was being investigated. However, this challenge was overcome by the fact that information from other revenue authorities and donor organisations like WCO, UNCTAD, World Bank was available, and their experiences helped to complement other limited studies that were done and added credence to the study. This limitation justifies the gap in literature that exits and hence the need for the study.

Some respondents refused to be tape-recorded during the interview. This limitation was however countered by the way that the researcher brought down written by hand notes which resulted in a lengthy process to capture the respondent's exact words. There was also a limitation with the use of self-reported data that is collected in qualitative studies in that it cannot be independently verified as the researcher must take information from respondents' interviews at face value. Further, self-reported data can also contain biases. However, this challenge was overcome by the fact that the researcher tried to remain objective so that the study did not reflect the researcher's personal views and opinions during the study and looked for inconsistencies in data in comparison with other sources to maintain and promote the validity of findings.

Another research limitation encountered in this study is that qualitative research cannot be generalised to the entire population (Saunders *et al.*, 2009). This is however limited by the fact the intention of qualitative research is to generalise ideas so that they can be applied in many contexts and not to necessarily generalise findings to the general population (Saunders *et al.*, 2009). The researcher overcame this limitation by using mixed methods approach which is a combination of quantitative and qualitative research methods. This helped researcher to balance between statistically significant findings and socially significant findings of the research study. The researcher also encountered challenges with accessing information from within the organisation. This was either due to lack of cooperation by certain individuals or due to the sensitivity of the information which had to be kept confidential. The researcher overcame this limitation by accessing the information directly from managers and by using other sources of information that are within the public domain.

Cant *et al.* (2011) describe reliability as the instrument which measures the repetition of the research findings. In addition to being reliable, data must also meet other tests for evidence (Guidance on Testing Data Reliability by City of Austin, 2004). Upon receiving permission from the university to conduct the study, the researcher conducted a pilot test on 20 independent respondents. Connelly (2008) suggests that the sample size of a pilot study to be 10% of the projected sample whereas Isaac & Michael (1995) suggested 10-30 participants. Basing on Connelly & Michael views, the sample size used in the pilot study was considered. The sample size consisted of customs officials, business owners, truck drivers, freight forwarders, and officials from the Zimbabwe Revenue Authority (ZIMRA) and other relevant agencies operating at the ports of entry.

This pilot test was used to evaluate the competence of the data collection instruments in providing relevant information to the research objectives. This

included assessing the effectiveness of the questionnaire and interview in terms of; if the respondents understood the objectives of the study; if the respondents felt comfortable in answering questions; if the wording of the survey was clear; if the time reference was clear to the respondents; if the questions were compatible with the respondents' experience in the matter, and if the questions were clearly understood by the respondents. The justification for using a pilot study was that it enabled the researcher to make necessary amendments to the research instruments to receive more accurate responses and to realign questions more effectively to the research objectives. Furthermore, the respondents used in the pilot study were excluded from the final research as a precaution against any biased responses or compromises.

To measure the reliability of the collection instruments, an internal consistency technique using Cronbach's Alpha was applied. Cronbach's alpha is a coefficient of reliability that gives an unbiased estimate of data generalizability (Zinbarg, 2005). An alpha coefficient of 0.75 or higher indicates that the gathered data are reliable as they have a relatively high internal consistency and can be generalized to reflect the opinions of all respondents in the target population (Zinbarg, 2005). All the variables were found to have a Cronbach alpha coefficient of 0.984.

Data need not only to be reliable but also true and accurate. If a measurement is valid, it is also reliable (Joppe, 2000). The content of the responses given by the respondents was checked against the study objectives. In addition, valuable comments, corrections, and suggestions given by the supervisor assisted in the validation of the instrument. Moreover, all the concepts and theories which were used by the researcher helped in guaranteeing the validity of this study. Joppe (2000) pointed out that evidence of content relevance, representativeness and relevance to the research variables indicates that the research instruments are valid.

Ethics are values that influence or direct moral choices about our behaviour and relations with others (Cooper & Schindler, 2008). There are various ethical issues that one needs to take into consideration which include voluntary participation, consent of participation, privacy issues, confidentiality and reaction of participants (Saunders *et al.*, 2009). The researcher was guided by the ethical considerations through the research. The researcher started by requesting for permission to carry out the research at Beitbridge Border post from ZIMRA which permission was granted. The researcher also sought the consent of respondents to participate in the study to minimise any form of deception. Respondents were also informed about the voluntary nature of their participation and of their right to withdraw partially or completely from the process. Questionnaires from the respondents

were kept locked up in a safe place and the researcher was the only person who had access to the safe. Respondents' privacy was also observed, and respondents were only contacted during normal business hours. The researcher was also cognizant of the respondents; reactions during the interview process in order not to cause any discomfort, stress or embarrassment.

The researcher generated both qualitative and quantitative data. This meant that both numeric and non-numeric data analysis methods had to be utilized. Qualitative data analysis was used on all non-numeric responses made on the research instruments. Descriptive statistics method was applied to analyse quantitative data where data were scored by calculating the percentages, mean and standard deviation. This was done using Statistical Package for Social Sciences (SPSS) computer software. SPSS was considered appropriate since it allows the researcher to follow clear set of quantitative data analysis procedures that leads to increased data validity and reliability and demonstrate the relationship between the research variables. SPSS also assisted in producing frequency tables for descriptive analysis. Secondary data collected were scrutinised to determine their suitability, reliability and adequacy and accuracy.

This chapter has critically covered the methodology that was used for this research study to investigate traffic congestion and its impact of the performance of Customs at Ports of Entry. The study employed a pragmatic philosophy, and mixed methods were used. The study was conducted at Beitbridge Border Post. Primary data was collected using self-administered questionnaires and semi-structured interviews whilst secondary data was obtained from academic journals, publications, articles on traffic congestion, newspaper articles, reports and institutional documents. A pilot study was also carried out to improve the research instruments. The data collected was analysed and presented in the next chapter.

# CHAPTER 4: Traffic Congestion and its Impact on the Performance of Customs at Ports of Entry

This chapter critically presents data that originated from the findings underpinning this research. The study employed SPSS to analyse traffic congestion and its impact on the performance of Customs at Ports of Exit and Entry. The analysis and presentation were done with the aid of secondary data to authenticate the results found. The chapter begins with analysis of the response rate and then explains reliability techniques adopted by the study. Reliability was carried out using Cronbach Alpha which is a coefficient of reliability that gives an unbiased estimate of data generalizability.

The study employed questionnaires and interview guides for data collection. These instruments were aligned with the research questions. Interviews were used as a backup to ensure that all the required data was gathered from the respondents. The response rates for the research instruments used in this study are presented in Table 4.1 and Figure 4.1.

Out of the 118 questionnaires administered to managers, operational staff in the Customs and Excise division, commercial vehicle operators and customs clearing agents, 96 were filled and returned translating to a response rate of 81.4%. The high response rate of 81.4% facilitated the gathering of sufficient data that could be generalized to determine traffic congestion and its impact on the performance of Customs at Ports of Exit and Entry. This was in line with Orodho (2009) that a response rate in respect to questionnaires which is above 50% contributes towards the gathering of sufficient data that could generalized to represent the opinions of respondents about the study problem in the target population. The response rate for questionnaires is presented in Table 4.1.

**Table 4.1:** Response rate (Primary data)

| | | Frequency | Percent |
|---|---|---|---|
| Valid | Responded | 96 | 81.4 |
| | Not Responded | 22 | 18.6 |
| | Total | 118 | 100.0 |

The reason for a high response rate can be attributed to the fact that the questionnaire was pilot tested before the actual study to improve the questions. In

addition, the questionnaire was easy to understand and free from errors. Moreover, a high response rate can also be attributed to the fact that respondents were given ample time to read, understand and complete the questionnaire.

Due to limited time and resources, it was not possible to interview all the respondents. A total of 23 respondents were targeted for the interviews including ZIMRA employees in the Customs division, commercial vehicle operators and clearing agents. Out of the 23 interviews scheduled, 17 were held giving a response rate of 73.9%. The response rate is presented on Figure 4.1.

