Effectiveness of the National Road Tolling Programme in Promoting Road Infrastructure Development in Zambia: A Case Study of Toll Gates in Lusaka Province

by

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DECLARATION

I, Nachi M. Mutungwa, hereby declare that the work presented in this dissertation is the result of my research work and that it has not previously been submitted for a degree, diploma or other qualification at this or another University.

Sign: ……..

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APPROVAL

This dissertation of Nachi M. Mutungwa is approved as fulfilling the partial requirements for the award of Master of Public Administration Degree by the University of Zambia.

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ABSTRACT

Over the years the Government of the Republic of Zambia has strived to broaden options for generating income to the road sector due to the pivotal role that roads play in economic development. Traditionally, the major sources of funds for road infrastructure development have been direct government funding, national road fund and donor community funds. However, these funds have been insufficient thereby hindering the adequate construction and maintenance of roads in the country. To mitigate this challenge, the government in 2013 introduced the NRTP based on the provisions of the Tolls Act No. 14 of 2011 to broaden the financing options for road infrastructure development in the country. The general objective of this research is to evaluate the effectiveness of the NRTP in promoting road infrastructure development in Lusaka Province. The specific objectives of his research are to assess the extent to which the NRTP has improved the collection of toll fees, examine the extent to which the NRTP allocates road toll fees towards road infrastructure development and assess the extent to which the NRTP maintains roads in Lusaka Province. This research was evaluative and the research design used was a case study. It made use of questionnaires and interview guides to collect quantitative and qualitative data, which were analysed using Statistical Package for Social Sciences (SPSS) and thematic analysis, respectively. The sample size was 109 comprising 100 motorists and nine key informants who were conveniently and purposively sampled, respectively.

The findings show that the NRTP has been very effective in collecting road toll fees from motorists in Lusaka Province. This is because an average amount of 14.8 million is collected from the Shimabala and Chongwe Toll Gates monthly against a total collection target of 14 million. This indicates that 106% of the targeted amount is collected. Further, an amount of 177.6 is collected from the two toll gates annually, against the required amount of 168 million. This amount is only 45% of the targeted amount of K396 million needed for road infrastructure development indicating that the programme is not effective in allocating road toll fess to road infrastructure development. Additionally, the programme has not improved the condition of the Great East and Kafue roads in the province as both roads are still in poor condition. This research recommends that the government should increase the annual budgetary allocations to road infrastructure development on order to supplement the efforts of the NRTP.

Keywords: National Road Tolling, toll gate, toll fees, road maintenance, road construction.

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ABBREVIATIONS

AWP	Annual Work Plan
ETC	Electronic Toll Card
ETS	Electronic Tolling System
FUD	Frequent User Discount
LUD	Local User Discount
NRTP	National Road Tolling Programme
NRFA	National Road Fund Agency
RDA	Road Development Agency
RTSA	Road Traffic and Safety Agency
SPA	Standard Prescribed Amount
ZIMRA	Zimbabwe Road Agency
ZINARA	Zimbabwe National Road Fund

CHAPTER ONE
INTRODUCTION AND BACKGROUND

1.1 Introduction

The purpose of this chapter is to introduce the research. To achieve its purpose, the chapter begins by presenting the background of the research. It then states the research problem. Thereafter, it presents the objectives of the research. It then explains the significance of the research. Thereafter, it presents the conceptual framework of the research. It then presents the structure of the dissertation. Finally, a conclusion is given.

1.2 Background

Roads are among the most important public assets in most countries. Road improvements bring immediate and sometimes dramatic benefits to road users through improved access to hospitals, schools, and markets; improved comfort, speed, and safety; and lower vehicle operating costs. For these benefits to be sustained, road improvements must be followed by a well-planned programme of maintenance. Without regular maintenance, roads can rapidly fall into disrepair, preventing realisation of the longer term impacts of road improvements on development, such as increased agricultural production and growth in school enrolment (Burningham and Stankevich, 2005).

Road transport is the most frequently used means of transporting goods and people in much of Sub-Saharan Africa. Furthermore, because of the region's geographical nature, where many of the countries are landlocked, imports and exports of goods happen primarily by land and in this case by road transport. This is primarily due to the fact that other means of surface transportation like rail and navigable rivers are not well developed. Nonetheless, the lack of complementarity between the two land transport modes, that is rail and road, has led to the over usage of the road. This has invariably led to congestion and deterioration of the road network with minimal investment in both the development and maintenance of road infrastructure (Kgamanya, 2015).

According to Burning and Stankevich (2005), although the need for maintenance of roads is widely recognised, it is still not getting adequately done. Many countries spend just 20 to 50

percent of what they should be spending on maintenance of their road network. There are many reasons why this is so, some of them include challenges in distinguishing maintenance from other types of road work; in calculating how much maintenance will cost; where to get the money; and how to plan for it institutionally; and also, in contracting maintenance work. Traditionally, the construction, maintenance and rehabilitation of roads in many countries has been the responsibility of government using funds from various taxes. In Zambia, the main source of funding for road infrastructure has comprised direct government allocation through Public Sector Investment Programmes (PSIP); vehicle licenses; registration and examination fees; fuel levies; international transit fees; weighbridge charges and overloading fines (Mudenda, 2017).

Zambia has a total classified road network of 67,671kms, of which 37, 000km are gazetted roads and 30,671km are ungazetted roads classified as feeder, national park and estate roads (Road Development Agency, 2011). Most of the roads in the country were constructed immediately after independence between 1964 and late 1970s. At the time, Zambia had one of Africa‘s most prosperous economies and was classified as a middle-income country. Therefore, with substantial tax revenues from the mining sector and negligible debt, the new government could afford to embark on major programs of public investment in road infrastructure. However, since their construction, these roads received very little or no maintenance despite the country at that time having had a steady financial income to support maintenance (Raballand and Whitworth, 2012).

Following the nationalization of the copper mines in 1972, there was a sharp economic decline caused by low copper and high fuel prices, depreciation of the kwacha and the country’s involvement in supporting liberation struggles in the region. This led to inadequate resources being available for road construction and maintenance. As a result, it became increasingly difficult for the government to finance the repair of the road network from its annual budgets. Consequently, most of the roads had deteriorated sharply by the late 1980s (Raballand and Whitworth, 2012). In response to the above challenge, in 1993, the government embarked on the Road Maintenance Initiative (RMI). The RMI was a World Bank (WB) sponsored initiative under the auspices of the Sub-Saharan African Transport

Programme (SSATP). The Road Maintenance Initiative emphasised on the concept of commercialisation, which is, bringing of roads into the marketplace and putting them on a fee-for-service basis. Commercialisation required complementary reforms in four important areas which include; creating ownership by involving road users in management of roads to win public support for more road funding so as to control potential monopoly power and constrain road spending to what is affordable; stabilising road financing by securing an adequate and stable flow of funds; clarifying responsibility by clearly establishing who is responsible for what; and strengthening management of roads by providing effective systems and procedures as well as strengthening managerial accountability (Heggie, 2003). As recommended by the RMI, a road user tariff was introduced in the form of fuel levy with effect from 1 May, 1993 and the proceeds from fuel levy were deposited in an autonomous road fund (Gananadha, 2001).

The above initiative also facilitated the restructuring of the then Roads Department and Local Authorities to streamline their operations. The mode of management of the road infrastructure changed from the traditional force accounting (maintenance by staff on payroll) to the contract system (contracting to the private sector) which introduced a more significant involvement of the private sector in the management of roads. These measures were intended to improve the road projects management system in the country. The road agencies were transformed from being the primary executor of road works to being supervisory departments. At the same time, capacity building programmes were implemented in order to create the much-needed expertise for the new environment (Raballand and Whitworth, 2012). The main achievement of the RMI was the formulation of the Road Sector Investment Programme (RoadSIP), which comprised II phases. Phase I was valued at USD500 million while Phase II was valued at USD1, 642million. The two phases of the programme were implemented within the period 1997-2002 and also 2004 -2013. The scope for Phase I was to develop, maintain and rehabilitate about 35,000 km of gazetted roads while Phase II targeted an expanded Core Road Network (CRN) of 40,454 km (National Road Fund Agency, 2016). The 10-year ROADSIP II (2004-2013) had four main objectives which are: bringing the core road network (40,113 km) into serviceable condition, strengthening the technical and managerial capacity of the new road authorities, creating employment opportunities in the

road sector and improving road safety and environmental management in the road sector through the establishment of procedures and guidelines (Republic of Zambia, 2003). These reforms also necessitated the creation of three road sector agencies namely; National Road Fund Agency (NRFA) in 2002 under the National Road Fund Act No.13 of 2002 whose purpose was to administer and manage the road fund, the Road Development agency (RDA) in 2002 under the Public Roads Traffic Act No.12 of 2002 with the object of developing and managing the road infrastructure and the Road Transport and Safety Agency(RTSA) in 2002 under the Road Traffic Act No.11 of 2002 with the purpose of managing road transport, traffic and safety in the country (National Road Fund Agency,2016).

Prior to the policy and legal reform under the Public Road Act of 2002, approximately 21,000kms of gazetted roads were under the jurisdiction of the Roads Department in the Ministry of Works and Supply (MWS). The balance of the roads was shared by local authorities under the Ministry of Local Government and Housing (MLGH) and the national park roads under the jurisdiction of the National Parks and Wildlife Service (NPWS) now the department of national parks and wildlife in the Ministry of Tourism, Environment and Natural Resources as was provided for under the defunct Roads and Road Traffic Act Chapter 464 of the Laws of Zambia (Road Development Agency, 2011). Nevertheless, the entire road network presently falls under the jurisdiction of one coordinating semi-autonomous agency, the Road Development Agency (RDA), established by the Public Roads Act of 2002. By this Act, the functions among others of the RDA include: to plan, manage and coordinate the road network in the country which includes maintenance and construction of public roads through its employees or independent contractors (RDA, 2021).

Over the years, RDA's major sources of funding have included direct government funding, national road fund and the donor community funds (Road Development Agency, 2011). However, these sources of income have been inadequate to keep the core road network in maintainable condition at all times. Consequently, in November 2013, the government introduced the National Road Tolling Programme (NRTP) with the intension of broadening the financing options for road infrastructure development, renewal and maintenance and ultimately creating a self-financing and self-sustaining mechanism for the road sector in Zambia (Mudenda, 2017). The launch of the NRTP was based on the provisions of the Tolls

Act No. 14 of 2011. This Act provides for the collection of toll fees to be used for the construction, maintenance and rehabilitation of roads in the country (Republic of Zambia, 2011). Through the NRTP, a number of inland toll plazas covering all vehicle classifications have been established in the country. The first were the Manyumbi and Kafulafuta toll plazas established in 2016. These toll plazas are located between Kabwe and Kapiri Mposhi districts and Kapiri Mposhi and Ndola districts, respectively. In 2017, three additional toll plazas were established. These are Katuba, Shimabala and Mumbwa toll plazas. These toll plazas are located between Lusaka and Chisamba districts, Lusaka and Kafue districts, and Lusaka and Mumbwa districts, respectively. Since then, several new toll plazas continued to be established. At the moment, there are 27 inland toll stations across the country (National Road Fund Agency, 2023).

This research was conducted in Lusaka Province. Lusaka Province holds Lusaka District which is the capital city of Zambia. The province has two toll gates namely: Shimabala and Chongwe Toll Gates. The Shimabala toll gate was commissioned in 2017 as a class A Toll Gate and is one of the busiest in the country. It is managed by a Station Manager supported by Toll Collectors and security personnel from the Zambia Police Service (ZPS). The toll Gate processes about 9000 vehicles per day and collects revenues of approximately ZMK 9 million per month. Collections are done on cash basis or e-tolls (Republic of Zambia, 2022). Similarly, the Chongwe Toll Gate was commissioned in 2017 and was categorized in class A. It has a staff compliment of 27 and nine Zambia Police personnel. It processes an average of about 4,500 vehicles per day with monthly collections of approximately ZMK 3.6 million. The mode of collection is through cash or e-toll system (Republic of Zambia, 2022).

NRFA working with other Road Sector Agencies such as RTSA and stakeholders like the Zambia Police Service (ZPS) undertakes random compliance checks at these Toll Gates with the objective of not only determining compliance levels of toll payments among motorists according to the prescribed toll tariff structure but also ascertaining some of the weaknesses that exist during the implementation of the road tolling programme at these toll gates (NRFA, 2018). Further, toll gates have been installed with automatic number plate recognition devices, toll price electronic displays and enhanced security monitoring features with a

picture recording for each transaction for transparency and accountability (Lusaka Times, 2017).

1.3 Statement of the problem

Before the implementation of the NRTP, roads in Zambia in general and Lusaka Province in particular were not regularly maintained due to financial constraints. This resulted in the erosion of the country's road infrastructure (Mudenda, 2017). However, despite the NRTP being implemented for more than a decade now, it is not clear whether the programme has been effective or not in its ability to collect road toll fees and allocate these toll fees towards road construction and maintenance in Lusaka Province. This is because there are numerous reports indicating that major roads in Lusaka Province such as parts of the Great North Road between Lusaka and Kabwe, the Great East Road between Chongwe and Rufunsa Districts, parts of Kafue Road in Lusaka Province and a number of secondary, feeder and rural roads within the province are in bad condition (Times of Zambia, 2024).

1.4 Research objectives

1.4.1 General objective

To evaluate the effectiveness of the National Road Tolling Programme in promoting Road infrastructure development in Lusaka Province.

1.4.2 Specific objectives

The specific objectives of the research are as follows:

1) To assess the extent to which the National Road Tolling Programme has improved collection of road toll fees from motorists in Lusaka Province.
2) To examine the extent to which the National Road Tolling Programme allocates road toll fees towards road infrastructure development in Lusaka Province.
3) To assess the extent to which the National Road Tolling Programme maintains roads in Lusaka Province.