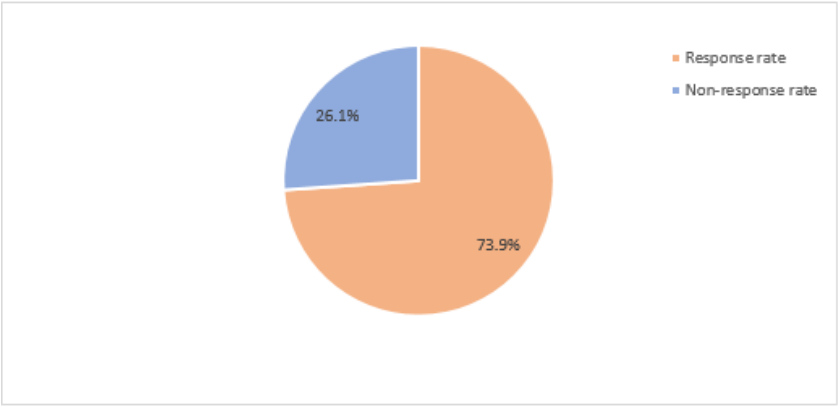


**Figure 4.1:** Response rate for interviews *(Primary)*

Punch (2008) rated the response rate for interviews and survey in the following order: 50% is adequate, 60% to be good, 70% as very good and a response rate above 80% is considered excellent. Basing on Punch's rating the response rate for this study in respect to interviews is very good.

To test reliability this study used Cronbach's alpha as a diagnostic measure which assesses the consistency of entire scale, since it is the most widely used measure. The lower limit for Cronbach's alpha is 0.70, although it may degrease to 0.60 in exploratory research (Hair *et al.*, 2010). A coefficient alpha of 0.80 or higher indicates that the gathered data are reliable and a relatively high internal consistency and can be generalized to reflect opinions of all respondents in the target population (Zinbarg, 2005). The Cronbach's Alpha test of the questionnaire used in this study resulted in a value of 0.984. Basing on Zinbarg's view, the questionnaires used were reliable. The results of the reliability analysis are summarized in Table 4.2.

**Table 4.2:** Reliability Statistics

| Cronbach's Alpha | N of Items |
|---|---|
| .984 | 20 |

The respondents were asked to indicate their gender status and their responses are presented on Table 4.3.

**Table 4.3**: Gender (Primary data)

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | female | 30 | 31.3 | 31.3 | 31.3 |
| | male | 66 | 68.7 | 68.7 | 100.0 |
| | Total | 96 | 100.0 | 100.0 | |

The descriptive statistics of the study brings to the fore the fact that 68.7% were male while 31.3% were female. This implies that male respondents participated more in the study. However this appears not to be the representative of the gender structure of the Zimbabwean population where the female to male ratio stands at 52% and 48% respectively (ZimStats, 2012). However this does not translate into more women in leadership positions. This result is in agreement with results found in a study by Zimbabwe Gender Commission titled measuring differences on Board of Directors in 2015 which established that out of 406 directors in the private sector, 10% were women and out of 64 companies on the Zimbabwe Stock Exchange female constituted only 4.68%.

In addition, the above findings can be attributed to the fact that the logistics and transport sector has traditionally been associated with physical work and consequently considered a masculine sector. This involves the performance of relatively difficult, hard manual physical labour and being away from home base for road motor crew as they will be crossing the border. Moreover, woman involved in the population usually will be carrying out clerical work with a few holding managerial positions. A study by the United States Labour Force in 2015 revealed that there is still a huge gap between the number of women and men working in the logistics and transportation sector as women constitutes 22.6% while men constitute 77.4%.

It was important to establish the highest academic qualifications held by the study respondents to ascertain if they were equipped with relevant knowledge on traffic

congestion and its impact on performance of Customs at Ports of Entry. **Table 4.4** shows the highest academic qualifications of respondents.

Table 4.4: Highest Academic Qualification (*Primary data)*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Ordinary Level | 17 | 17.7 | 17.7 | 17.7 |
| | Advanced Level | 13 | 13.5 | 13.5 | 31.3 |
| | Degree | 35 | 36.5 | 36.5 | 67.7 |
| | Masters | 24 | 25.0 | 25.0 | 92.7 |
| | Doctorate | 7 | 7.3 | 7.3 | 100.0 |
| | Total | 96 | 100.0 | 100.0 | |

As presented in Table 4.4 above a majority 36.5% had Degree, 25% had Masters Degrees, 17.7% had Ordinary level qualification level, 13.5% had Advanced level qualifications and a minority of 7% had Doctorate degrees as their highest academic qualification. These means that most of the respondents understood the nature of the study problem. This concurs with Joppe (2000) that during research process, respondents with technical knowledge on the study problem assist in gathering reliable and accurate data on the problem under investigation. This demonstrated that most of the respondents were knowledgeable to understand the study problem and thus provided the study with reliable information on traffic congestion and its impact on performance of Customs at Ports of Entry.

The respondents were asked to indicate their highest professional qualifications, and their responses are presented on Table 4.5.

**Table 4.5:** Highest Professional Qualification *(Primary data)*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Certificate | 36 | 37.5 | 37.5 | 37.5 |
| | Diploma | 30 | 31.3 | 31.3 | 68.8 |
| | HND | 19 | 19.8 | 19.8 | 88.5 |
| | Post Graduate Diploma | 7 | 7.3 | 7.3 | 95.8 |
| | Other | 4 | 4.2 | 4.2 | 100.0 |
| | Total | 96 | 100.0 | 100.0 | |

It was apparent from the study findings that 37.5% of the respondents had certificates, 31.3% had diplomas, 19.8% had HNDs, 7.3% had post graduate diplomas and 4.2% had other professional qualifications. This result shows that all of the respondents are well educated and capable of understanding the purpose of the study and hence able to understand and interpret the research questions. The deduction of the above statistics in respect to certificates can be attributed to the requirements of the Road traffic Act (Chapter 13:11) which requires every driver to possess a drivers licence or certificate of competence.

The study comprised ZIMRA employees in the Customs and Excise division, employees from commercial vehicle operators and customs clearing agents at Beitbridge Border Post. The respondents were asked to indicate their work positions, and their responses are presented on Table 4.6.

**Table 4.6:** The work positions of respondents *(Primary data)*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Managers | 14 | 14.6 | 14.6 | 14.6 |
| | Supervisors | 29 | 30.2 | 30.2 | 44.8 |
| | Officers | 27 | 28.1 | 28.1 | 72.9 |
| | Clerks | 16 | 16.7 | 16.7 | 89.6 |
| | Drivers | 10 | 10.4 | 10.4 | 100.0 |
| | Total | 96 | 100.0 | 100.0 | |

The study was made up of employees from different levels of management. The study findings above shows that 14.6% were managers, 30.2% were supervisors, 28.1% were officers, 16.7% were clerks while 10.4% were drivers. These findings show that the study was only made up of respondents who were directly involved in the formulation of policies, measuring performance, clearance and movement of commercial vehicles thus improving the reliability and validity of study findings.

To examine the causes of traffic congestion at Beitbridge Border Post, respondents were asked to indicate the causes of traffic congestion on a Likert scale of 1-5 where 1=strongly disagree, 2= disagree, 3= not sure, 4= agree and 5= strongly agree. The responses given by the respondents enabled the researcher to calculate the mean and standard deviation to measure the variation in the opinion of respondents on the causes of traffic congestion. Their responses are presented in Table 4.7:

**Table 4.7:** Causes of Traffic Congestion at Beitbridge border post *(Primary data)*

| | Mean score | Mean response | Std. Deviation |
|---|---|---|---|
| Customs Inefficiencies | 4.32 | Agree | 1.30 |
| Inadequate & poorly managed infrastructure | 3.72 | Agree | .926 |
| Lack of integrating activities | 3.80 | Agree | 1.18 |
| High traffic volume | 4.02 | Agree | .88 |
| Delays in vehicle inspection | 4.22 | Agree | .98 |
| Inadequate staffing levels | 4.00 | Agree | .76 |

Table 4.7 shows the study findings in respect to the causes of traffic congestion at Beitbridge Border Post during the period 2013 to 2016. The study findings indicate that customs inefficiency was a cause of traffic congestion with a mean score and standard deviation of (M=4.32, SD=1.30). These results suggest that outdated and cumbersome systems, along with overly bureaucratic border clearance processes imposed by customs and other agencies, significantly delayed the clearance of imports, exports, and transit goods, leading to increased traffic congestion. These findings were corroborated by findings from interviews. Other previous studies agree with this finding for example Bugbilla and Asamoah (2016) found that traffic congestion at Ports of Entry is largely attributed to physical examination, tariff classification, goods valuation and delay in receiving permits and exemptions from institutions. A Report by B&FT (2015) shows that excessive physical examination of goods at the Tema harbour, by 23 agencies was a major cause of congestion in clearing goods. In addition, a study by Feidieker (2011) revealed that while COMESA has harmonized transit documentation it is still missing within the SADC region for example, when a consignment from Durban to Malawi the same information is declared seven times at different borders posts resulting in large queues at border terminals.

The study findings also shows that inadequate and poorly managed infrastructure had a mean of 17.72 and a low standard deviation of 0.926 indicating a small variation in opinion of respondents. This result shows that there was a small variation in the opinions of the respondents. Infrastructure at Ports of Entry includes road and truck parking bays, commercial offices, office space, inspection bays, bridge development, truck and baggage scanners, information and communication technology, surveillance technology. This implies that Beitbridge Border Post was characterised by various infrastructure constraints during the period understudy. This finding is supported by Downie (2008) who pointed out that traffic congestion occurs when the volume of vehicular traffic is greater than the available road infrastructure and capacity. The findings for this study also

correlate with findings by an Interim Report of the Canadian Senate Committee on National Security and Defence (2005) announces that infrastructure deficiencies caused traffic congestion at the Windsor-Detroit crossing and costs the Ontario economy $7 million in lost production. Waterman *et al.* (2009) found that traffic congestion at Ports of Entry is exacerbated by inefficient rail services and lack of inspection equipment like scanners.

The study findings also shows that lack of integrating activities of border management agencies was a cause of traffic congestion at Beitbridge Border Post as it had a mean of 18.30 and standard deviation of 1.180 indicating a small variation in opinion of respondents. This can be attributed to the level of bureaucracy and uncoordinated data and document requests by different agencies which translates into congestion and delays. From the interviews conducted, a majority of 72% of the interviewees explained that other border management agencies such as the police and other government agencies were the major source of delays. This finding agrees with findings from many previous studies. The Doing Business (2012) report most of the traffic congestion and delays in the import export process are due to the time take it in the document's preparation. A study by the World Trade Organisation (1998) shows that in some nations particularly in Africa, non-harmonization of systems and too many documentations all increase the paperwork so involved to 4 times. This results in unnecessarily prolonged release waiting times accounting for 20% of total transport time and 25% of transport costs. A recent study by African Development Bank (2012) reported that the customs environment in the Southern and Eastern African sub-region is characterized by a lack of coordination among the multiple government agencies on both sides of borders. This raises the common challenge of the duplication of procedures at each border, which results in traffic congestion and fraud.

To identify the challenges faced by Customs in traffic clearance at Beitbridge Border Post, respondents were asked to indicate the challenges on a Likert scale of 1-5 where 1=strongly disagree, 2= disagree, 3= not sure, 4= agree and 5= strongly agree. The responses given by the respondents enabled the researcher to calculate the mean and standard deviation to measure the variation in the opinion of respondents. Their responses are presented in Table 4.8.

**Table 4.8**: Challenges faced by Customs in traffic clearance at Beitbridge border Post *(Primary data)*

| Challenge | Mean score | Mean response | Std. Deviation |
|---|---|---|---|
| Corruption | 4.31 | Agree | 1.22 |
| Insufficient state of supporting infrastructure | 4.03 | Agree | 0.97 |
| Illicit Trade and Customs Violations | 4.47 | Agree | 1.08 |
| Contribution of various agencies to customs delays | 4.02 | Agree | 0.85 |
| Systems incompatibility | 4.59 | Agree | 0.94 |

The study findings in respect to the challenges faced by Customs at Beitbridge Border Post reflect that corruption had a mean score and standard deviation of (M=4.31, SD=1.22). This implies that customs officials and other border management agencies are using their discretionary powers and opportunities to extract bribes. These results were backed by the findings from the interviews where 100% of the interviewees pointed out that wrong declaration of goods brings risks so much that customs officers might reveal cheating during the inspection of cargo. Corruption in border control and customs authorities most often manifests itself either as a collusive form of corruption to avoid taxes and tariffs or as coercion to speed up routine procedures (the public official requests the bribe) (Wickberg, 2013). This finding on corruption has been supported by many scholars such as Buyonge and Kireeva (2008) who reported that sometimes it is easier and cheaper for businessmen to bribe a customs officer than to discharge all duties or to avoid paying customs duties by wrongly declaring goods at customs. In addition, this finding also correlates with the findings by Mpumela (2012) who found that corruption at ZIMRA is rampant at border posts even though ZIMRA have zero tolerance for corruption.

The study findings also lay bare the thinking that insufficient state of supporting infrastructure was a challenge faced by Customs during the period understudy as it had a mean score and standard deviation of (M=4.03, SD=0.97). This implies that Infrastructure such as road and truck parking bays, commercial offices, inspection bays, office space, housing, bridge development, information and communication technology, surveillance technology, and truck and baggage scanners were inadequate at Beitbridge Border Post. These findings were reinforced by findings from the interviews conducted by the researcher where 96% of the interviewees elaborated that insufficient state of infrastructure hinders efficient cargo evacuation and slows down the clearance process. These findings are consistent with other empirical studies such as a study by Mashiri & Chakwizira (2016) who confirm that insufficient state of supporting infrastructure is an impediment at land Ports of Entry in South Africa. Nyema (2014) argues that infrastructure is the necessary condition for efficient cargo handling operations

and adequate infrastructure is needed to avoid congestion, foster trade development and securing connectivity for economies heavily dependent on international trade.

The study findings bring to light that illicit trade and customs violations had a mean score and standard deviation of (M=4.47, SD=1.08). This implies that there was duty evasion at Beitbridge Border Post in the form of outright avoidance of official customs controls, under-declaration of goods, undervaluation of goods, misclassification of goods, falsification of documents, collusion with tax authorities and smuggling. This finding agrees with the African Forum and Network on Debt and Development (AFRODAD) (2014) which approximates that between 2009 and 2012 cash-strapped Zimbabwe lost USD2.79 billion through illicit financial flows, which represents nearly half of the country's national budget of USD4 billion. Araia (2009) found that customs officials are reportedly paid regular 'stipends', bribed on an ad hoc basis, and encouraged using improper influence, to make smuggling possible in various ways and to protect the smugglers from arrest and prosecution.

It was apparent from the study findings that the contribution of various customs agencies to customs delays was a challenge faced by ZIMRA at Beitbridge Border Post as it had a mean score and standard deviation of (M=4.02, SD=0.85). This can be attributed to the fact that the border agencies (police officers, immigration, state security agents, vehicle Inspection departments, and health and customs officers) have different missions at ports and borders and each agent endeavours to satisfy its requirements. The array and variety of sometimes uncoordinated data and document requests by different agencies doubles the bureaucracy at border posts, which translates into congestion and delays. This finding agrees with the findings by Barka (2012) who reported that the customs environment in the Southern and Eastern African sub-region is characterised by a lack of coordination among the multiple government agencies on both sides of borders which, in turn, increases the potential for fraud, the need for risk management and delays customs clearance processes. Savage *et al.* (2013) found that the burdensome paperwork was the reason for holdups in customs.

The study findings shows that systems incompatibility had a mean score and standard deviation of (M=4.59, SD=0.94). This shows that system incompatibility was a challenge faced by ZIMRA at Beitbridge Border Post from 2013 to 2016. This implies that there was lack of harmonization between the software used by different agencies such as the South African Revenue Services meaning customs clearance was duplicated in some instances. This finding agrees with findings by

Mutombodzi (2007) who found that customs automated systems in most African regions are not interfaced and therefore this poses a serious challenge in ensuring that goods have left the country and are accounted for in the next transit country and those acquittals are genuine and authentic.