1.5 Significance of the research

This research is of significance in a number of ways. To begin with, it has provided information on the benefits of the road tolling programme in road infrastructure development. The road tolling pogramme is believed to be the most sustainable method of mobilising resources for road maintenance and construction. Advocates of road tolling argue that toll collection provides a mechanism for financing, construction and maintenance of new roads and in states and regions facing budget problems and limited debt capacity, toll roads offer a welcome source of external financing. Secondly, technological innovations are increasingly making possible an effective use of time-of-day pricing on toll roads to control and mitigate problems of congestion (Munroe et al, 2006).

This research has also availed policy makers with information on the road tolling programme which they can use to make policy decisions in order to improve its operations and accrue more benefits from it. The research also answers the questions which the general public have pertaining the usage of the toll fees which are collected from the toll gates and will help to stimulate public debate and assist in directing government policy on matters relating to the road tolling programme. Further, the research has contributed to the existing body of knowledge in the academic field, as it builds on the existing knowledge on the road tolling programme

1.6 Conceptual framework

The conceptual framework of this research is presented in Figure 1.1.

Figure 1.6.1 shows the model of the effectiveness of National Road Tolling on road infrastructure development. This model shows that for the NRTP to be able to achieve its objectives of road construction, maintenance and rehabilitation, there is need for inputs to be available. These inputs include; human resources to collect road toll fees and financial resources for paying wages, meeting operational costs and costs associated with purchasing and maintaining the equipment. When these inputs are made available, there is effective road toll fees collection, on the other hand, when the inputs are not available, there is ineffective road toll fees collection.

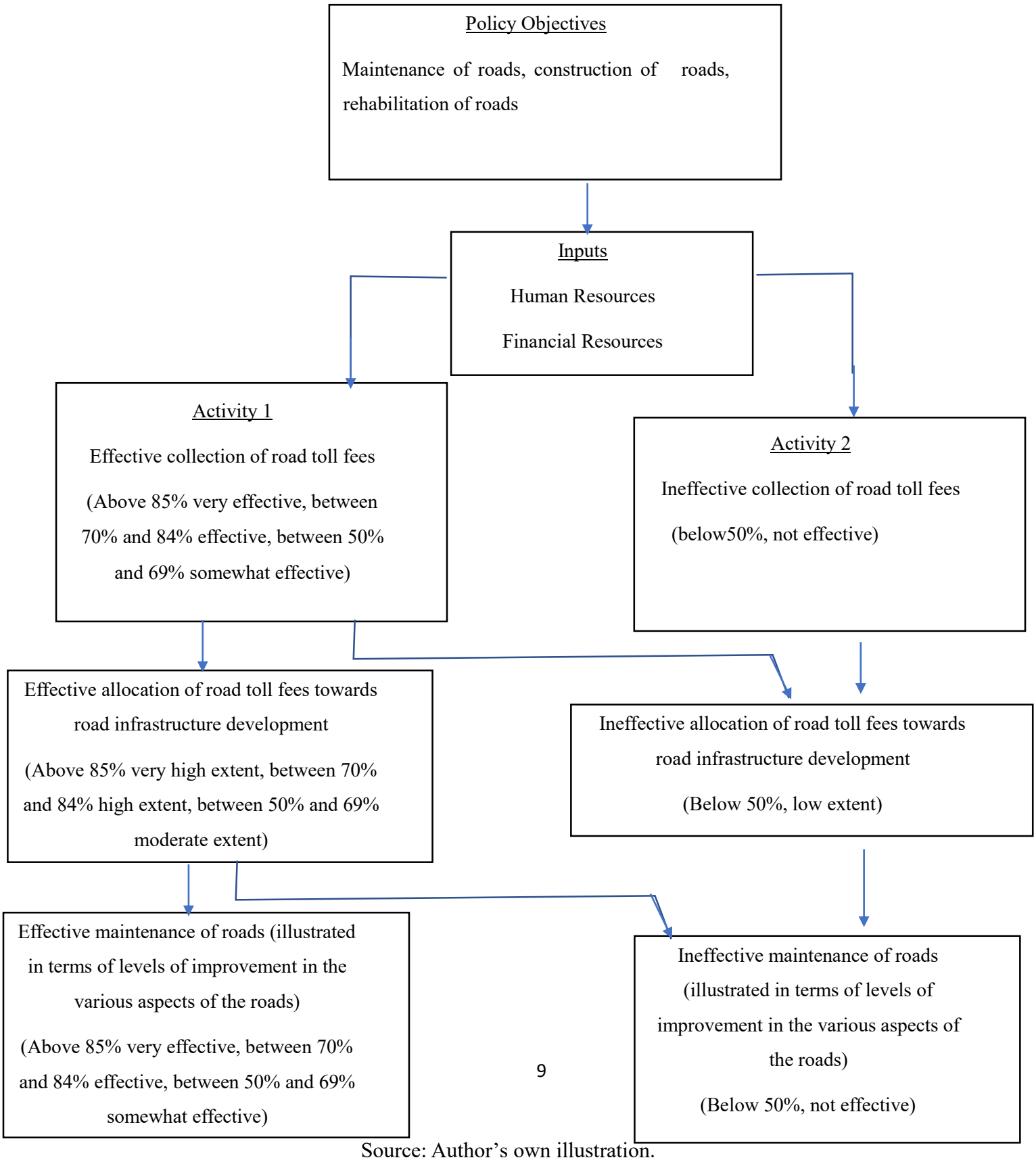
For the purpose of this research, if the NRTP collects more than 85% of the planned toll fees, then the collection of the toll fees is very effective, if it collects between 70% and 84% of toll fees out of the planned toll fees then the collection is effective, if the programme collects between 50% and 65% of the planned toll fees, then the collection is somewhat effective. However, if the collection of the toll fees is below 50% of the planned toll fees then the collection is not effective.

The model also shows that, when toll fees are collected, the next step is the allocation of these funds towards road infrastructure development. Similarly to the collection of toll fees, if 85% of the collected toll fees are allocated towards road infrastructure development , then the allocation is to a very high extent, if the toll fees allocated to road infrastructure development is between 70% and 84% of what was collected then the allocation towards road infrastructure development is to a high extent , on the other hand , if between 50% and 69% of the collected toll fees are allocated towards road infrastructure development , then the allocation is to a moderate extent while if less than 50% of the collected toll fees are allocated towards road infrastructure development, then the allocation of toll road fees towards road infrastructure development is low . The model also illustrates that in some cases, tolls fees can be effectively collected but the allocation towards road infrastructure can be to a low extent. This is as a result of the revenue being insufficient for road infrastructure development or misappropriation of the revenue.

A similar distribution is also applicable to the maintenance of roads in which the improvement in the condition of the roads is measured in terms of the levels of improvement in the various aspects of the road such as road surfacing, road width, road markings, sign posts, drainage systems and road humps as perceived by the motorists. In this case, if more than 85% of the motorists state that there is improvement in a certain aspect of the road, then the maintenance of that particular aspect is to a very high extent, if motorists between 70% and 84% see improvement in a certain aspect of the road, then the improvement is to a high extent, if motorists between 50% and 69% see improvement in the condition of an aspect of the road, then that particular aspect has been maintained to moderate extent. On the other hand, if motorists below 50% see improvement in an aspect of the road, then maintenance of that aspect of the road is to a low extent. The model also shows that in some instances, the maintenance of roads can to a low extent despite the effective allocation of the funds toward

maintenance of road. This situation can arise if the funds are diverted to other ventures and not maintenance of roads.

Figure 1.1: A model of the effectiveness of National Road Tolling in road



Source: Author's own illustration.

1.7 Structure of the Dissertation

This dissertation is divided into seven chapters. Chapter 1 presented the background of the research. It also presented the structure of the dissertation.

Chapter 2 is a review of literature relevant to this research. The review starts with literature on the effectiveness of national road tolling in collecting road toll fees. Thereafter, it reviews literature on the effectives of national road tolling in allocating road toll fees towards road infrastructure development. It then reviews literature on the effectiveness of national road tolling in maintaining roads. The chapter then presents lessons drawn from the literature. Thereafter it presents the gaps in the literature. Finally, a conclusion is given.

Chapter 3 presents the methodology used to conduct the research. Specifically, the chapter presents the type of research, the location of the research, the research approach, research design, sources of data, sample size, sampling methods, data collection methods, reliability of data, validity of data, data analysis techniques, ethics applied when conducting the research and the limitations of the research.

Chapter 4 assesses the extent to which the National Road Tolling Programme has improved the collection of road toll fees from motorists in Lusaka Province. Specifically, the chapter explains the strategies used to collect road toll fees, presents the extent to which the NRTP collects road toll fees from eligible motorists, presents the challenges faced in the collection of toll fees from the motorists. The final section is a conclusion of the chapter.

Chapter 5 examines the extent to which the National Road Tolling programme allocates road toll fees towards road infrastructure development in Lusaka Province. Specifically, the chapter discusses mechanisms used to allocate the funds raised from toll gates, discusses the extent to which the NRTP enables the allocation of toll fees towards road infrastructure development, presents the road projects which have been implemented using revenue from the road toll fees in Lusaka Province and presents the challenges faced in allocating road toll fees towards the various road projects. Finally, a conclusion is given.

Chapter 6 assesses the extent to which the National Road Tolling Programme allocates the road toll fees towards maintenance of roads in Lusaka Province. Specifically, the chapter discusses the extent to which the condition of roads has improved from the motorists' perspective, following the introduction of the NRTP, presents problems of the NRTP from the motorists' perspective and the challenges faced in the maintenance of roads. Finally, a conclusion is given.

Chapter 7 presents a summary of the conclusions and recommendations of the dissertation.

1.8 Conclusion

As can be seen in this chapter, road transport is the most common mode of transport used by many countries in Southern Africa including Zambia. In Zambia, most of the funds for road infrastructure development was initially acquired from taxes and donors. However, these funds were not sufficient resulting in a number of roads not being constructed and maintained. This led to the introduction of the NRTP. However, it is not clear whether the NRTP is effectiveness in addressing the problem of poor road infrastructure in the country. This research therefore intends to assess the effectiveness of this programme in terms of its ability to collect road toll fees and allocate these toll fees towards road construction and maintenance. The research is significant in a number of ways one of which is the provision of policy makers with information which can be used to make policy decisions in the management of toll gates and funds. The chapter also presents the model of the effectiveness of the NRTP which indicates the policy objectives, inputs required to achieve the objectives of the programme, the activities to be carried out to achieve these policy objectives and the threshold used to measure the effectiveness of the programme.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter is aimed at reviewing literature that is relevant to this research. To achieve its aim, the chapter begins by reviewing literature on the effectiveness of national road tolling in collecting road toll fees. Thereafter, it reviews literature on the effectiveness of national road tolling in allocating road toll fees towards road infrastructure development. It then reviews literature on the effectiveness of national road tolling in maintaining roads. The chapter then presents lessons drawn from the literature.

Thereafter, it presents the gaps in the literature. Finally, a conclusion is given.

2.2 Literature on the effectiveness of national road tolling in collecting road toll fees

The Zambia Tax Platform (2021) in its report titled '*tracking the utilisation of toll fees'* highlights findings of the research whose objectives were to track the utilisation of revenue from toll fees in Zambia from the point of collection to point of use from 2013 to 2019. It established whether the toll fees collected under the National Road Tolling Programme (NRTP) were being managed in accordance with the legal framework and to establish the perception of the general public that is, civil society organisations, local councils and the business community on the NRTP program. The study employed desk review to determine the legal and operational structure used in the management of toll fees in Zambia. Sources of information included Acts of Parliament, Regulations and Annual Reports from the Ministry of Finance and the National Road Fund Agency, among others. Furthermore, key informant interviews were also utilised to collect information from Road Development Agency, National Road Fund Agency, and various line ministries. These stakeholders were requested to provide information concerning the management and use of toll collections covering the period 2013 to 2019.

In order to gather views on the challenges encountered in collection and management of toll fees in Zambia, the researchers interviewed various managers at selected toll stations across the country. Taxpayers at these toll stations were also requested to provide their perception

about the collection and management of revenue from toll stations. Finally, the study also incorporated views from local councils, civil society organizations, the business community and the general public. The perceptions of the NRFP were obtained from road users around Michael Chilufya Sata Toll Plaza, Shimabala Toll Plaza and Chongwe Toll Plaza. The data was collected from 59 participants split across different locations and categories.

This research established that the collection, management and utilisation of toll fees in Zambia follows a complex legal and operational framework, in as far as tracking is concerned. Upon collection, all funds are transmitted to the central treasury's consolidated account while NRFA and RDA only keep records of how much has been collected and transferred. Thereafter, the ministry of finance remits the funds to NRFA for management and consequent allocation to different road projects. It has been established that the revenue flows into two consolidated accounts, one at the ministry of finance and another at the NRFA, before being utilized by the RDA. In terms of collection of the toll fees, the managers at the toll gates argued that the NRTP's performance has been excellent as there has been an increase in revenue collections and the whole implementation strategy has improved. One lesson which can be learnt from this this study is that the collection, management and utilisation of toll fees follows a complex legal and operational framework which includes transmission of collected funds to the central treasury's consolidated account while the NRFA only keeps the record of what has been collected. However, the study has a gap as it only focuses on the means by which funds move from the point of collection to allocation and the performance of the national road tolling system without establishing the suitability of the methods used to collect the toll fees.