The study also examined the performance measures of Customs at Ports of Exit and Entry. A Likert scale of 1-5 where 1=strongly disagree, 2= disagree, 3= not sure, 4= agree and 5= strongly agree was used to measure the responses. Table 4.9 shows the responses.

**Table 4.9:** Performance of Customs at Ports of Exit and Entry *(Primary data)*

| | Mean score | Mean response | Std. Deviation |
|---|---|---|---|
| The average time taken to clear goods has increased. | 4.01 | Agree | 1.04 |
| The total revenue collected from duties, taxes, and fees at the ports of entry has increased. | 4.19 | Agree | 0.88 |
| The number of fraudulent activities or smuggling cases detected has decreased. | 4.23 | Agree | 0.76 |
| The level of customer satisfaction levels regarding customs services has decreased | 3.89 | Agree | 1.14 |
| The number of transactions handled per staff member has decreased | 3.92 | Agree | 0.95 |
| The rate of errors in customs documentation and processing has decreased | 4.06 | Agree | 1.01 |
| There is high compliance with standard operating procedures and regulations. | 4.00 | Agree | 0.91 |

The study findings above show that the number of fraudulent activities and smuggling cases has increased represented by a mean score and standard deviation of (M=4.23, SD=0.76). This implies that there has been a significant rise in illicit activities at the border, potentially due to lapses in security measures and oversight. In addition, it can also mean that sometimes customs officials would delay the initiation or conclusion of customs procedures until a bribe is offered to them. This result is supported by Hors, (2001) who reported that customs officials would create or threaten to create unwarranted complications in the clearance process. This often takes the form of officials conducting examinations in extreme detail, or requesting documents that are difficult to adduce, or sending the cargo for further controls such as quarantine or any other unnecessary actions that may complicate the clearance process. In addition, a study by Ndenga & Ayuma (2013) confirms that delays in traffic clearance is one of the root causes of corruption at Ports of Entry.

The study findings above show the average time taken to clear goods has increased at Beitbridge Border Post as it had a mean score and a standard deviation of (M=4.01, SD=1.04) indicating that customs clearance processes have become more time-consuming, likely due to inefficiencies such as outdated procedures, inadequate infrastructure, or increased scrutiny and inspections. The increase in clearance time may also reflect a higher volume of goods being processed or more stringent enforcement of regulations, leading to delays. This finding correlates the findings by Arvis *et al.* (2007) who reported that in most African countries excessive physical inspections are a major source of delays there, and the time between accepted customs declaration and customs clearance is four days, while in OECD countries it is one day.

The study sought to establish the impact of traffic congestion and the performance of Customs at Ports of Exit and Entry. The scores of the variables to be regressed were computed through factor analysis and then saved as dummy variables. The researcher then conducted a regression analysis to explain this relationship using SPSS version 21. The results obtained are presented and discussed below;

**Table 5:** Model Summary

| Model | R | $R^2$ | Adjusted R2 | Std. error of the Estimate |
|---|---|---|---|---|
| 1 | .910 | .824 | .717 | .231 |

The study sought to establish the impact of traffic congestion on the performance of Customs at Ports of Exit and Entry. The research findings indicate that there is a strong relationship ($R^2$= 0.824) between traffic congestion and the performance of Customs. The result of the study also indicates that the value of adjusted $R^2$ is 0.717. This implies that 71.7% of the variance in Customs performance can be accounted for by traffic congestion. The remaining 28.3% can be explained by other variables which were not included in the model and the chance of variations.

**Table 6:** Analysis of Variance (ANOVA) *(Research Data)*

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| | Regression | 113.682 | 5 | 22.736 | 49.09 | .001[b] |
| 1 | Residual | 52.393 | 113 | 0.463 | | |
| | **Total** | **166.075** | **118** | | | |

a. **Dependent Variable:** Performance

b. **Predictors: (Constant),** customs inefficiencies, inadequate and poorly managed infrastructure, high volume of traffic, delays in vehicle

inspection, inadequate staffing levels, poor communication between agencies

From the ANOVA statistics, the study established that the regression model had a significant level of 0.1%, indicating that the data was ideal for concluding the population parameters as the significance value (p-value) was less than 5%. The calculated value of the dependent variable was greater than the critical value (49.09>4.87); this indicates that all the causes of traffic congestion identified have a statistically significant impact on the performance of Customs at border posts. The significance value was less than 0.05 indicating that the model was significant and a good fit for the data collected.

**Table 4.15:** Coefficients of Determination (*Research Data)*

| Model | Unstandardized | | Standardized | T | Sig. |
|---|---|---|---|---|---|
| | Coefficients | | Coefficients | | |
| | B | Std. Error | Beta | | |
| (Constant) | 1.560 | .637 | | 2.338 | 1.560 |
| Customs inefficiencies | .461 | .111 | .320 | 4.154 | .000 |
| Inadequate and poorly managed infrastructure | .470 | .114 | .331 | 4.206 | .001 |
| High volumes of traffic | .408 | .109 | .310 | 4.038 | .011 |
| Delays in vehicle inspection | .440 | .112 | .313 | 4.260 | .003 |
| Inadequate staffing levels | .411 | .104 | .320 | 4.312 | .000 |
| Poor communication between agencies | .426 | .115 | .318 | 4.122 | .001 |

a. Dependent Variable: Performance

From Table 4.13 above it is evident that at 95% confidence level, all the predictors have a positive relationship with the performance and are statically significant. Positive effect was reported for all the independent variables with Customs inefficiencies (t= 4.154, p= 0.000), Inadequate and poorly managed infrastructure (t= 4.206, p= 0.001), High volume of traffic (t= 4.038, p = 0.011), Delays in vehicle inspection (t = 4.260, p= 0.001), Inadequate staffing levels (t=4.312, p=0.000) and Poor communication between agencies (t=4.122, p=0.001) produced statistically significant values for this study of (high t-values, $p \leq 0.05$). The constant value (1.560) shows that if the traffic congestion identified were all rated zero, the performance of customs at ports of entry would be reduced by 1.560. In this study, the stochastic error term was assumed to be zero since the study captured the causes of traffic congestion.

The study further revealed that: a unit decrease in customs inefficiencies would lead to a performance improvement of 0.461; a unit decrease in inadequate and poorly managed infrastructure would lead to a performance increase of 0.470; a unit increase in the management of high volumes of traffic would lead to a performance increase of 0.408; a unit increase in high traffic volumes would result in a performance change of 0.440; a unit increase in staffing levels by 0.411 would contribute to improved performance, and a decrease in poor communication between agencies would lead to a performance increase of 0.426.

Data collected for this study was adequate to meet the research objectives and will immensely contribute to the drawing of meaningful conclusions. The data collected was analyzed using SPSS. All research questions were analysed and interpreted depending on the information gathered. The respondents and interviewees provided valuable data on traffic congestion and its impact on the performance of Customs at Ports of Entry. The researcher made conclusions of the entire study and gave recommendations basing on data gathered in Chapter Four and these are presented in the next Chapter.

# CHAPTER 5: Towards Congestion-Free Point of Entries

This chapter critically discusses the summary of the key findings along the study objectives. It then draws conclusions based on these findings and discussions are put forth for the recommendations of the study based on both policy and practice. Finally, the chapter presents the recommendations and further areas of research.

The conclusions for this study were made in accordance with the study objectives and research findings.

The research findings revealed that customs inefficiencies, inadequate and poorly managed infrastructure and lack of integrating activities of border management agencies were the causes of traffic congestion at Beitbridge Border Post during the period 2013 to 2016.

The study's findings publicised that corruption, insufficient state of supporting infrastructure, illicit trade and customs, contribution of various agencies to customs delays and systems incompatibility were the challenges faced by ZIMRA at Ports of Entry during the period understudy.

The study's findings confirmed that the level of traffic congestion at Ports of entry is increasing and impairing the performance of Zimbabwe Revenue Authority Ports of entry.

Considering the above conclusions, it can be recommended that:

To reduce traffic congestion and improve performance of Customs at Ports of Entry, there is need to improve the clearance process of goods by implementing measures that will establish an elaborate risk management system that will remove customs inefficiencies, bureaucracies, allow faster clearance for commercial vehicles and eliminate the need for physical inspection. Through streamlining the clearance process excessive customs inspections, lack of transparency and predictability, insufficient application of automated systems and too many documentary requirements for a single transaction will be easily resolved.

There is need to improve hard infrastructure at Beitbridge Border Post to reduce traffic congestion and improve performance of Customs at Ports of Entry. This includes improving road and truck parking bays, commercial offices, office space, inspection bays, bridge development, truck and baggage scanners, information and communication technology, surveillance technology. For example, a single

lane dedicated to commercial vehicles is grossly inadequate for the volume of traffic going through the border. This urgently needs to be updated. The area should be redesigned so that the necessary transport and economic infrastructure, such as the taxi rank and informal traders' space, does not interfere with commercial traffic.

There is also need to upgrade soft infrastructure such as truck scanners used by ZIMRA to deal with high traffic volumes. ZIMRA's information technology also needs to be upgraded to prevent the frequent communication crashes between the Beit Bridge and Harare offices, and to capacitate the head office's computer system to deal with the high volume of traffic.

ZIMRA should adopt a single window facility. The use of a single window facility will allow commercial vehicles to lodge information with a single body to fulfil all import or export related regulatory requirements. A single window environment provides one entrance, either physical or electronic, for the submission and handling of all data and documents related to the release and clearance of an international transaction. This reduces queues at Ports of Entry which in turn reduces traffic congestion.

The Zimbabwean and South African governments should embark on a programme to establish a One Stop Border Post (OSBP). OSBP concept promotes a coordinated and integrated approach to facilitating trade, the movement of people, and improving security. This eliminates the need for travellers and goods to stop twice to undertake border crossing formalities. The OSBP concept calls for the application of joint controls to minimise routine activities and duplications. Through a "whole of government" approach, the OSBP concept reduces the journey time for transporters and travellers and shortens the clearance time at border crossing points.

Further research should be undertaken on traffic congestion and its impact on the efficiency of freight logistics. Research should also be conducted on the indirect and consequential costs of traffic congestion. This will require an in-depth analysis to identify the actual indirect costs incurred by freight companies and the effect on the national economy.

# References


Abeywickrama, M.H., & Wickramaarachchi, W.A.D.N. (2015). Study on the Challenges of Implementing Single Window Concept to Facilitate Trade in Sri Lanka: A Freight Forwarder Perspective. *Journal of Economics, Business and Management, 3, 9, 883-888.*

Adan, I., & Resing, J. (2015). Queuing Systems. Department of Mathematics and Computing Science. Eindhoven University of Technology, Netherlands. http://www.win.tue.nl. Accessed on 11/10/17

Adebajo, A. (2010). *The Curse of Berlin*: Africa after the cold war. Scottsville: University of KwaZulu-Natal.

Altiok, T., & Melamed, B. (2007). *Simulation Modeling and Analysis with ARENA*. Academic Press

Anderson, U. (2004), Studies in Applied Probability, Papers in honour of Lajos Takacs*, Journal of Applied Probability*, 31, 1.

Araia, T. (2009). *'Report on human smuggling across the South Africa/Zimbabwe border'*. University of Witwatersrand, South Africa.

Armstrong, M., & Baron, A. (1998). *Performance Management:* The new realities, Institute of Personnel and Development, London

Arvis, J, Saslavsky, D, Ojala, L, Shepherd, B, Busch, C., & Raj, A. (2014). *Connecting to Compete 2014 -Trade Logistics in the Global Economy.* The Logistics Performance Index and Its Indicators. Washington, DC.

Arvis, J, Mustra, M, Panzer, J, Ojala, L & Naula, T (2007). Connecting to compete: trade logistics in the global economy. *Global enabling trade report 2007.* World Economic Forum, Davos, Switzerland.

B & FT. (2015). Port bottlenecks to ease drastically-MoTI. B*usiness and financial times,* 1910, 1.

Badoni A. (2001). *On some problems in queuing and scheduling system*. PhD thesis. Garhwali University Srinagar.

Beneke, D. (2001). The role of the SAPS in South African border control mechanisms. *The challenge to South Africa's borderline*. ISS Monograph Series No. 57. Pretoria: Institute for Security Studies

Bovy, P. H. L., & Salomon I. (2002). *Travel Behaviour: Spatial Patterns*. Congestion and Modelling. Cheltenham: Edward Elgar Publishing.

Boyce & Neale, 2006). *Conducting in-depth interviews*. A guide for designing and conducting in-depth interviews for evaluation input: Pathfinder International Watertown, MA

Bugbilla, D., & Asamoah, E.O. (2016). An Analysis of Trade Facilitation at the Ports and Borders of Ghana: Implications on the Mobilization of Government Revenue. *International Journal of Business and Social Science, 7, 111-124*

Buyonge, C., & Kireeva, I. (2008). "Trade Facilitation in Africa. Challenges and Possible Solutions". *World Customs Journal*, 1, 41-55.

Carkeys (2017). What is a commercial vehicle? https://www.carkeys.co.uk/guides/what-is-a-commercial-vehicle. Accessed on 11/10/17

Cant, M. C., Gerber-Nel, C., & Kotze, T.D (2011), *Marketing Research*, Claremont: New Africa Education.

Cantens, T, Raballand, G., & Bilangna, S. (2010). 'Reforming Customs by measuring performance: a Cameroon case study', *World Customs Journal*, 4, 2, 55-74.

CEPS NEWS. (2007). *History and functions*. A newsletter of Ghana customs excise and Preventive service. Anniversary edition.

Cetin, M., & List, H. (2004), A priority queuing model to reduce waiting times in emergency care. *International Journal of Health Care Quality Assurance, 9*, 10-16.

Chime, K. (1980). *Frontiers in queuing*: models and applications in science and engineering, CRC Press.

Christopher, M., Holweg, M. (2011). "Supply chain 2.0": managing supply chains in the era of turbulence. *International journal of physical distribution and logistics management*, 41, 1, 63-82.

Collins English Dictionary (2014). *Collins.co.uk. HarperCollins Publishers Ltd.* https://www.collinsdictionary.com/dictionary/english/commercial-vehicle. Accessed on 27/10/17.

Collier, P., Hoeffler, A., & Pattillo, C. (2001). *Flight Capital as a Portfolio Choice.* World Bank Economic Review, 15, 55-80

Collis, J., & Hussey, R. (2009). *Business research: a practical guide for undergraduate & postgraduate students*. Basingstoke, Hampshire, UK, Palgrave Macmillan

Cox, D. R. (1955). The analysis of Non-Markovian stochastic processes By the inclusion of supplementary variables Proc. *Cambridge Phil. Soc*, 52, 433-441.

Cox, S.A., & Martin, SH. (1997). Planning for future competitiveness with optimized production technology. *Proceedings of the 4th international conference York, UK IEE conference publication*, 398, 227-233.

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). London: SAGE Publication.

Creswell, J. W. (2009). *Research design: Qualitative and quantitative approaches* (3rd ed.). London: SAGE Publication.

Cronbach, L. J. (1951). *Coefficient alpha and the internal structure of tests*. Psychometrika, 16, 297–334

Cross Border Road Transport Agency. (2016). *Annual state of cross border operations report second report* March 2016

Curtis, M. (2009). The Chirundu Border-Post. *SSATP Discussion Paper 10. for International Development*, Washington, DC

Defee C.C., Williams, B., Randall, W.S., & Thomasd, R. (2010). An inventory of theory in logistics and SCM research. *International Journal of Logistics Management*, 21, 3, 404-489.

Djankov, S., Freund, C., & Pham, C.S. (2006). *Trading on Time', a contribution to the report on "Trade Facilitation and Economic Growth*: The Development. Dimension" to the UK Department for International Development (DFID), April 2006.

Downie, A. (2008). The World Worst Traffic Jams time. Available at: http://www.time/world/article/0,8599,1733872,00.html. Accessed on 12/10/17.

Enwurum, H. (2003). Queuing analysis: a useful planning and management technique for radiology. *Journal of Medical Systems, 11*, 413-419

ESA BMO Network. (2010). *Harmonizing Border Procedures in the ESA Region to Facilitate Trade*. http://www.samonetwok.org/esa-bmo-network/publications/2010.html. Accessed on 27/10/17.