Quintino (2018), in his research report titled '*examine the effectiveness of toll gates in Zambia, a case study of Kafulafuta Toll Gate'* carried out a research whose objectives were to investigate the extent to which the toll gate fees had enhanced communities where they were installed, to establish the durability of the mechanisms used, to ascertain how much is generated, the cost of running and cost of maintaining each toll gate and to determine the effectiveness of the process of auditing financial resources from the toll gates in Zambia. This research used both qualitative and quantitative data from key officials at Road and Safety

Agency (RTSA), Road Development Agency (RDA), National Road Fund Agency (NRFA) and motorists who were operating. The findings indicate that the people entrusted with this huge task of collecting the money at the toll gate had never experienced any major problem except where vehicles could queue up and sometimes, they had a few of being robed when they collect enough money. One respondent said that the equipment was working according to the expectation the only challenge was the fear that one might produce a gun instead of money. Findings further reveal that, one respondent among the respondents from NRFA and RDA said they had once experienced a problem where vehicles piled up and some motorists were panicking, as they wanted to go but the equipment did not work as fast as was expected. The solution was to allow payment in advance so that they could only pass at the second toll gate, a motorist was allowed to pay at kaumatua toll twice so that at Katuba gate he/she could just pass. However, all RTSA workers interviewed said that they had no problem with the equipment. It can be learnt from this study that in as much as good working equipment is necessary to collect toll fees from the motorists, it does not resolve issues of congestion and safety of the workers, thus there is need to ensure that more efficient means of collecting toll fees and a more secure working environment are put in place to avoid congestion and enhance security of the workers. However, one weakness of this study is that it's a case study and therefore only brings out findings at one toll gate in the Copperbelt Province leaving out the experiences of other toll gates in the province.

Foya (2022) in a journal artcile titled, '*An assessment of the impact of toll (gate) fees collection on road maintenance in Zimbabwe: The toll (gates) of Harare Metropolitan Province (2015-2021)*' seeks to understand the role tollgates play in the maintenance of roads in Zimbabwe. The main objective of the study is to assess the impact of toll gate fees collection on road maintenance in Zimbabwe. A descriptive research design was adopted for this study. The sampling technique that was adopted was purposive as it was deemed ideal by the researcher to effectively collect all the necessary data for the study. Data was collected through interviews that were carried out with key informants, questionnaires as well as focus group discussion with other stakeholders. Findings reveal that since their inception, Zimbabwean toll gates are still relying on manual ticketing and collection system which has thus posed some challenges which are militating against the efficient and effective collection

of revenues at the toll gates. The manual nature has created problems affecting traffic flow (that is, delays and congestion are conspicuous at the Zimbabwean toll points especially during peak hours) as it falls short in sufficing the traffic volumes. There is the challenge of change especially when the new shift commences work which makes it difficult for adequate revenues to be realised as vehicles will be parked by the booths as the motorists wait for their change. Revenue is also lost during heavy rainstorms since the toll officials abandoned the toll gates leaving vehicles to pass through without paying the fees as the current rudimentary structures do not provide adequate shelter against such elements of weather. There is also the absence of proper monitoring systems as the current collection system does not determine the type of vehicle that passes through the toll booth thus creating irregularities between the fees collected and the vehicle type since there are monitoring mechanisms in that regard. The collection structure does not take into account that fees paid by different classes of vehicles should represent the amount.

Findings further reveal that in as much as the accountants are responsible for the overall management of the toll gates, they do have other core duties at the office making it difficult for them to know which kind of vehicle passed through the toll gates and tally it with the money collected since the numbers, the amount paid, and the rates are not filled in.

Findings also reveal that there are scenarios whereby upon payment of the fees the motorists do not wait for the ticket hence the same ticket is most likely to be used again and no one monitors such malpractices. There is also the challenge of human error whereby the toll collectors tend to overcast change and this challenge is rife during peak periods and in such scenarios, motorists have proven to be unfaithful as they hardly return the extra monies to the toll collectors. In some cases, it was observed that some motorists out rightly avoid paying the fees as they normally accelerate their vehicles and disappear without paying. In another case, it was noted that twenty-two ticket books were found at Eskbank toll gate. These books were alleged to have been issued from the stores without being recorded in the toll gates' register. In an interview, it was noted with regards to this scenario, that about 23 443 ticket books were missing which amounts to more than a million toll gate slips. Thus, all these slips were not recorded anywhere neither were they accounted for leading to revenue leakages. It was also submitted that the Zimbabwe Road Agency (ZIMRA) officials were facing

problems from government officials and the Central Intelligence Organisation who were failing to produce the required documents and were also refusing to pay toll fees. It was further noted that all government vehicles bearing white number plates, diplomatic vehicles, ambulances and the presidential motorcade are exempted from paying tolls. However, it was changed to include those with yellow number plates upon producing log books and identity cards. It was submitted that some government officials are unable to produce these documents. It was also noted that the roads are too narrow hence pausing risks to officers stopping the cars and this had also exacerbated delays during peak hours. On the humanitarian side, it was noted that fumes and dust from motor vehicles were likely to cause health problems to officers operating toll gates. The toll collectors were also at the risk of physical danger. One toll collector at the Shamva toll gate was knocked down by a rear door of a delivery van which swung open as it took off.

Generally, response spread also suggested that the most pressing need to strengthen was the collection exercise as the majority of the respondents expressed this view. This could be attributed to observed notable delays and congestion on tolling points especially during peak hours as the manual nature of ticketing failed to timeously suffice the traffic volumes and the resultant delays led to what had been termed “economic sterility”. Further, visits to polling sites also revealed that there were gaps in terms of monitoring. It was not clear how ZIMRA officials back at the office would not know the number and make of vehicle passing through the toll gates to enable them tally it with the money collected since the numbers, the amount paid and the rates were not filled. The findings also reveal that majority of respondents were of the view that a shift from manual to E-tolling systems will not only enhance efficiency in revenue collection but also reduce delays and attendant costs arising from the congestions often experienced at tolling booths. The study by Foya (2022) informs that malpractices occur at the toll gates where by a toll collector withholds a receipt from a motorists upon making a payment in order to issue the same receipt to the next motorist and them steals the toll fees paid. The study also reveals that the collection system at the toll gate should have a proper monitoring system without which there can be irregularities between the fees collected and the vehicle type leading to loss of revenue. The other lesson which can be learnt from this study is that poor structures which cannot contain certain weather conditions such as rains

may lead to loss of revenue as the toll collectors may abandon the toll gate during such climatic conditions. In addition, it can be learnt from this study that some vehicles such as presidential motorcades and ambulances are exempt from paying toll fees. Besides this, the study also informs that the toll gates should be placed on wide roads as constructing them on narrow roads could be hazardous to the health of workers due to fumes and dust from the cars. However, despite all these lessons from this study, it has a limitation in that it was only conducted at the toll gates in Harare and therefore experiences from other Provinces are unknown.

Stock (2004) in his Masters Dissertation titled, '*The Economic Efficiency of Tolling Roads in South Africa' focuses* on the economic benefits and efficiency of tolling by the State and PPP's. Relevant literature, in conjunction with using TRAC (a concession toll road project) as a case study formed the primary research resources for this project. The Findings of the research suggested that, currently all toll plazas (with the exception of some of those on the Platinum Toll route which are mixed, i.e. ETC and manual mode) in South Africa were operated on a manual basis, resulting in an increased toll cost. This cost was transferred to the road user and thus constituted a burden on road users, compared to the use of similar roads without tolls. However, findings suggested that those costs were expected to decline in the future as Electronic Tolling Collection was introduced into the remaining plazas on the national road. Findings further indicated that collecting tolls manually resulted in job creation and hence resulted in an increase in economic demand which then stimulated economic activity. Manual toll collection could thus be viewed as a positive economic impact particularly in a South African context in which high unemployment rates were found. It could thus be contested that the inefficiency related to toll collection may be compensated by the increase in economic demand resultant from employing toll collectors. One lessons which is derived from this study by Stock (2004) is that the high cost arising from the manual collection of toll fees is borne by the road users. The other lesson learnt is that the manual collection of toll fees leads to employment creation. Nevertheless, one notable gap in this study is that it neither states the research methods nor instruments which were used for data collection.

Saffarzadeh (2006) in his journal tilted '*cost-benefit analysis of electronic toll collection (ECT) system in Iranian freeways'* focuses on the economic and technical analysis of ETC after investigating the ETC systems in Tehran-Qom and Tehran-Karan freeways. The findings established that the Iranian pay toll system in road is based on the traditional method which is collecting the toll by road barriers installed at the beginning of Freeways. In this method of collecting tolls, the drivers are permitted to enter the freeway after paying the toll by cash or ticket. Although in this system the toll is collected directly from the drivers, the existence of barriers causes increased travel time, increased fuel consumption and consequently increased pollution in the road environment. Findings also established that there is another method widely used in industrial countries which is the Electronic Toll Collection (ETC) system in which tolls are collected using electronic equipment on road sides and with no speed reduction or vehicle stopping. This method has quite a considerable number of advantages amongst which the reduced fuel consumption through reduced vehicle stop times, increased vehicle speeds, reduced number of personnel required for running the system, reduced environmental pollution, more passenger comfort, reduced cash circulation and consequently integration of the financial system, may be mentioned. This study is significant in that it informs that the manual collection of toll fees in which a barrier is used to prevent the passage of motorists at the toll gate before payment of toll fees, increases travel time, fuel consumption and pollution of the environment. On the other hand, the electronic tolling system in which electrical equipment are used to collect toll fees leads to increased speed of vehicles, less fuel consumption and reduced number of personnel required to run the system. However, similarly to the above study, Saffarzadeh (2006) neither states the research methods nor instruments which were used for data collection.

Hinge (2020) in a journal article titled "*Study on Toll Plazas for Impact Assessment and Remedy Measures on Existing ETC System"* identifies the factors accounting for traffic delay at the toll gates in India and provides some remedy measures on existing ETC toll plazas. The data were collected during field survey. Findings suggest that the 100% roll out of ETC recently implemented in India has some marginal issues like blacklisting of vehicles, provided signs and marker position are improper at toll plaza, bank payment issues and Non-FASTag vehicles (vehicles without stickers fixed to the middle of the windscreen to deducted

money from the account of the holder) asking for toll exemption at FASTag lane (lane for vehicles with stickers fixed to the middle of the windscreen to deducted money from the account of the holder). A traffic survey was conducted on ETC lane during peak hour for calculating vehicle average crossing time. Simultaneously factors were also noted down for cause of delay occurs during peak hour. The study revealed that long queue length on tolling lanes make drivers confused during peak hours. Due to this confusion Non-FASTag vehicle driver enter their vehicles into dedicated FASTag lane which imposes 2-time penalty charges on it leading to argument with toll staff and resulting into increase plaza crossing time for queued vehicles. This research is useful in that it demonstrates that challenges may be encountered in the early stages of implementing the electronic tolling system at the toll gates. However, one notable gap of this study is that it only mentions that the data was collected using the survey without giving details about the research approach, methods and data analysis techniques used in the study.

Karsaman etal (2014) in their journal article titled "*Measuring the Capacity and Transaction Time of Cash and Electronic Toll Collection Systems"* compares between the capacity of a cash payment system and an electronic payment system at three toll gates in Indonesia . The research was conducted at the Jakarta Intra Urban Toll Road, the Cikupa- Merak Toll Road, and the Cawang-Pluit Toll Road. The data collected consisted of primary and secondary survey data. The primary data was obtained from direct field surveys, whereas the secondary data, namely the gate layout and the E-Toll information and its usage, were obtained from the toll operators. Vehicle arrival times observation was performed by counting the number of vehicles that entered the tollgate at a certain time point. One tollgate was selected for each of the toll road links operated by a different operator. The first step was to determine the point of the longest queuing boundary, where the speed of the vehicles was still constant when they entered the tollgate. The next step was to count the number of vehicles every 5 minutes. The transaction time of each vehicle entering the booth was recorded using a stopwatch. A total number of 80 vehicles for each booth were subjected to this study. The transaction time started from the time the driver provided the toll payment, followed by the time the toll staff attendant received the money or card, and ended at the time the driver reached out to receive the change and/or receipt. The obtained data were analysed to determine the length of the queue and the capacity of the gate based on a fixed arrival level (λ) at various service times (μ) for the

payment systems of all booths using mixed systems (cash and electronic systems) and all booths using ETC systems. The findings suggest that the queuing at the tollgates when modelled followed a poisson distribution. The average cash transaction time was approximately 5 to 6 seconds, while the ETC transaction time was only 4 seconds. Furthermore, the capacity of the cash system gate was 550 to 620 vehicles/hour (which is above the minimum service standard of 450 vehicles/hour), whereas the electronic gate capacity was 770 to 870 vehicles/hour. This study is significant as it demonstrates that the ETC system is more effective than the cash system in terms of reducing the number of queuing vehicles. However, the study does not state weather the toll fees collected at these toll gates were allocated towards road infrastructure development.