Estevadeordal, A. (2017). *Why trade facilitation matters now more than ever*. Economic and social policy in Latin America initiative. Brookings Global, Ceres.

Erlang, A.K. (1909). The Theory of Probabilities and Telephone Conversations, Nyt Tidsskrift for Matematik B 20

Erlang, A.K. (1917). Solutions of Some Problems in the Theory of Probabilities of Significance in Automatic Telephone Exchanges. *Post Office Electrical Engineering Journal,* 10, 189-197

European Union (1998). Road transport: reducing $CO_2$ emissions from vehicles. European Commission.

Ferreira, C., Engelschalk, M., & Mayville, W (2007). The challenge of combating corruption in customs administrations', in J Campos & P Sanjay (eds), *The many faces of corruption: tracking vulnerabilities at the sector level*, World Bank, Washington, DC, 367-86.

Flynn, D.K. (1997). '"We are the border": identity, exchange and the state along the Bénin-Nigeria border', *American Ethnologist*, 24, no. 2, 311-30.

Fishman, R & Wei, S (2004). 'Tax related tax evasion: evidence from "Missing imports" in China', *Journal of Political Economy*, 112, 2, 471-96.

Fitzgerald, L., & Moon, P. (1996). *Performance Measurement in Service Businesses*: Making it Work, London, CIMA

Granqvist, M, Hintsa, J., & Männistö, T. (2010). *'e-Customs study*: private sector views on potential benefits of further electronic customs developments in Switzerland', paper presented at '1st Workshop on IT Innovations Enabling Seamless and Secure Supply Chains, WITNESS 2011', Delft, The Netherlands.

Goes, J., & Simon, M. (2015). Definitions of Terms in Books. http://www.bookrecipes.com/definitions-terms-books/. Accessed on 11/10/17

Goldratt, E. (1999). *Theory of constraints*. North River Press, Great Barrington, Mass.

Goldratt, E.M. (1994). *It's not luck*. North river press, great Barrington, MA.

Gupta, M. C., & Boyd, L. H. (2008). Theory of constraints: a theory for operations management. *International Journal of Operations & Production Management*, 28, 10, 991-1012.

Gupta, M.P., & Khanna, R.B. (2007). *Quantitative Techniques for Decision Making*. Prentice Hall, New Delhi Hair, G, Wolfinberger, M, Oritan, H., & Bush, F. (2008). *Essentials of Business Research Methods*: Wiley.

Hors, I. (2001). Fighting corruption in customs administration: what can we learn from recent experiences? OECD Development Centre, working paper no. 175. http://www.oecd-ilibrary.org. Accessed on 12/10/17

Hummels, D. (2001). *Times as a trade barrier.* Department of economics, West Lafayette

Hummels, D., Ishii, J., & Yi, M. (2000). The nature and extent of vertical specialization in international trade. Journal of international economics.

Hummels, D., & Schaur, G. (2012). "Time as a Trade Barrier." *American Economic Review,* 103, 7, 2935–2959.

Ihuah, P.W., & Eaton, D. (2013). The Pragmatic Research Approach: A Framework for Sustainable Management of Public Housing Estates in Nigeria. *Journal of US-China Public Administration,* 10, 10, 933-944

Intikhab, Q.A, Huapu L, Shi, Y. (2008. Urban transportation and equity. A case study of Beijing and Kairachi. *Journal of transportation research part A*: policy and practice, 42:1

Japan International Cooperation Agency, Africa Department. (2009). *Preparatory study report of Western Africa comprehensive OSBP assistance program formulation*. Study prepared for JICA, Tokyo, March.

Joppe, G. (2000). Testing reliability and validity of research instruments. *Journal of American Academy of Business Cambridge*, 4, 1/2, 49-54.

Kendall, D. G. (1951). "Some problems in the theory of queues", *Journal of Research Statistics*, 13, 151–173, 1951.

Kendall, D. G. (1953). "Stochastic processes occurring in the theory of queues and their analysis by the method of the imbedded Markov chain", The Annals of Mathematical Statistics, 24, 3, 338–354.

Kieck, E. (2017). 'Coordinated border management: unlocking trade opportunities through one-stop border posts', *World Customs Journal*, 4, 1, 3-13.

Khintchine A.Y. (1932). "*Mathematisches Über die Erwortung voreinemöffenthchen Schalter*", Mat. Sb.

Khintchine, A.Y. (1960). *Mathematical Methods in the Theory of Queuing*, Griffin,

Khintchine, A.Y. (1960): *Mathematical Methods in the Theory of Queuing*, Griffin.

Khumalo, S. (2014). Unlocking South African cross border transport challenges: A case study of Beitbridge border post. *Proceedings of the 33rd Southern African Transport Conference. 7-10 July 2014.*

Khumalo, S and Chibira, E. 2015. Finding practical solutions to cross border road transport challenges in SADC: A review of major challenges and prospects. Proceedings of the 34th Southern African Transport Conference. ISBN Number: 978-1-920017-63-7

Kohil, A.K., & Jaworski, B.J. (2009). *Market orientation.* The construct, preposition and managerial implications. *Journal of marketing*, 54, 1-18.

Kolmogrove A. N. (1931). Uber die analytischen Methoden in der Wahrscheinlichkeitsrechnung. *Math.Ann.*104, 415-458.

Kotut, C.K, and Mugambi, F.M 2014. "The Influence of Hinterland Transport Inefficiencies on the Performance of Ports-A Case Study of Kenya Ports Authority", International Journal of Science and Research, **3**, 8, 405- 417,

Krejcie R. V., & Morgan, D. W. (1970). *Determining sample size for research activities.* Educ Psychol Meas.

Kwesu, I., Nyatanga, E.K. & Zhanje, S. (2004). *Business Statistics.* Harare: Zimbabwe Open University Publishers

Kwesu, I., Nyatanga, E.K., & Zhanje, S. (2002). *Business Statistics.* Zimbabwe Open University Publishers.

Lee, M.T., & Raschke, R.L. (2016). Understanding employee motivation and organisational performance: arguments for a set-theoretic approach. *Journal of innovation and knowledge*, 1, 3, 162-169.

Liu, Z. (1995). *The Comparative Performance of Public and Private Enterprises:* The Case of British Ports'. The London School of Economics and Political Science and University of Bath.

Mahesh, K & Lingaiah, J. (2016). Density Based Traffic Signal System. International Journal of Scientific Engineering and Technology Research, 5, 38, 7845-7853.

Marshall, G. (2015). *Writing a literature review.* Synergy: Imaging & Therapy Practice [serial online]. Accessed on 19/10/17.

Martini, M. (2013). Conflict of interest in public procurement. Transparency international. http://www.transparency.org/whatwedo/answer/conflict_of_interest_in_public_procurement. Accessed on 27/10/17.

Mashiri, E & Mpofu, F. (2015). Illicit trade, economic growth and the role of Customs: a literature review. *World Customs Journal.* 9, 2

Meiren T. (2016). *Derivation of a service typology and its implications for new service development*. In: Gummesson E, editor: The Naples Forum on Service 2015. Proceedings. Naples: University of Naples Federico II

Meltzer, J. (2013). The Internet, Cross-Border Data Flows and International Trade. Issues in technology innovation. Issue number 22. Centre of technology and brookings. https://www.brookings.edu/wp-content/uploads/2016/06/internet-data-and-trade-meltzer.pdf

Matsushita, K. (2013). Cross Border Transport Infrastructure (CBTI). For Inclusive and Dynamic Development in Sub-Saharan Africa-JICA. https://www.jica.go.jp/jica-ri/publication/booksandreports/jrft3q00000029aw-att/TICAD_JICA-RI-0800-Chapter8-v3.pdf . Accessed on 12/10/17.

McLinden, G., Fanta, E., Widdowson, D., & Doyle, T. (2011). *Border management modernization*, World Bank, Washington, D.C.

Millar, M. (2014). Transport infrastructure for air cargo and ocean freight. *Africa-the next Big Opportunity, 2*.

Motwani, J.G, Mahmoud, E., & Rice, G. (1994). Quality practices of indian organisations: an empirical analysis. *International journal of quality and reliability management*, 1, 1, 38-43.