The Center for Urban Transportation Research (2004) in its report titled, '*the Feasibility of Open Road Tolling in Florida'* investigates the possibility of implementation of a state wide All Electronic Toll Collection (AETC) System. The effort used two existing systems that employ all Electronic Toll Collection as case studies (Toronto and Melbourne) and reviewed the concept from the perspectives of Customer Service and Marketing, Operations and Collections Reliability, Traffic and Revenue, Engineering and Organizational and Legal. Subcommittees for each of these functional areas were formed along with a Management Committee to oversee the effort. While the case studies used are currently employing AETC, both facilities were designed, constructed and marketed as toll highways that would not accommodate any provision for paying cash on the highway. The Customer Impacts and Marketing group assessed the impacts and potential customer acceptance of employing open road tolling on an existing system. A telephone survey conducted as a part of the study revealed an overwhelming majority of current cash paying customers and non-toll road users believe that cash should always be an option on toll facilities. Almost as many indicated a willingness to subscribe to an electronic toll collection program if discounts were offered or if it meant not having to stop to pay a toll. Of all of the issues addressed throughout the course of the study, none was more debated and discussed than that of the wisdom and appropriateness of eliminating the ability of customers to pay cash in a traditional toll lane. What is clearly apparent from the study is that in order to move to more automated and high-speed toll collection, actions and programs to increase the use of electronic transponders must

continue to be pursued. The cost of collecting a toll electronically is less than a manual transaction, the queuing at toll plazas can be reduced and the hurdle of non-transponder users is minimized if open road tolling is pursued. As the demand for manual collection wanes, the resistance to all electronic collection will diminish. A review of the cost to collect tolls in Florida shows that operating savings are achieved through the use of electronic toll collection. The extent of these operating cost savings varies significantly with cost allocation assumptions and the maturity of an ETC system. A system with a higher percentage of ETC transactions should see more savings per transaction due the spread of the fixed cost over a larger transaction base. Based on this review, it is estimated that at current ETC usage rates, the operating cost savings per transaction over a manual transaction is on the order of $0.05 to $0.06. Applying these differentials (understanding that this savings should grow as ETC market penetration increases) would result in an estimated annual operating savings for FDOT owned or operated facilities of $23 million. This is roughly equivalent to the ability to bond over $320 million for capital projects. Another significant potential of an all-electronic collection system is that of customer convenience. The long-standing dilemma for toll operators is the customer service implication of charging for a premium service, in many cases a true timesaving, and then delaying the customer to accept payment. The potential of employing a system where no customer has to fumble for money and stop to pay a toll is both intriguing and worth investigating. In addition to the operating costs of toll collection, there are significant capital costs involved in any toll facility. The widening of the highway to "flare" for the toll plaza, the administration building, the plaza and booths, canopy, access tunnels and the electronic equipment are expensive.

Findings indicate that the potential benefits from an AETC system could be derived from eliminating the need to have toll collection personnel working in traffic lanes. The introduction of dedicated ETC lanes and express lanes incriminates employee health and safety issues. Even with access tunnels there is routinely the need for supervisory, maintenance and other toll employees to confront highway traffic. Although a substantial number of customer service personnel would undoubtedly need to be employed in lieu of toll collectors offsetting operational savings, they would certainly work in a safer environment. Other safety issues that may be involved include the elimination of queuing at toll plazas. If

all tollbooths were eliminated, there would be no capacity reduction at the point of collection. The other side of this issue is that in some urban settings, the toll plaza acts as a traffic meter. The elimination of the plaza will in some cases overload downstream interchanges or highway sections. The backup will merely move from the plaza to another location. Although from the toll operator's standpoint, this may in fact be somewhat beneficial. One lesson that can be learnt from this study is that it is a wide held belief that the cash method of collecting toll fees should always be among the options when it comes to making payments for tolled roads. It can also be learnt that an electronic tolling system has several benefits such as, eliminating the need for toll gate personnel, convenience for motorists as they do not need to have cash at hand to pay at the toll gate and increase in safety of the toll operators. However, like the above discussed study, this study also focuses on the methods of collecting toll fees without indicating whether the funds collected at the toll gates are channeled towards road infrastructure development.

2.3 Literature on the effectiveness of national road tolling in allocating road toll fees towards road infrastructure development

The earlier cited report by the Zambia Tax Platform (2021) indicates that, in terms of utilization of the road toll fees, a number of stakeholders believe that the funds are not being correctly utilised because roads were not being constructed. Some other also raised concerns about the quality of road construction. Furthermore, it has also been observed that NRFA did not state when a road was being constructed o using toll fees. This made it difficult for taxpayers to appreciate the benefits of paying toll fees. The current management of funds, though within the legal provisions, presented a limitation to establishing whether the funds were indeed utilised for road maintenance and rehabilitation. The provisional chairman of the Bus Association of Zambia for the Copperbelt Province was of the view that the money from the toll fees was not being spent on constructing roads as there were no signs of roads being constructed. He stated that the money was being channeled somewhere else noting that the tolling program was a good move as there was need for Zambia to be developed by Zambians but the people did not want to sacrifice their money through different charges without seeing where the money was going.

Similarly, a representative from Oxfam Zambia had no idea how the money was being used but they indicated that there were unsubstantiated reports that it was being used to pay civil servants' salaries. Oxfam was of the belief that the cost of paying toll gates was being passed on to the customer who was an already burdened taxpayer. He however stated that, the NRTP was a good initiative that could be used to generate all the money needed to upgrade all roads as well as repair the damaged ones. They however feared that the toll fees were not being used for their intended purpose. On the other hand, a representative from Caritas Zambia felt that toll fees had not really affected the business community except it had increased the number of taxes that they had to pay. This research is significant as it provides information on the views of a number of stakeholders regarding the usage to toll fees in the country. However, it can be criticised on grounds that the findings are based on mere perceptions rather than facts.

Republic of Zambia (2022) in a report titled '*committee on transport, works and supply for the first session of the thirteenth national assembly'* highlights findings of a study on the implementation of The Road Tolling Programme in Zambia. The objectives of the study was to appreciate the adequacy of the legal policy framework that governs the Road Tolling programme, gain an insight into how the Government was implementing the programme in terms of roll-out of the toll facilities; appreciate the administration of the Road Fund in relation to toll fees and its application to road construction, maintenance and rehabilitation, appreciate challenges and opportunities, if any, in the implementation of the programme; and make recommendations on the way forward. The Committee benefitted from oral and written submissions of stakeholders.

Stakeholders submitted that the principal legislation that governed the construction, rehabilitation and maintenance of roads included; the Tolls Act No. 14 of 2011; the Public Roads Act, No 12 of 2002; the National Road Fund Act, No 13 of 2002; and the Road Traffic Act, No 13 of 2002. Stakeholders also submitted that the road sector had a comprehensive institutional framework comprising of three key sector agencies which included the NRFA, RDA and RSTA. In addition to the foregoing, the Committee was informed that Local Authorities were designated as roads authorities responsible for construction, rehabilitation, maintenance and care of specific classes of roads in their areas of jurisdiction. With respect

to the administration of the Road Fund, the Committee was informed that the Road Fund was initially established in 1993 with income from the fuel levy. Currently the Road Fund was administered by the NRFA and it derived its income from the fuel levy, road user charges, weighbridge fines, toll charges, funding from the Treasury through the Ministry of Finance and National Planning and external funds from development and cooperating partners. Notwithstanding the provisions of the *Tolls Act*, the Road Fund was a basket of funds from various revenue sources which complicated the use of toll fees exclusively for construction, maintenance and rehabilitation of roads as this would be in conflict with the provisions of the *National Road Fund Act*. In addition, revenue from toll charges was exclusively generated from existing roads that required or would require maintenance or rehabilitation. However, the fact that the *Tolls Act* provided for toll revenue to be used on construction of roads had led to skewed allocation of funds towards development projects with little allocation to maintenance, thereby greatly disadvantaging many roads from which funds were being collected. The findings of this study are cardinal to this research as they bring out important information surrounding the implementation of the National Road Tolling Programme in Zambia such as the different sources of revenue which make up the road fund of which toll fees are one of them, however this study does not bring out the extent to which the NRTP allocates funds to the construction of roads in the country.

Foya (2022) in a journal article titled, '*An assessment of the impact of toll (gate) fees collection on road maintenance in Zimbabwe: The toll (gates) of Harare Metropolitan Province (2015-2021)'* seeks to understand the role tollgates play in the maintenance of roads in Zimbabwe. The main objective of the study is to assess of the impact of toll gate fees collection on road maintenance in Zimbabwe. A descriptive research design was adopted for this study. The sampling technique that was adopted was purposive as it was deemed ideal by the researcher to effectively collect all the necessary data for the study. Data was collected through interviews that were carried out with key informants, questionnaires as well as focus group discussion with other stakeholders. Regarding the use of the funds from road tolling, findings indicate that, sixty-four percent of respondents made up of motoring public and those from the Office of Auditor General stated that there was so much corruption in the awarding of tender without going through the correct legal, government procedures. Thus, the procurement of road construction vehicles and some of them not even suitable for

Zimbabwean terrain. Furthermore, a lot of money has been lost thereby affecting road development and maintenance throughout the country. According to these respondents, Zimbabwe National Road Fund (ZINARA) operates in extremely opaque ways such that it has been failing to meet the minimum operation standards. The Annual reports from Office of the Auditor General has flagged a red flag over ZINARA operations. The accounting systems within ZINARA were weak thereby creating large loopholes for embezzlement and theft. There is serious lack of transparency in the disbursements of funds such that the general public have no idea as to how much money is raked in, in every six months or per annum and how this money is used or distributed to various local authorities for the purposes of road maintenance and or development. Furthermore, thirty percent of those interviewed strongly believed that the political appointees in the ZINARA Board has colluded those senior managements of ZINARA to steal the funds meant for roads to other things and for their own use. The above view of senior Cabinet officials colluding with ZINARA officials in corrupt practices has been strengthened by the fact that despite loss of so much moneys from ZINARA, nobody has been prosecuted. Others were actually removed from police cells in Avondale Harare by the former Vice President of the Republic Mr. Phelekezela Mphoko. Two major lessons can be derived from this study, the first one is that lack of transparency in the usage of toll funds may lead to loss of revenue thereby effecting the construction and maintenance of roads. The second lesson is that having week financial controls in institutions especially those involved in income generation can result in misappropriation of funds. However, this study can be critised on grounds that the findings are based on the toll gates in the capital city, Harare without providing experiences of those in other Provinces.

Chilunjika etal (2023) in their journal article titled "*Road Tolling and Domestic Revenue Mobilisation in Zimbabwe"* analyse the effectiveness of road tolling systems as an instrument for mobilising domestic revenue in Zimbabwe. By way of mixed methods research design, the study conceptualised and contextualised the theory, models, technologies and practices of toll revenue collection in Zimbabwe. The study found that toll revenue is not only used for road maintenance but also repayment of loans for projects such as the Plumtree-Harare-Mutare Highway, where ZINARA successfully raised a loan from the Development Bank of Southern Africa (DBSA). In addition, it was noted that toll revenues also covered the

administrative costs at ZINARA. However, there are indications that recurrent expenditure is eroding the bulk of the toll fees, with administrative and staff costs taking up most of the funds. In this regard, the proportion of staff, administrative and other fixed costs is disproportionately high. Thus, it hampers the Road Fund in terms of its ability to maintain the country's road networks. The study also established that tolls are sometimes channelled towards the payment of civil servants' salaries. This shows that funds are being diverted to cater for unrewarding consumptive expenditures at the expense of long-term capital expenditures. Additionally, the study found that in terms of the adequacy of the road tolling revenue, the allocations have been found to fall far below the required funds to complete road construction and therefore the rehabilitation and development of the country's road network continues to be hampered by inadequate financial resources and skilled personnel. This is due to the fact that the road maintenance backlog has continued to widen, thereby widening the funding requirement gap. This study provides an important lesson that in some settings, revenue collected from toll fees is not only used for road infrastructure development but also diverted to other activities. However, it has a weakness in that it omits a discussion on the different modes of toll fees collection, their effect on revenue collection and ultimately road infrastructure development.

Fraunhofer ISI *(2017)* in their report briefing 'The *Economic Impacts of Road Tolls - How tolls can be a mechanism to reduce emissions from transport while raising revenue for the public budget*' summarises the 2017 European Commission review of Directive 1999/62/EC, a piece of legislation, and known commonly as the "Eurovignette Directive". This legislation sets the parameters by which countries in the European Union can toll trucks for their use of road infrastructure. The research looks at the economic and environmental impacts that tolls have had in Germany and Spain since their introduction. This report briefing focused on the German tolling system for trucks and how it has impacted the country since its introduction. The findings established that, the Eurovignette Directive allows for member states to use the revenue collected from tolls for whatever they so choose. The Commission earmarks road user charges to the transport sector and to promote sustainable mobility in general. Such projects are aimed at, inter alia, facilitating efficient pricing, reducing road transport pollution at source, mitigating its effects, improving the CO2 and energy performance of vehicles,

developing alternative infrastructure for transport users, optimising logistics or improving road safety. The findings further show that toll revenues may constitute an important part of the transport sector funding as countries like Switzerland use such revenues to fund the infrastructure of alternative modes while Germany uses the majority of the money for road maintenance and construction. This study informs that in other settings, revenue raised from toll gates is used for the general improvement of the transport sector and not restricted to road infrastructure development. However, like the above study, this study does not discuss the different methods used in collecting toll fees.

2.4 Literature on the effectiveness of national road tolling in maintaining roads

Quintino (2018), in his research report titled '*examine the effectiveness of toll gates in Zambia, a case study of Kafulafuta Toll Gate'* carried out a research whose objectives were to investigate the extent to which the toll gate fees had enhanced communities where they are installed, to establish the durability of the mechanisms used, to ascertain how much is generated, the cost of running and cost of maintaining each toll gate and to determine the effectiveness of the process of auditing financial resources from the toll gates in Zambia. This research used both qualitative and quantitative data from key officials at Road Transport and Safety Agency, Road Development Agency, National Road Fund
Agency and motorists who were operating.

Findings indicate that 67% of the respondents said toll gate fees had enhanced the site where the toll is situated and if not enhanced then works were going on. 27% were not sure, perhaps they had not seen the roads or the works going on at any toll site while 6% said no enhancement has taken place at the toll site instead the roads have even become worse than before. Some taxi drivers added that those roads such as the Ndola-Kitwe Road, which were recently constructed, are being damaged quickly. This has therefore raised concerns about the quality of road construction and maintenance. Managers of the toll gates on the other hand argued that they did not see any change, especially around places where the toll gates have been stationed in terms of improved standards of roads. They therefore suspected that the money was being used for other activities and not road maintenance or rehabilitation.

The earlier cited report by Republic of Zambia (2022) points out that, with respect to road maintenance initiatives through use of toll fees, the committee learnt that in 2015 the RDA launched the Road Maintenance Strategy, which was a ten-year plan covering the period 2015-2024.