Morgan, D. L. (2007). Paradigm lost and paradigm regained: Methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research, 1*, 48-76.

Morse P. M. (1958). *" Queues, Inventory and Maintenance",* New York, Wiley.

Moya, H. (2012). *Border crossing modelling and analysis:* a non-stationary dynamic reallocation methodology for terminating queuing systems. Book Texas A&M University. https://oaktrust.library.tamu.edu/bitstream. Accessed on 12/10/17

Mpogolo, J. (2013). Efficiency analysis on operational performance of container terminals for seaports: a case of Dar es Salaam Port. *European Journal of scientific research*, 23, 4,597-612.

Mpumela, N.T. 2015. *An assessment of the effectiveness of automation as an information technology intervention in curbing customs administrative challenges:* a case of ZIMRA. Book University of Zimbabwe

Muchengetwa. S.M. (2005). Business Statistics Module. Harare, Zimbabwe Open University Publishers.

Muchori, P.K. (2016). The Effects of Road Traffic Congestion on the Efficiency of Freight Logistics: A Survey of the Port of Mombasa. *The International Journal of Business & Management,* 3, 10, 339-370.

Munyanyi, W. (2015). Is infrastructure upgrading an antidote for smuggling? Evidence from Beitbridge Border Post, Zimbabwe. *World Customs Journal*, 9, 1, 103-108

Muqayi, S., & Manyeruke. C. (2015). The Impact of the Chirundu One Stop Border Post in Addressing Border Protectionist Challenges. *Mediterranean Journal of Social Sciences, 6, 2.*

Mussema, A. (2016). *An assessment on determinants of dry port performance*: the case of Modjo dry port. Addis Ababa University School of Commerce Department of Logistics and Supply Chain Management, http://etd.aau.edu.et/bitstream/123456789/12110/1/ABDUREZAK%20MUSSEMA.pdf

Nave, D. (2002). How to compare six sigma, lean and the theory of constraints. *Quality Progress*, 35, 3, 73.

Ndenga, N., & Ayuma, D. (2013). Travel Time Variability: A Review of Theoretical and Empirical Issues, Transport Reviews, 22 (1), pp. 39-54.

Ndikumana, L., & Boyce, J.K. (2011). *Africa's Odious Debts*: How Foreign Loans and Capital Flight Bled a Continent. London: Zed Books.

Nwabuzor, A. (2005). 'Corruption and development: new initiatives in economic openness and strengthened rule of law', *Journal of Business Ethics*, 59, 1/2, 121-38.

O'Hare, O, Makuta, I, Zeev-Bar, N, Chiwaula, L., & Cobham, A. (2014). 'The effect of illicit financial flows on time to reach the fourth Millennium Development Goal in Sub-Saharan Africa: a quantitative analysis'. *Journal of the Royal Society of Medicine*, 107, 4, 148-56

Otley, D., 1999. Performance management: a framework for management control systems research. *Management Accounting Research*, 10, 363–382.

Ojadi, F.I. & Walters, J., (2015). Critical factors that impact on the efficiency of the Lagos seaports. *Journal of Transport and Supply Chain Management,* 9, 1,180, 13:

Onyemejor, V. I. (2015). *Market analysis for future port development to earn Nigeria more competitive advantage in Africa's growing trade*. Unpublished manuscript, Maritime Logistics & Marketing Module, World Maritime University.

Ozigbo, S. (2000). *Quantitative Analysis for Management*. Enugu: Precision printer Publishers, 1st Edition.

Peungpradt, V. (2010). *Port reforms*: On safe anchor for the ports. Presented at the 6th Annual Conference of the National Freight Committee Association of Kenya, Airport Hotel, Mombasa.

PMAESA Secretariat. (2008). *"Consultative Workshop on port congestion in the PMAESA region at the Nyali Beach Hotel on 25-26 September 2008"*. Mombasa Kenya.

Raballand, G., Refas, S., Beuran, M. & Isik, G., (2012). *Why does cargo spend weeks in sub-Saharan African ports? Lessons from six countries*, Directions in development Trade, World Bank. Washington, DC, USA. http://dx.doi.org/10.1596/978-0-8213- 9499-1. Accessed on 12/10/17

Rahi, S. (2017). Research Design and Methods: A Systematic Review of Research Paradigms, Sampling Issues and Instruments Development. *International Journal of Economics and Management Sciences*, 6, 403. doi: 10.4172/2162-6359.1000403

Refas, S. & Cantens, T. (2011). 'Why does cargo spend weeks in African ports? The case of Doula, Cameroun'. *Policy research working paper*, 5565. World Bank Africa Region, Transport Department, Washington DC, USA.

Regioniel, P. (2015). Conceptual framework: a guide step by step guide on how to make one. Empirical research, quantitative research. http//:www.sipmlye ducate.me. Accessed on 1/11/17.

Reid, R. A. (2007). Applying the TOC five-step focusing process in the service sector: A banking subsystem. Managing Service Quality*: An International Journal*, 17, 2, 209-234.

Revolvy (2017). What is a commercial vehicle? https://www.revolvy.com/main/index.php?s=Commercial%20vehicle. Accessed on 12/10/17.

Saaty T. L. (1961). "*Elements of Queuing Theory with Applications*". New York: McGraw Hill.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (4th ed.). Essex: Person Education Limited.

Savage, C. J., Fransman, L., & Jenkins, A. K. (2013). Logistics in Namibia: issues and challenges: original research. *Journal of Transport and Supply Chain Management*, 7, 1, 1-8.

Schragenheim, M., & Ronen, J. (1990). Using queuing theory to increase the effectiveness of emergency department provider staffing. *Academic Emergency Medicine, 13*, 61-68.

Shapiro R.J., & Hasset, K.A (2002). *Conserving Energy and Preserving the Environment*: the Role of Public Transportation. American Public Transportation Association. http//:www.opta.com/resources/reportstandpublications/.../better-health.pdf. Accessed on 16/10/17.

Shayanowako, P. (2013). *A study into the cooperation of border management agencies in Zimbabwe*. Stellenbosch: tralac.

Shoemaker, T.E., & Reid, R.A. (2005). Applying the TOC thinking process: a case study in the government sector. https//www.researchgate.net/publication. Accessed on 17/10/17

Simatupang, T. M., Wright, A. C., & Sridharan, R. (2004). Applying the theory of constraints to supply chain collaboration. *Supply chain Management. An international journal*, 9, 1, 57-70.

Şimşit, Z. T., Günay, N. S., & Vayvay, Ö. (2014). Theory of constraints: A literature review. *Procedia-Social and Behavioral Sciences*, *150*, 930-936.

Slack, N., Chambers, S., & Johnston, R. (2010). *Operations management*. Pearson education, Harlow, England.

Soloaga, I, Wilson, JS & Mejia, A. (2006). Moving forward faster: trade facilitation reform and Mexican competitiveness. *World Bank Policy Research Working Paper 3953, June 2006*. Global Facilitation Partnership for Transport and Trade 2006, Logistics Perception Index Survey, http://www.gfptt.org/lpi: Accessed on 30/10/17.

South African Institute of International Affairs. (2014). *Southern Africa: Regional Business Barriers - Unlocking Economic Potential in Southern Africa*. https://www.saiia.org.za: Accessed on 22/10/17

Schwartz Paul M. (2010). "*Managing Global Data Privacy.*" A Report from Privacy Projects 2009, 10

Stantcher and Whiteing (2005). 'Urban freight transport & logistics).An overview of the European research and policy'. www.transportresearch.info/.../20060831-105348-urban-Fr. Accessed 11/10/17

Tashakkori, A., & Teddlie, C. (2003). *Handbook of mixed methods in social and behavioural research.* London: SAGE Publication. UN-HABITAT.

Tanigichi, T., & Thompson, R. (2007) Challenges faced by the city logistics globally. Available at www.businessteacher.org.ink. Accessed on 11/10/17

Taylor, M.A.P. (1999). An Extended Family of Traffic Network Equilibria and its Implications for Land Use and Transport policies. World Transport Research. *Selected Proceedings from the Eight World Conference on Transport Research, Transport Policy*. Elsevier-Pergamon, Oxford, 4; 29-42.