The Road Maintenance Strategy was formulated to set a pathway for the provision of construction and maintenance activities on the core road network. It was hoped that the initiative would create an atmosphere that guaranteed long term economic development through the construction and maintenance of the core road network. The findings of this study are cardinal to this research as they bring out important information surrounding the implementation of the National Road Tolling Programme in Zambia such as the implementation of the road maintenance initiatives through the use of road toll fees, however this study does not bring out the extent to which the NRTP allocates funds to the maintenance of roads in the country.

Foya (2022) in a journal article titled *'An assessment of the impact of toll (gate) fees collection on road maintenance in Zimbabwe: The toll (gates)* of *Harare Metropolitan Province (2015-2021) seeks to understand the role tollgates play in the maintenance of roads in Zimbabwe*.' The main objective of the study is to assess the impact of toll (gate) fees collection on road maintenance in Zimbabwe. The main research question is the major impact of toll fees collection on the maintenance in Zimbabwe. A descriptive research design was adopted for this study. The sampling technique that was adopted was purposive as it was deemed ideal by the researcher to effectively collect all the necessary data for the study. Data was collected through interviews that were carried with key informants, questionnaires as well as focus group discussion with other stakeholders. Findings indicate that despite the collection of tolls from road users, there is limited impact on road development and its subsequent maintenance. Over 60% of respondents were skeptical about the uses of the financial resources collected by ZINARA. The respondents were of the view that there was no transparency nor accountability in the disbursement of ZINARA moneys. The respondents from both Auditor General Office, ZIMRA and even from ZINARA itself admitted that ZINARA was collect large chunks of money both in foreign currency through the tolls levied on foreign trucks and passes as well as Zimbabwean vehicles crossing mainly into South Africa.

It is argued that despite the availability of evidence of funds being collected, there is no evidence of the funds being put to good use and the roads since 2009 when toll fees were introduced. The most roads are in a deplorable state. More so in the areas including Harare the capital city. The research established that Matabeleland North and South are the worst affected. For instance, the Bulawayo -Victoria Falls is in bad shape and this is also followed by Bulawayo-Beitbridge Road which is full of potholes and they have not been attended for a long period yet they are major, busy roads with heavy traffic. The respondents of the study fully appreciated the need for levying motoring public for the purpose of developing the roads that are in dire need of attention. The disappointment comes when the funds are not being used for intended purposes. The study by Foya (2022) is significant in that it informs that road users expect to see improvement in the condition of roads as they pay the toll fees and lack of it may create an impression that the funds are being used for other ventures. However, these findings may be critised on grounds that the study was only conducted at toll gates in Harare the capital city without discussing experiences of the toll gates in the other Provinces.

2.5 Lessons drawn from the literature

From the literature reviewed, nine lessons can be drawn. The first lesson is that the collection, management and utilisation of toll fees follows a complex legal and operational framework. This includes transmission of collected funds to the central treasury's consolidated account while lower offices are required to keep records of how much has been collected and transferred. Thereafter, funds from the consolidated account are remitted to spending agencies for allocation to different road projects (The Zambia Tax Platform, 2021). The second lesson that can be learnt from the literature is that, the collection of toll fees manually poses some challenges such as delay in attending to clients leading to congestion at the toll gate. The third lesson learnt is that the use of rudimentary structures may lead to loss of revenue during heavy rainy season as the toll attendants may abandon the toll gates to seek shelter elsewhere (Foya, 2022).

The fourth lesson is that sometimes scenarios present themselves whereby upon payment of the fees the motorists do not wait for the ticket. This can lead to malpractices at the toll gate as the toll collector may issue the same ticket to another motorist leading to loss of revenue

(Foya, 2022). The fifth lesson is that the absence of proper monitoring systems which determine the type of vehicle that passes through the toll gate may create irregularities between the fees collected and the vehicles type especially if there are no monitoring mechanisms (Foya, 2022). The sixth lesson learnt is that when toll gates are operated on a manual basis, it results in an increase in toll costs which can be transferred to the road users and thus constitute a burden on road users, compared to those using similar roads without tolls (Stock, 2024). The seventh lesson is that, collecting tolls manually can resulted in job creation and hence result in an increase in economic demand which can then stimulate economic activity (Stock, 2004). The eighth lesson from the literature is that lack of transparency in the allocation of funds collected from tool fees can lead to misappropriation of funds thereby affecting road maintenance (Quintino, 2018). The ninth lesson is that lack of improvement in roads is likely to create an impression that the funds being collected for the purpose of road development are being channelled to other ventures and not to the intended purpose (Foya, 2022).

2.6 Gaps in the literature

There are three major gaps in the literature. First, the literature focuses on the means by which funds move from the point of collection to allocation and the performance of the national road tolling system without establishing the suitability of the method used to collect the toll fess. Second, much of the literature is based on people's perceptions rather than facts. Third, in some cases the research designs used were case studies focusing on only a single unit of study.

2.7 Conclusion

From the reviewed literature, it is evident that road tolling is used by a number of countries to mobilise additional resources for road infrastructure development. It can be seen that; this method of revenue mobilisation has gained acceptance by many people in various countries despite most of them not being certain that the toll fees collected are being utilised for the intend purpose by the institutions entrusted with this task of collecting and allocating these funds to road infrastructure development. With regard to the methods of collecting toll fees,

it can be seen that more countries are moving from manual collections which purportedly lead to congestion leading to clients spending more time than they should at the toll gates, to electronic methods of collecting toll fees which are believed to be a faster option. As can be seen above, few studies have been conducted on the NRTP in Zambia but none of them investigated the extent to which the NRTP has improved the collection of road toll fees from motorists and the extent to which the programme enables the allocation of road toll fees towards the construction and maintenance of roads in Lusaka Province.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology that was adopted for this research. The chapter will look at the type of research, location of the research, research approach, research design, the sources of data, the population and sample size, the sampling methods, the data collection methods, the reliability of data, the validity of data, the data analysis techniques and the ethics which were applied when conducting the research. The chapter will then discuss the limitations of the research and end with a conclusion.

3.2 Type of Research

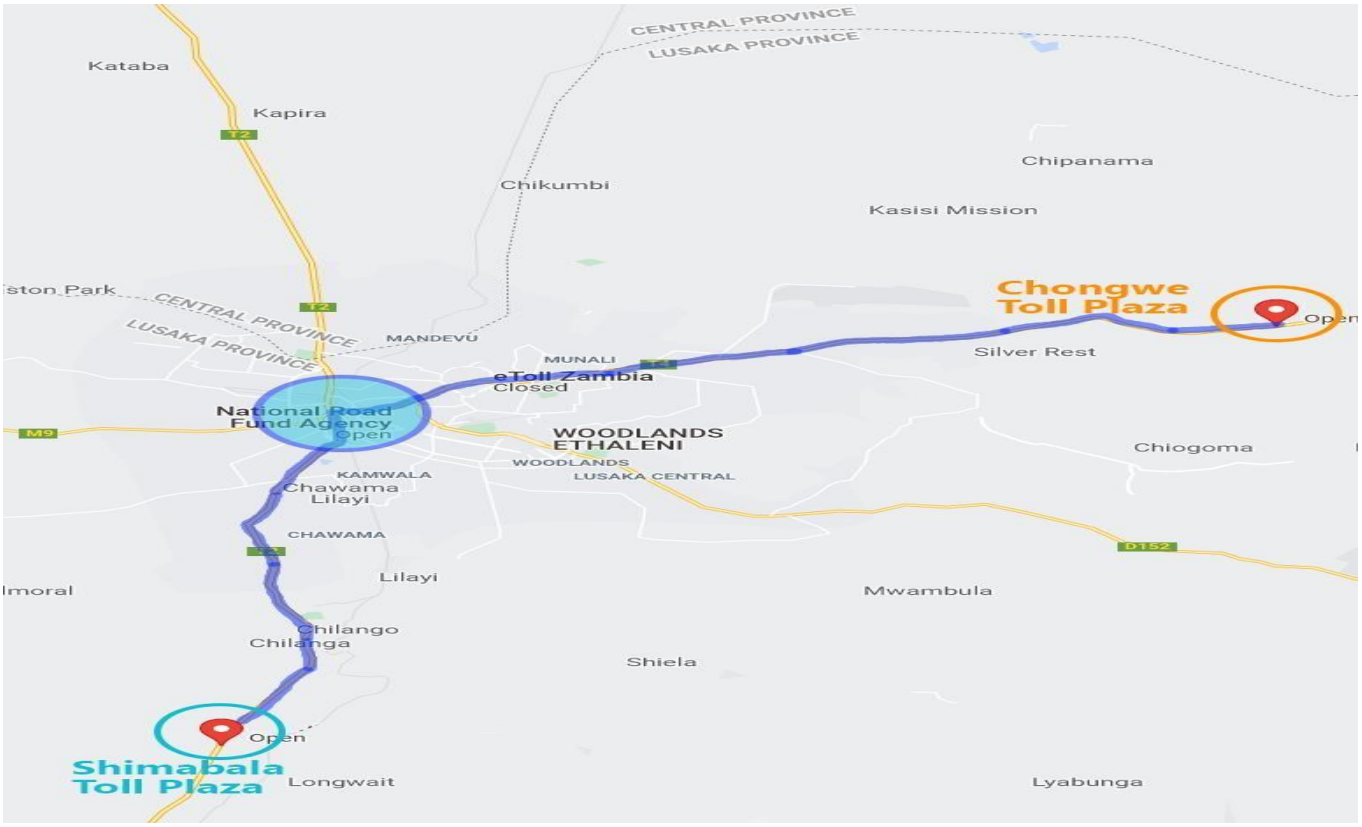
The type of research that was conducted was evaluative research. Evaluative research refers to the type of research in which the effectiveness and success of a particular programme, policy intervention or project is measured (Unseen, 1978). This type of research was chosen because it is used to measure the effects of a programme against the goals it set out to accomplish as a means of contributing to subsequent decision making about the programme and improving future programming (Unseen, 1978). The purpose of this evaluation research was to establish the extent to which the objectives of the National Road Tolling Programme in Zambia have been achieved. These objectives relate to the collection of road toll fees through the implementation of the National Road Tolling Programme, allocation of road toll fees towards road infrastructure development and the use of toll fees to maintain roads.

3.3 Location of the Research

This research was confined to two toll plazas in Lusaka province. These are Shimabala Toll Plaza on Kafue Road and Chongwe Toll Plaza on Great East Road (Republic of Zambia, 2022). Both Chongwe and Shimabala Toll Plazas were selected because they are based in Lusaka Province. Lusaka Province was selected because it is centrally located and connects the country's four main highways leading North, East, South and West of the country (Lusaka City Council, 2008). This means that it experiences the highest traffic thereby having the

highest number of vehicles using the toll roads as compared to other provinces. The other reason Lusaka Province was selected is because that is where the NRFA one of the key players in the National Road Tolling programme is based. This proximity made it easier for the researcher to adequately interact with this institution and the two toll gates when conducting the research.

Figure 3.1: Map of Lusaka province and the locations of Chongwe and Shimabala toll gates



Source: Google Maps (2021)

3.4 Research Approach

This research employed the mixed methods research approach. This is a research approach which encompasses the use of both qualitative and quantitative research approaches. On the one hand, qualitative research approach focused on the collection of qualitative data. Qualitative data is the indepth and detailed information about the issue under investigation which is collected in narrative form. Mertens (2009) contends that qualitative data is

information which is obtained through the use of open ended questions and words. On the other hand, quantitative research approach focused on the collection of quantitative data. Quantitative data is information which can be quantified, grouped or expressed in terms of numbers, statistics, frequencies or percentages. Mertens (2009) further contends that quantitative research involves the use of closed ended questions and numbers. Therefore, mixed methods research approach resides in the middle of this continuum because it incorporates elements of both qualitative and quantitative approaches. The core assumption of this form of inquiry is that the combination of qualitative and quantitative approaches provides a more complete understanding of a research problem than either approach alone (Mertens, 2009)

3.5 Research Design

The research design used in this research was non-experimental design. Non-experimental design refers to research designs in which researchers measure variables as they naturally occur without any further manipulation (Cook, et al, 2001). The specific type of non-experimental design that was adopted was a case study. According to McLeod (2019), case studies are in-depth investigations of a single person, group, event or community. In this regard, this research was a case study of the National Road Tolling Programme in Lusaka Province. Madimutsa (2019) further argues that, case studies are important because they allow the researcher to collect detailed information about a social unit and its interaction with the environment that is, economic, political, social, and cultural conditions, among others. In this regard, the research focused on collecting data on the effectiveness of the NRTP in Lusaka Province at two toll gates namely; Chongwe and Shimabala. The research was conducted during the period February, 2022 and March, 2022.

3.6 Sources of Data

This research used both primary and secondary data sources. Primary data refer to the first hand data gathered by the research himself through observations, surveys, questionnaires, case studies, interviews and focus groups (Ajayi, 2023). Primary data can be both qualitative and quantitative. Qualitative data was collected from key informants who are officials at

National Road Fund Agency (NRFA), toll gate managers at both Shimabala and Chongwe toll gates in Lusaka Province. Quantitative data on the other hand was collected from the road users using the two tolled roads at the time of the research. Primary data were collected because this type of data is original in nature and as such helps in addressing targeted issues or specific research issues (Thakur, 2021). Secondary data on the other hand is data collected by someone else earlier, a party not related to the to the research study but collected these data for accessible but are not pure as they have undergone through many statistical treatments (Ajayi, 2023). This research used secondary data from the National Road Fund Agency (NRFA) and Road Development Agency (RDA) annual reports and strategic plans. Secondary data were collected because it is useful in extracting the relevant information from other sources or previous studies on the research topic (Kalu et al, 2018).

3.7 Population

The population from which the sample size was drawn was all the motorists using the Shimabala and Chongwe Toll Gates in February, 2022 and officials at National Road Fund Agency, Shambala and Chongwe Toll Gate.