Teweldeberhan, W. (2012). *Challenges of Customs on Trade Facilitation in Ethiopia:* The case of Customs clearance in ERCA. Masters Book, Addis Ababa University.

Transparency International (2013). Corruption Perception index. http://cpi.transparency.org/cpi2013/results/. Accessed on 27/10/17.

UNECE Trade Facilitation Guide (2016). A tool for simplifying cross-border trade. http://www.tfig.unece.org. Accessed on 13/10/17

UN/ESCAP. (2013). Designing and implementing trade facilitation in Asia and the Pacific

U.S. Agency for International Development. (2004). *Performance incentives for border control officers*. The role of a well-motivated workforce in securing and facilitating trade. USAID

Van Dunem, J & Arndt., C. (2006). 'Confronting the Issue of the Elasticity of Customs Evasion in Mozambique: An Empirical Study. *GTAP Conference on Global Economic Analysis*. Addis Ababa, Ethiopia.

Varma, S. P. (2016). Minimisation of Traffic Congestion by Using Queuing Theory. *IOSR Journal of Mathematics,* 12, 1, 116-122.

Volpe Martincus, C., Carballo, J., & Graziano, A., (2015). "Customs." *Journal of International Economics*, 96, 1, 119–137.

Walsh, B. (2006). "Port Privatization, Efficiency from container Ports (Terminal)." *Journal of transportation research*, Part A., 39, 5, 405 – 424.

Wanyama, T. (2017). Causes of delay in clearance of goods at the port of Mombasa. *International journal of supply chain and logistics*, 1, 1, 22 – 43.

Wanyanya, M. (2015). Is infrastructure upgrading an antidote for smuggling? Evidence from Beitbridge Border Post, Zimbabwe. *World Customs Journal*, 9, 1. http://worldcustomsjournal.org. Accessed on 11/10/17

Waters, D. (2008). *Quantitative Methods for Business*. Prentice Hall, Essex.

Watts, M.A Hekala, W. (2006). Developing Service Standards and Performance Indicators for Customs. Customs Institutional Development, 555.01. Chemonics International, Inc.

Weisbrod, G. Vary, D. & Treyz, G. (2003). Measuring the Economic Costs of Urban Traffic Congestion to Business. *Journal of transportation research Board,* 1839. http://www.edrgroup.com . Accessed on 24/10/17.

Whitt L. (2007). *Queuing networks and Markov chains*: modelling and performance evaluation with computer science applications, John Wiley and Sons

Wickberg, S. (2013). Literature review on corruption in cross-border business. Transparency International. http://www.transparency.org/whatwedo/answer/literature_review_on_corrupion_in_cross_border_business. Accessed on 27/10/17.

Wilmott, P. (2007). 'A review of the European Commission's plans for an electronic customs environment', *World Customs Journal*, 1, 1, 11-17.

Wilson N., & Lee, G. (2015). *Essential elements of maritime transport management in Kenya.* Maritime Publications Limited, Surulere, Mombasa.

Wilson, N (2007). '*Examining the trade effect of certain customs and administrative procedures'*, OECD Trade Policy Working Paper, 42, 26.

Woodrow Wilson School of International and Public Affairs (2011). *Regional Integration in Southern Africa. Binding Obstacles and a Practical Way Forward*. https://www.sadcbankers.org. Accessed on 24/10/17.

Woolfrey, S. (2013). Challenges at Chirundu One-Stop Border Post. Trade Law Centre for Southern Africa (TRALAC). https://www.tralac.org/files/2013/09/Annex-2-TRALAC-Original-Article-from-Website.pdf. Accessed on 24/10/17.

World Customs Organisation. (2011). *Single Windows Implementation*. WCO Research Paper No. 17. http://citeseerx.ist.psu.edu. Accessed on 12/10/17

World Bank (2012) *Connecting to Compete 2012:* Trade logistics in the global economy. The logistics performance index and its indicators. Washington, DC: World Bank.

World Bank (2012). *Fighting corruption in public services: chronicling Georgia's reforms*. World Bank, Washington, DC.

World Customs Organisation. (2007). *Guide to measure the time required for the release of goods*. WCO, Brussels.

World Customs Organisation. (2014). Legal thoughts on how to merge trade facilitation and safety & security. *World Customs Journal,* 8, 1, 233-287. World Customs Organisation (WCO).

World Customs Organisation (2011). *WCO SAFE Framework of standards to secure and facilitate global trade*, WCO, Brussels, pp. 1-58.

World Trade Organisation. (1998). *Customs and trade facilitation*: From concept to implementation.http/www.worldcustomsjournal.org/.../customs_and _trade_facilitation_from.pdf

World Trade Organisation. (2014). *Customs and trade facilitation*: From concept to implementation. http//www.worldcustomsjournal.org/.../customs _and_trade_facilitation_from.pdf. Accessed on 24/10/17.

Wu, D., & Zhao, F. (2009). *Performance measurement in the SMEs in the information technology industry.* Information Technology, Entrepreneurship and Innovation, Hershey, USA, Idea Group, Inc.: 79-99.

Wulf, L. D., & Sokol, J., B. (2005). *Customs modernization handbook*. The World Bank, Washington, DC.

Zamora Torres, A. I., Navarro-Chavez, C., & Pedraza-Rendon, O. H. (2013). The Impact in Customs Efficiency of the ITSW: Mexico Case of Study, *International Business Journal*, 5, 1-6.

Zimbabwe National Budget Statement. (2016). The 2016 mid-year fiscal policy review statement. *"Improving investor confidence to enhance productivity".* Presented to the Parliament of Zimbabwe on 8 September, 2016

Zinbarg, R.E., Revelle, W., Yovel, I., & Li, W. (2005). Cronbach's $\alpha$, Revelle's $\beta$, and McDonald's $\omega_H$: Their relations with each other and two alternative conceptualizations of reliability. *Psychometrika*, *70*, 1, 123–133.

## Synopsis

This book sought to investigate, in a critical fashion, traffic congestion and its impact on the performance of Customs at Ports of Exit and Entry during the period 2013 to 2016. The research objectives were, inter alia, to examine the causes of traffic congestion at Ports of Entry; to identify the challenges faced by ZIMRA in traffic clearance at Ports of Entry; to examine the impact of delays in traffic clearance on the performance of Customs at Ports of Entry and to suggest strategies can be given to improve the performance of Customs at Ports of Entry to overcome traffic congestion. The literature review was carried out on the research topic and there was a gap in the literature on the impact of traffic congestion on the performance of customs at Ports of entry. The study employed a pragmatism research philosophical approach and grounding. A mixed-method research methodology and an explanatory sequential research design were used. The study was conducted at Beitbridge Border Post. The study was comprised total of ninety-six respondents which included ZIMRA's managers and operational staff in the customs and excise division, clearing agents and commercial vehicles operators. The respondents were selected using stratified random sampling and simple random sampling. Descriptive statistics method was applied to analyse quantitative data where data were scored by calculating the percentages, mean and standard deviation. This was done using Statistical Package for Social Sciences (SPSS) computer software. It was therefore concluded that customs inefficiencies, inadequate and poorly managed infrastructure and lack of integrating activities of border management agencies were the causes of traffic congestion at Beitbridge Border Post. In addition, corruption, insufficient state of supporting infrastructure, illicit trade and customs, contribution of various agencies to customs delays and systems incompatibility were the challenges faced by ZIMRA in traffic clearance at Ports of Entry. Furthermore, increased corruption, reduced customs revenue, reduced trade volumes and increased clearance times were the impact of delays in traffic clearance on performance of Customs at Ports of Entry.

## About the Author

Dr. James Kanyepe is a senior lecturer in the Department of Management at the University of Botswana and a former chairperson of the Department of Supply Chain Management at the Chinhoyi University of Technology. He is a researcher and consultant with expertise in sustainable transportation, emerging technologies, agricultural supply chains, procurement practices, land use and transportation interaction, trade, cross-border supply chains, and sustainable development. Dr. Kanyepe has authored over 20 scholarly publications, significantly contributing to academic discourse in his field. He holds an honours BSc, MSc, and PhD in Supply Chain Management from the Chinhoyi University of Technology. He is also a chartered member of the Chartered Institute of Logistics and Transport (CILT).