3.8 Sample Size

This research had a sample size of 109 participants. Qualitative data was collected from nine key informants namely; three officials from NRFA in charge of the National Road Tolling Programme, two toll gate managers that is, one from Shimabala Toll Gate and one from Chongwe Toll Gate, four toll fees collectors, two from Chongwe Toll Gate and two from Shimabala Toll Gate. A sample of nine key informants was chosen because it was large enough to ensure collection of reliable data. This is based on the arguments by Creswell (2017) that a sample size of between five to 25 participants is adequate for collecting qualitative date. While a sample size of 100 was chosen based on the argument by the Central Theorem Theory that the sample size equal or greater than 30 are often considered sufficient for the get reliable results (winters, 2022). On the other hand, quantitative data was obtained from 100 motorists, that is, 50 passing through the Shimabala Toll Gate and the other 50 passing through the Chongwe Toll Gate at the time of the research.

3.9 Sampling Methods

This research used purposive sampling to select key officials from the NRFA and the two toll gates under investigation which provided qualitative data. These key informants were obtained from the key departments handling matters of the NRTP in the NRFA and holding key positions. One key informant was the Manager from the Road Fund Management, and two included; the Manager from the Road Tolling Department and the Senior Toll Collector from the same Department. Etikan et al (2017) argue that, this sampling design is based on the judgment of the researcher as to who will provide the best information to succeed in achieving the objectives of the study and the person conducting the research needs to focus on those people with the same opinion to have the required information and be willing to share it. Hansen et al (1994) further state that, in purposive sampling, sampling is done with a purpose in mind, there is usually one or more specific predefined groups the researcher is seeking. Therefore, this method of sampling was used in this research based on the researcher's judgement that the nature of information needed to answer the research questions was supposed to be obtained from the above-mentioned groups of people who are the key players in the Road Tolling System in Zambia.

On the other hand, convenience sampling was used to select the motorists who provided quantitative data. According to Hansen et al (1994) convenience sampling is the sampling method in which researchers simply use participants who are available. It is usually used in cases where there is no well-defined population and a list of members of the population is not available. This method was selected for this research because there was no list of motorists using the road at the time of the research. Apart from this, most motorists using the roads were busy hence the researcher administered the questionnaires to only those who were willing to participate until the required number of respondents was attained.

3.10 Data Collection Methods

This research used semi-structured interviews to collect qualitative data from the key informants from NRFA, Shimabala and Chongwe Toll Gate Managers and Toll Fee Collectors. Kumar (2011) argues that, a semi-structured interview is a qualitative research

method that combines a pre-determined set of open questions (questions that prompt discussion) with the opportunity for the interviewer to explore particular themes or responses further. This method enabled the researcher to get detailed information on the various dynamics surrounding the road tolling system in Zambia with reference to Lusaka Province.

On the other hand, a mixture of closed and open-ended questions was used in questionnaires to collect quantitative data from the motorists. This gave respondents a choice of choosing from a list of pre-set questions and to create their own responses. Kumar (2011) states that questionnaires are designed to collect and record information from multiple people, groups or organisations in a consistent way and may contain open-ended or closed questions, or a mixture of both. An open-ended question can be answered in many ways, according to the preferences of the person being interviewed or filling in the form while closed questions must be recorded in a specific way. Further, Kumar (2011) notes that closed questions are generally better for gathering data that needs to be analysed statistically(quantitative), whereas open-ended questions are more often analysed through qualitative methods. However, even open-ended questions can be analysed statistically if the answers are later coded or sorted by those administering the questionnaire.

Apart from this, secondary data was collected through reading and analysing documents on national road tolling. These documents were in the form of journals, reports and annual reports and strategic plans from the National Road Fund Agency (NRFA) and Road Development Agency (RDA). This method was used to gain insights into what was documented on national road tolling.

3.11 Reliability of Data

This research used internal consistency to ensure that the collected data are reliable. Internal consistency involves having research tools consisting of questions that are logically related in order to see if the responses to the questions will be equally logically related (Kumar, 2011). This method was applied to both the interview guides used to collect qualitative data and the questionnaire used to collect quantitative data. This method was used because it helps generate results which are more reliable and credible (Kumar, 2011).

3.12 Validity of Data

This research used content validity to ensure that the collected data are valid. Content validity is a type of validity which ensures that the research instruments used are representative of the full content of the issue under investigation (Kumar ,2011). In this research, the researcher ensured that the interview guides and questionnaires which were used to collect qualitative and quantitative data, respectively, were inclusive of all aspects which this research was attempting to investigate. In the case of national road tolling, the aspects which were covered were; suitability of the strategies of collecting toll fees and toll fees collected. For road infrastructure development, the aspects which were covered were the following; road surfacing, sign posts, road width, street lights, road markings, drainage systems, road humps and other aspects of the road.

3.13 Methods of Data Analysis

Quantitative data were processed and analysed using the Statistical Package for Social Sciences (SPSS) and Excel Spread Sheets. SPSS is used to perform data entry and analysis and to create tables and graphs for the variables being investigated (Arkkelin, 2014). On the other hand, qualitative data was analysed using thematic analysis. Thematic analysis refers to a method for identifying, analysing, organizing, describing, and reporting themes found within a data set (Guest et al, 2011). Through this method of analysis, data from key informants' interviews were transcribed into major themes. The themes included; strategies of collecting toll fees, suitability of the strategies of collecting toll fees, utilisation of toll fees and effectives of the NRTP on road infrastructure development.

3.14 Ethical Considerations

The researcher got ethical clearance from HSSREC under clearance No. HSS REC: 2020-SEP-032. In addition to this, the researcher firstly sought permission to carry out the research from key officials and respondents relevant to this study. The research participants were fully informed about the procedures involved in the research and were asked to give their consent to participate. They were also informed that if at any point in the process of giving out data felt uncomfortable, they would be allowed not to give responses to questions they are not

comfortable to respond to or to withdraw their participation from the research. The participants were also guaranteed that the information they were going to provide would remain confidential and be used only for the purpose it was intended. Apart from this, the participants were also assured of their anonymity throughout the study to guarantee privacy.

3.15 Limitations of the Research

This research had several limitations. Some of them are as follows;

1. The convenient sampling method used in this research to select the motorists is one of the nonprobability methods of sampling which are criticised for being biased. According to Glen (2005), non-probability sampling is a sampling technique where the probability of any member being selected for a sample cannot be calculated. This sampling method relies on the subjective judgment of the researcher. One major disadvantage of non-probability sampling is that it is impossible to know how well you are representing the population and the confidence intervals and margins of error cannot be calculated. However, although the sampling method used to obtain the quantitative data in this research limits generation of findings to the entire population, the views of the key informants who are well knowledgeable about the NRTP were incorporated in the research.
2. The information on the utilisation of toll fees was only provided by two key informants from the Road Fund Management Department and Road Tolling Department hindering the researcher from getting different views on the Subject. All the other seven key informants could not answer the questions stating that they were not aware how the road toll fees were being utilised. Furthermore, the said key informants were overly busy and therefore did not provide much information but recommended some documents from which the researcher could get the needed information. The researcher relied on the few information given by this key information and the official documents such as the Annual Reports and Strategic Plans to get the required information.

3.16 Conclusion

As can be seen in the chapter presented above, this research is evaluative research as it attempts to measure the effectiveness of the NRTP in Zambia. The research was conducted at Shimabala and Chongwe Toll Gates in Lusaka Province and used the mixed methods approach which involves the use of both qualitative and quantitative data. The research used the nonexperimental research design in that the research variables were studied in their natural environment without being manipulated in any way. The specific type of nonexperimental design which was adopted was the case study design. The research used both primary and secondary sources of data and a sample size of 109 participants. Purposive sampling was adopted in this research as the researcher had a specific population in mind which was essential in obtaining the useful information to answer the research questions. This research further used content validity to ensure that the collected data was valid and data analysis was done using the Statistical Package for Social Sciences (SPSS) and Excel Spread Sheets for quantitative data and thematic analysis for qualitative data. The researcher also ensured that permission was sought from the research participants before obtaining data from them and assured them that the data being collected was only required for academic purposes. Nevertheless, the researcher had a limitation with regard to data collection. This is because the key informants at NRFA were busy and therefore did not give adequate information especially on the utilization of road toll fees. However, the researcher relied on the information from official documents to obtain the required information.

CHAPTER FOUR

THE NATIONAL ROAD TOLLING PROGRAMME AND COLLECTION OF ROAD TOLL FEES FROM MOTORISTS

4.1 Introduction

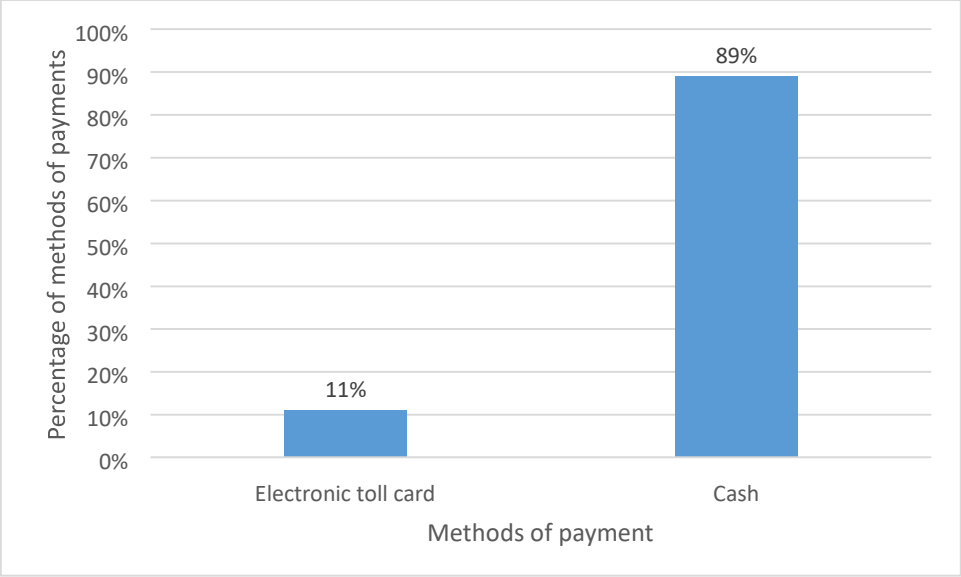
The purpose of this chapter is to present and discuss the findings relating to the first specific objective which reads: To assess the extent to which the National Road Tolling Programme has improved the collection of road toll fees from motorists in Lusaka Province. In order to achieve its purpose, the chapter has been divided into five sections. The first section is the introduction. The second section explains the strategies used to collect road toll fees. The third section presents the extent to which the NRTP collects road toll fees from eligible motorists. The fourth section explains the challenges faced in the collection of road toll fees from the motorists. The final section is a conclusion of the chapter.

4.2 Strategies used to collect Toll Fees

The findings indicate that there are two strategies used to collect road toll fees which are cash and Electronic Toll Cards (ETCs). The cash method involves motorists paying cash in order to be allowed passage at the toll gate. This was the earliest method used to collect road toll fees. ETCs on the other hand allows motorists to make cashless payments at all toll gates across the country (National Road Fund Agency, 2020). Electronic Toll Cards (ETCs) use the pre-paid toll accounts. Each time an ETC is used, the corresponding toll charge is debited from the motorists' account and when the account balance runs low, top up is done using one of the many payment methods available (National Road Fund Agency,2020).

The findings show that some motorists prefer using ETCs while others prefer cash to pay for road toll fees. This trend is shown in figure 4.1 below.

Figure 4.1: Motorists using each toll fee collection method



Source: Field Data

Figure 4.1 reveals that out of 100 motorists, 89 (89%) used cash while 11 (11%) used ETCs to pay road toll fees. This indicates that the motorists who used cash were more compared to those who used ETCs. This is attributed to the fact that the use of cash was the first method used when the NRTP was introduced and as such most motorists are still accustomed to it. The Manager of the Road Tolling Department at NRFA stated that:

> All motorists were using cash to pay road toll fees since the inception of the tolling programme in 2013 until 2018 when E-Tolling was introduced. And since then the Agency has been sensitising members of public on the benefits of getting on the E-Toll platform. I must say the response is good so far as quite a number of our clients have migrated to the E-Toll platform but there is still more that has to be done. We are hopeful that with time more and more people will see the need to migrate to this platform.

According to NRFA (2020), the Agency anticipates to have more that 50% of revenue collection on the ETCs by 2022, currently it is standing at 28%. The goal of the Agency is to

have 60 to 70 percent of heavy goods vehicles paying through the ETCs. The Manager of the Road Fund Management Department at NRFA added that:

> There should be less money collected through cash and more through electronic toll cards because cards are safe, convenient and faster. People are buying electronic toll cards every day. NRFA has a target of having more than 50% of revenue collected through the use of electronic toll cards. However, there is need to ensure that maintenance of this platform is prioritised to ensure improvement on maintenance regimes and reduce network failure.

Like cash payments, ETCs are also used in developed states such as Florida in the United States of America (Centre for Urban Transportation Research, 2004). The Centre for Urban Transportation Research (2004) argues that electronic payment of toll fees not only reduces the cost of collecting toll fees but also reduces queuing at toll plazas.

The findings also show that some categories of vehicles have a higher likelihood of paying toll fees using ETCs while others prefer cash. This is shown in table 4.2 below.

Table 4.2: Distribution of method of payment by type of Vehicle

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Type of Vehicle	Method of Payment		
	Cash	Electronic Toll card	
	Frequency	Frequency	Total
Small	37 (97%)	1(3%)	38
Minibus	17 (100%)	0	17
Big bus	10 (100%)	0	10
Light trucks	8 (80%)	2(20%)	10
Heavy trucks	17 (68%)	8(32%)	25
Total	89 (89%)	11 (11%)	100

Source: Field Data

Table 4.2 shows that out of the 38 motorists who drove small vehicle, 37 (97%) used cash to pay for toll fees while 1(3%) used an ETC. These small vehicles generally use cash to pay toll fees as they are privately owned and, in most cases, used for non-commercial activities and thereby do not appreciate the need to use the ETCs. The table also shows that all 17 (100%) minibus drivers used cash to pay for toll fees and all 10(100%) drivers of big buses used cash to pay for road toll fees. This category of vehicles prefers the use of cash to card because they usually have cash at hand received as bus fares which they easily use to pay toll fees.

The table further shows that out of the 10 drivers who drove light trucks, 8(80%) used cash to pay for road toll fees while 2 (20%) used an ETC. This implies that the majority of motorists in this category prefer paying toll fees using cash. With regard to the heavy trucks, the table shows that out of the 25 drivers, 17(68%) used cash while 8(32%) used ETCS. This situation is because heavy trucks mostly operate on commercial basis and therefore ETCs are

more convenient for companies operating large vehicles. This is because ETCs help these companies evade the burden of giving each driver cash for paying tolls on everyday basis and makes it easier for them to monitor the movements of the vehicles and the monies spent on toll fees. According to NRFA (2020), companies who have fleet of over 300 find the use of ETCs more convenient as this saves them from withdrawing money on everyday basis to give the drivers.

The findings reveal that a preference by a motorist to use a particular method of payment is also influenced by the amount of money they are required to pay. This situation is seen in table 4.3 below.

Table 4.3: Amount paid by type of method used

Amount paid (K)	Cash	Electronic toll card	
	Frequency	Frequency	Total
2	3(100%)	0	3
5	3(100%)	0	3
20	36(97%)	1(3%)	37
40	13 (93%)	1(7%)	14
50	17 (94%)	1(6%)	18
150	17 (68%)	8 (32%)	25
Total	89 (89%)	11(11%)	100

Source: Field Data

Table 4.3 shows that all the 3(100%) motorists who paid K2 used cash to pay for toll fees, it also shows that all the 3(100%) motorists who paid a K5 used cash to pay road toll fees. The table also shows that out of the 37 motorists who paid K20, 36 (97%) paid using cash while 1(3%) paid using an ETC. This indicates that motorists who paid less money preferred cash

to pay for road toll fees. The table also indicates that out of the 14 motorists who paid K40, 13 (93%) used cash to pay for toll fees while 1(78%) used an ETC. On the other hand, it can be seen that out of the 18 motorists who paid K50 for toll fees, 17(94%) used cash to pay for road toll fees while 1(6%) used an ETC. The table further indicates that out of the 25 motorists who paid K150, 17 (68%) used cash while 8(32%) used an ETC. These findings reveal that the higher the amount of toll fees a vehicle is required to pay, the more likelihood that that particular vehicle will pay toll fees using an ETC and vice versa. This is because its safer and more convenient for vehicles which pay higher amounts of money to use ETCs as they simply load the value in the card . Additionally, these vehicles are usually used for commercial purposes hence the payment of tolls using a card makes the monitoring of movements easier.

The findings further reveal that the amount of money to be paid by a vehicle is determined by its Gross Vehicle Mass (GVM). However, in some cases vehicles with the same GVM pay different amounts due to different circumstances. These different amounts arise because some vehicles pay the Standard Prescribed Amount (SPA) which is the stipulated amount each class of vehicles is required to pay, others pay the Local User Discount (LUD) which is an amount paid by motorists who live within a 10km radius from the toll gates and some pay the Frequent User Discount (FUD) amount which is given to motorists when they use the toll gate more than 10 times in a particular month. The Manager at the Road Tolling Department at NRFA said that:

> There is the standard prescribed amount which is the recommended amount that each vehicle type is required to pay by law. However, some vehicles living within a radius of 10km from the toll gate are given a discount of 90% percent and this is called a local user discount, local chiefs qualify for this discount, while others are given a discount of 75% for passing at the toll gate over 10 times in a particular month. This is called the frequent user discount. These discounts only apply to categories A and B vehicles, those paying K20 and K40.

The Senior Toll Collector at the NRFA head office added that:

> There are five classes of vehicles named A, B, C, D and E and each class has its own amount of toll fees. Vehicles in category A are those with GVM of up to 3500 kg and pay K20 as the standard prescribed amount and K5 as the frequent user discount amount, Category B vehicles have a GVM between 3501 - 6500 kg and pay standard prescribed amount of K40 and K10 as the frequent user discount amount, category C vehicles have GVM of 6501 and above and pay standard prescribed amount of K50, category D vehicles have GVM of and standard prescribed amount of 150 while category E vehicles are the abnormal vehicles with GVM above 56000kg and pay K500 as a standard prescribed amount.

These different amounts paid by different categories of vehicles are shown in table 4.4 below.

Table 4.4 Amount paid by type of vehicle

Type of Vehicle	Amount Paid						
	2	5	20	40	50	150	Total
	Frequency	**Frequency**	**Frequency**	**Frequency**	**Frequency**	**Frequency**	
Small	3 (8%)	3 (8%)	32 (84%)	0	0	0	38
Minibus	0	0	5 (29%)	12 (71%)	0	0	17
Big bus	0	0	0	0	10 (100%)	0	10
Light truck	0	0	0	2 (20%)	8 (80%)	0	10
Heavy Truck	0	0	0	0	0	25	25
Total	3	3	37	14	18	25	100

Source: Field Data

Table 4.4 shows that 38 small vehicles paid toll fees in the range of K2-20. Out of these, 3(8%) paid K2, 3(8%) paid K5 whilst 32(84%) paid K20. The Manager at Shimabala Toll Station said that:

> Some small cars pay an amount of K2. This is the amount paid by small vehicle under the local user discount which is a reduction in toll fees which is given to all small car users who live within a 10 km radius from the toll gate. The other small cars pay K5 as a result of the frequent user discount which is given to motorists after passing at the toll gate for more than ten times in the same month while other

small cars pay K20 which is the standard prescribed amount for this category of motorists.

Table 4.4 also shows that out of the 17 minibuses (both light passenger buses and medium light passenger buses), 5 (29%) paid K20 and 12 (71 %) paid K40 while all the 10 big buses paid K50 which is the SPA for this type of buses. These fees are in agreement with what the Manager at Shimabala Toll Station said that:

> Light passenger mini buses with 0-16 seats pay K20 as the standard prescribed amount and K5 as the frequent user discount, the medium light passenger mini buses with 16-30 seats pay K40 as the standard prescribed amount and K10 as the frequent user discount amount. The big buses with 30 plus passengers pay K50 as standard prescribed amount and are not entitled to a frequent user discount.

Table 4.4 further shows that out of the 10 motorists who drove light trucks, 2(20%) paid a K40 while 8 (80%) paid K50. This difference in toll fees is as a result of the difference in the GVM of the light trucks as some tend to be heavier than others. On the other hand, all 25 heavy trucks paid an amount of K150.

4.3 Extent to which NRFA collects toll fees from eligible motorists at the Shimabala and Chongwe Toll Gates

As indicated in the conceptual framework, the extent of collection of tolls fees from the motorists is measured in terms of very effective if more than 85% of the planned amount is collected, effective if between 70% and 84% revenue of the planned revenue is collected, somewhat effective if between 50% and 69% of the planned revenue is collected and not effective if below 50% of the planned revenue is collected. According to Tolls Act. 14 of 2011, all motorists are required to pay road toll fess apart from those exempted by law. In line with this requirement, the Manager Tolling Department mentioned that "all motorists pay road toll fees before passage at the toll gate." However, it has been noted that incidences occur whereby a motorist has no money to pay at the toll gate. The common response given by all key informants interviewed on this matter is that no motorist is allowed passage at the toll gate without paying the toll fee. The Manager at Chongwe Toll Gate indicated that:

> Passage at the toll gate is strictly by payment of the road toll fee, the system has no technique which allows motorists to pass without paying toll fees and if someone runs away it is considered as abscondment and that person is charged. There are police officers stationed at the toll gates to deal with such motorists.

Therefore, motorists who do not have the funds to pay are asked to find alternative ways to pay. One of the alternatives is to use the mobile phone account of the motorists. The Manager of the Road Tolling Department at NRFA indicated that:

> Sometimes motorists genuinely do not have money to pay because they forget that they will find the toll gate on the way. However, such motorists are asked to park their vehicles and arrangements are made for them to pay either using their mobile money account or any other means because by law everyone is supposed to pay except those categories of vehicles outlined in Tolls Act No.
> 11 of 2011.

The other alternative involves workers at the toll gate lending money to the affected motorists. One of the toll fee collectors at Chongwe Toll Gate indicated that "workers at the toll gate sometimes lend money to the motorists who do not have money to pay at the toll gate which they are supposed to pay back later either using a mobile money service provider or any other means". However, a Senior Toll Collector based at NRFA, Head Office indicated that such situations do happen but are not common.

The key informant said that "cases of motorists not having money to pay at the toll gate are rare because the NRTP commenced in 2013 and there has been a lot of sensitisation about the programme so far". While in some countries such as Zimbabwe (Foya, 2022), some motorists refuse to pay the toll fees, this is not the case in Zambia. According to Foya (2022), some motorists in Zimbabwe out rightly avoid paying the fees as they normally accelerate their vehicles and disappear.

However, some categories of vehicles are exempt from paying toll fees. These categories of vehicles and the reasons for the exemption are discussed below.

The Manager at Shimabala Toll Gate said that:

> Some of the vehicles exempted from paying toll fees include; the presidential motorcade, the vice president's motorcade, Zambia Air Force vehicles, Zambia Army vehicles, Zambia Police vehicles, Zambia National Service vehicles, ambulances and firefighters. These vehicles are exempted from paying toll fees for security and emergency reasons.

The Senior Toll Fee Collector at NRFA Head office added that:

> The vehicles exempted from paying toll fees are defense and security registered vehicles, Prison Service vehicles, Bank of Zambia vehicles and vehicles carrying blood samples. These vehicles are exempted from paying toll fees because they are emergency vehicles as a result of the nature of duties they perform such as saving lives and materials they carry such as blood samples.

Furthermore, the Manager of the Road Tolling Department at NRFA stated that "the Tolls Act No. 14 of 2011 exempts the constructors' vehicles from paying toll fees as they move from one part of the road to the other to carry out road construction works". This agrees with the finding by Foya (2022) that all government vehicles bearing white number plates, diplomatic vehicles, ambulances and the presidential motorcade in Zimbabwe are exempted from paying tolls.

With regard to the monthly collections at both the Shimabala and Chongwe Toll Gates when every eligible motorist pays toll fees, the Manager at Road Fund Management Department said that,

> The target amount to be collected at Chongwe Toll Gate is 4 million while the target amount to be collected at Shimabala Toll Gate is 10million. However, an average amount of 4.3 million is collected from Chongwe Toll Gate while an average amount of 10.5 million is collected from Shimabala Toll Gate monthly.

This means that an average amount of 177.6 million was collected from the two toll gates annually against the required amount of 168 million. Based on the responses from the Manager, it means that the NRTP had improved the collection of toll fees at Chongwe Toll Gate by 107.5 %. On the other hand, the collection of toll fees at Shimalaba Toll Gate had improved by 105%. This means that these toll gates exceeded their targets and were able to reach an average of 106 % for the whole province

4.4 Challenges faced in the collection of toll fees

There are eight major challenges faced in the collection of road toll fees. The first challenge involves handling cash in the era of Corona Virus of 2019 (COVID 19) which puts toll gate staff at risk of contracting the disease. NRFA (2021) notes that, cash-based transactions at the toll gates have challenges because this is a COVID 19 era and there are chances of transmitting COVID 19 through handling cash. The second challenge faced involves dealing with motorists who do not have money to pay for the toll fees. The Manager of the Road Tolling Department at NRFA noted that "sometimes motorists genuinely do not have money to pay because they forget that they will find the toll gate on the way, as a result these affected people are requested to park their vehicles to find alternative ways to pay the toll fees"

The third challenge encountered in the collection of road toll fees is the lack of security at the toll gates. The Manager of Road Tolling Department at NRFA stated that "an incident occurred at one of the toll gates in Northern Province where a police officer manning the toll gate at night was shot dead and two female Toll Fees Collectors were raped by criminals." The fourth challenge involves poor internet connectivity experienced in the use of the ETCs. The manager of the Road Tolling Department at NRFA said that "sometimes there is network failure which requires motorists to wait slightly longer than usual and this makes some motorists impatient and unruly although backup is always there and receipts are written manually."

The fifth challenge faced in the collection of road toll fees is congestion at the toll gate which arises as a result of the manual toll fees collection method. One of the toll collectors at Chongwe Toll Gate indicated that "the manual collection of toll fees leads to congestion at the toll gate because it tends to be slow, sometimes vehicles queue up and this makes

motorists get impatient because most of them are usually very busy." This finding agrees with Foya (2022) who states that manual ticketing and collection in the Zimbabwean tolling system has posed some challenges which are militating against the efficient and effective collection of revenues at the toll gates. The manual nature has created problems affecting traffic flow (that is, delays and congestion are conspicuous at the Zimbabwean toll points especially during peak hours) as it falls short in sufficing the traffic volumes.

The sixth challenge mentioned is the problem of double deduction. A Toll Fee Collector at Chongwe Toll Gate stated that "sometimes the electronic toll card deducts the money twice from the motorist's toll account making the client pay more, this may cause inconvenience to the motorist although such transactions are reversed afterwards" The seventh challenge faced is the poor attitude from the motorists. This includes being impatient when there is delay and complaining when paying the road toll fees. The Manager of the Road Tolling Department said that "people can be very impatient especially when there is a technical fault which requires more time" In addition, the key informant indicated that "many people complain as they are paying the road toll fees that they are not seeing improvements on the roads." This is similar to the findings in the report by the Zambia Tax Platform (2021), which states that, although most motorists acknowledged the fact that the road tolling program was a good initiative, they believed that the funds were not being correctly utilised because a number of roads were not being maintained or rehabilitated.

The eighth challenge faced in the collection of toll fees is the occurrence of accidents at the toll gate. The Manager of the Road Fund Department at NRFA indicated that "sometimes there are accidents which happen at the toll gates and in order to clear the traffic vehicles are allowed to pass without paying toll fees leading to loss of revenue."

4.5 Conclusion

The findings show that the National Road Tolling Programme is very effective in collecting road toll fees from motorists in Lusaka Province. This is because it collects 106% of the targeted amount. It can be seen that the programme collects road toll fees from all the eligible motorists (all the motorists not exempted by the Toll Act No.14 of 2011). This is made

possible by the provision of two methods for paying road toll fees from the motorists. These are the cash method and the ETCs method. The cash method is convenient for those motorists using private cars and those who do not frequently use the toll roads as these do not have need of monitoring the road toll fees being paid. On the other hand, the use ETCs to pay toll fees is beneficial to large fleet operators as it makes monitoring of movements easier and avoids the tediousness of giving each driver money to pay tolls on everyday basis. Furthermore, this method is said to be fast, safe and secure. It can also be seen that the programme provides motorists with other alternatives to use to pay road toll fees in the event that they do not have cash when they reach a toll gate. These alternatives are the use of mobile service provider money accounts or borrowing cash from the toll gate workers to be reimbursed.

CHAPTER FIVE

THE NATIONAL ROAD TOLLING ROGRAMME AND ALLOCATION OF ROAD TOLL FEES TOWARDS ROAD INFRASTRUCTURE DEVELOPMENT

5.1 Introduction

The purpose of this chapter is to present and discuss the findings relating to the second specific objective which reads: To examine the extent to which the National Road Tolling programme allocates road toll fees towards road infrastructure development in Lusaka Province. In order to achieve its purpose, the chapter has been divided into five sections. The first section is the introduction. The second section discusses mechanisms used to allocate the funds raised from toll gates. The third section discusses the extent to which the NRTP enables allocation of road toll fees towards road infrastructure development in Lusaka Province. The fourth section presents road infrastructure projects implemented using road toll fees. The final section is the conclusion of the chapter.

5.2 Mechanisms used to allocate the funds raised from toll gates

According to the Tolls Act. 14 of 2021, toll fees or other charges imposed for the use of a tolled road and collected by the Agency that is, RDA or NRFA, shall form part of the Road Fund and shall be used exclusively for the construction, maintenance and rehabilitation of roads. This point is validated by Republic of Zambia (2002) that argues that road user charges including fees levied by the Agency under the provisions of the Act are for construction, rehabilitation and maintenance of roads. This therefore implies that it is illegal to use tolls revenue for other purposes. The Ministry of Finance, the NRFA and RDA are also required by law to use revenue from tolls exclusively for road projects (Zambia Tax Platform, 2021). This observation is different from the findings by Fraunhofer ISI (2017) that countries in the European Union are given freedom to utilise the toll fees in whichever manner they deem fit so long as it in the confines of benefiting the road sector and promoting sustainable mobility in general.

The above stipulated regulation with regard to the use of toll fees augments the statement by the Manager of the Road Fund Management at NRFA who indicated that "100% of the collected toll funds go to the national treasury which are then released to the road fund for funding of road works, everything goes to the treasury that is, control 99". The key informant added that "100% of the collected toll funds goes towards the development of road infrastructure. The funds do not go anywhere apart from road infrastructure development; no monies are spent on other activities outside road infrastructure development" (Manager, Road Fund management Department – NRFA). This response agrees with the findings by the Zambia Tax Platform (2021) which established that, upon collection, all funds are transmitted to the central treasury's consolidated account while NRFA and RDA only keep records of how much has been collected and transferred. Thereafter, the Ministry of Finance remits the funds to NRFA for management and consequent allocation to different road projects. However, this finding disagrees with people's perceptions regarding the utilisation of road toll funds in Zambia. Zambia Tax Platform (2021) argues that most stakeholders in Zambia feel that the funds collected from toll fees are used elsewhere because a number of roads are not being maintained or rehabilitated.

According to the NRFA (2020), the NRFA through the Department of Road Fund Management is responsible for administering the road fund. This involves tracking funds collected from the road user charges and ensuring that all such funds collected are remitted into the road fund. The department further controls the usage of funds by ensuring that the funds are disbursed for intended road works, road transport, and traffic and safety management activities. The mechanism used to allocate funds to various projects is the Annual Work Plan (AWP). The Manager of the Road Fund Management Department indicated that "the Annual Work Plan (AWP) is used as a guide in deciding which road projects to embark on and how the funds from the toll fees are distributed". The informant further said that "road sector agencies which include the RDA, NRFA and RTSA prepare an AWP which lists projects to be undertaken in each year and their associated costs" (Manager, Road Fund Management Department – NRFA). Additionally, NRFA (2023) indicates that:

Every calendar year, Road Sector Agencies and related institutions convene to come up with an AWP which provide detailed distribution by funding sources and summaries of all activities planned for the year**.** It also shows the funds distribution per province as well as a listing of the planned projects and activities.

The Manager of the Road Fund Management Department indicated that "the key road sector agencies comprising of the RDA, NRFA and the RTSA are the key decision makers in the utilisation of toll fees". With regard to whose responsibility, it is to supervise the utilisation of the toll fees, the informant indicated that "the books of the NRFA which maintain the account of the Road Fund to which the toll gate funds accrue are audited by external auditors appointed by the Auditor General of Zambia." According to NRFA (2020), the main objective of these audits is to ensure that the agency is in compliance with both internal procedures and various pieces of legislation that affect its operations such as the Public Finance Management Act of 2018, the Tolls Act No. 14 of 2011, the Public Procurement Act No. 12 of 2018 and all underlying Statutory Instruments. A quarterly Action Taken Report (control log) of Auditor General, External and Internal Audit observations and recommendations are prepared and updated ensuring that all management commitments and resolutions of audit queries are constantly tracked.

Like in Zambia, The Office of the Auditor General in Zimbabwe also supervises the operations of the Road Tolling Programme and generates reports on its findings (Foya, 2022). Similarly, the European Union has a Eurovignette Directive which gives guidance on the operations in the tolling of trucks in its member states. For trucks to be tolled in Germany and Spain, the toll must be compliant with what's permissible within the Eurovignette Directive (Fraunhofer ISI, 2017). This is a form of supervision by the European Union on road tolling activities carried out in its member states.

5.3 Extent to which the NRTP enables allocation of road toll fees towards infrastructure development in Lusaka Province.

As indicated in the conceptual framework, the extent of collection of tolls fees from the motorists is measured in terms of very high extent which is achieved if the NRTP allocates more than 85% of the planned toll fees to road infrastructure development, high extent if

the progrmme allocates between 70 % and 84% of the planned resources to road infrastructure development , moderate extent if the programme allocates between 50% and 69% of the planned resources to road infrastructure development, high extent if between 70% and 84% of the planned amount is allocated to road infrastructure development , moderate extent if between 50% and 69% is allocated to road infrastructure development and low extent if the programme allocates less than 50% of the planned amount to road infrastructure development . According to NRFA (2021), the total budget for the road sector for the year 2021 had a total value of K4.93 billion comprising of 30% external financing (Loans and grants) and 70% from local sources in the form of direct GRZ funding from the treasury and the road fund. Out of this total amount of 4.95 billion, 8% was allocated to Lusaka Province. This means that Lusaka Province was allocated K396 million for road infrastructure development. This amount is much higher than K177.6 which was received from the two toll gates in 2021. This means that the amount received from the toll gate was only 45% of the target amount. The implication of this scenario is that the NRTP in Lusaka Province was not effective in allocating road toll fees towards road infrastructure development as the programme was only able to contribute a small proposition of the required amount. This implies that there was a difference of K218.4 million which had come from other sources. This is because these toll fees are not isolated but are part of a road fund which comprises of revenue from other sources. The Manager at Road Tolling Department said that "all the monies collected from the toll fees goes to Control 99 and forms part of the road fund to be used for road infrastructure development". Similarly, Road Development Agency (2021) indicates that the road fund is made up of local funding from the GRZ in the form of Road Tolls, Fuel Levy, road tax, vehicle examination and licenses fees and funding from Multilateral Development Banks (MDBs) such as the World Bank, European Investment Bank (EIB), Exim Bank of China (EBC), African Development Bank (AfDB) and various Cooperating Partners such as the European Union (EU) and the Japanese International Cooperation Agency (JICA).

5.4 Road projects implemented using revenue from road toll fees in Lusaka Province

The Manager of the Road Fund Department indicated that,

> It is difficult to clearly state which roads have benefitted from the collected toll fees as all roads in Lusaka Province have benefitted. This is because routine maintenance of roads in Lusaka Province is financed from toll fees, some of the notable roads that have been recently maintained in Lusaka District include; Zambezi Road, Makishi, Thabo Mbeki roads, among others. There is also maintenance of roads in areas such as Kalingalinga, Kabulonga and Makeni.

The Manager further pointed out that,

> There are a number of roads which are being constructed and benefiting from the money collected from toll fees, some of these projects are the Link Zambia 8000, the Pave Zambia 2000 and the L400 road project and some of the roads which have been constructed under these projects are the Lusaka -Leopards Hill Road, Leopards Hill to Katoba, Chiawa in Kafue District to Chirundu District, Luangwa Bridge to Feira Road, Ngwerere road in Chawama Township. These has also been L400 Phase III project in Lusaka Province which has seen construction works on Lumumba Road in Lusaka and all gravel road projects in Chongwe District were constructed using revenue from toll fees"

Further, the Manager at Road Tolling Department argued that all the roads which have benefitted from road toll fees were in the Annual Work Plan. He indicated that,

> All the roads constructed using the toll fees were in the Annual Plan as the agency worked within the provisions of the Public Procurement Act No. 8 of 2020 which requires that all the goods and services procurement by government spending institutions should be in the Annual Work Plan

5.5 Challenges faced in allocating road toll fees to various projects

There are two major challenges faced in allocating road toll fees to various projects. The first challenge is the scarcity of resources available for road construction, maintenance and

rehabilitation. The Manager of the Road Fund Management Department at the NRFA said that:

> Limited resources is the major challenge faced by the road sector agencies in the utilisation of toll fees. The needs on the ground far outweigh the available resources. The road sector agencies are dealing with competing needs, having a toll gate on a certain road does not necessarily mean the money raised from that toll gate will be used for maintenance of that particular road as people often think, for example, the money collected at Shimabala Toll Gate is not specifically meant for maintaining Kafue road but can be used for maintenance of any road in any part of the country where there is need. This is similar to the findings by Chilunjika etal (2023) that the revenue collected from toll gates is not sufficient to rehabilitate Zimbabwe's core road net singlehandedly.

It has been difficult for road sector agencies to improve road infrastructure in Zambia because of the limited resources raised from the NRTP. This has led to a number of stake holders feeling that the money collected from toll fees in the country is being used for other things including paying of civil servants' salaries (Zambia Tax Force, 2021). This is also the case in other developing countries like Zimbabwe where there is evidence that money is being collected from the road tolling programme but improvement of the major roads is not been seen (Foya,2022). Further, road sector agencies in Zambia have a mandate to channel the money collected at any toll gate in the country to any part of the country which they may consider to be most critical. This has created the general perception that the money being raised from toll gates is not being used in the manner it is expected to especially that the main roads where the toll gates are located are not in good condition (Quitino,2018).

The second challenge is the unrealistic expectations from the public. The Manager of the Road Fund Management Department at the NRFA mentioned that "people have a perception that there are huge amounts of money raised from the toll fees and expect the road sector agencies to do miracles without realising that the gap is huge as compared to the revenue collected."

The road sector agencies in Zambia are faced with a huge responsibility which requires more money than what is generated. However, there is a perception by the various stakeholders that the NRTP generates huge amounts of money sufficient to rehabilitate and construct all the roads needed to realise meaningful development in the country. This raises their expectations of the road agencies in terms of delivery on road infrastructure development. These high expectations have created a situation whereby various stakeholders feel that the monies from this programme are not being channeled to road infrastructure development but other ventures since a number of roads are not being maintained (Zambia Tax Force, 2021) .

5.6 Conclusion

The findings indicate that the extent to which the National Road Tolling Pragramme allocates road toll fees towards road infrastructure development in Lusaka Province is low. This is because the revenue contributed by the programme to road infrastructure development was only 45% of the targeted amount. Findings indicate that the funds received from toll gates are supplemented with other funds such as fuel levy, road tax and vehicle examination and license fees which together with toll fees form a road fund. However, despite this, it has been indicated that a number of road projects being implemented such as the Link Zambia 8000, Pave Zambia 2000 and L400 and all gravel roads in Chongwe District of Lusaka Province were benefiting from road toll fees collected in Lusaka Province. The findings in this chapter indicate that the mechanism used by road sector agencies to allocate resources to road projects is the Annual Work Plan which is generated by the road agencies who list projects to be carried out in a year and their associated costs. Findings also show that all the road projects constructed using toll fees from Lusaka Province were indicated in the Annual Work Plan as per requirement of the Public Procurement Act No. 8 of 2020. The Findings further show that road sector agencies, that is, NRFA, RDA and RSTA are the decision makers on how the revenue from the toll gates is utilised while being supervised by the Auditor General and other external auditors who ensure that the Agency is complying to all internal procedures and various pieces of legislation effecting its operations and all statutory instruments. One notable challenge faced in the allocation of road toll fees to infrastructure development is that the needs on the ground outweigh the revenue collected.

CHAPTER 6

THE NATIONAL ROAD TOLLING PROGRAMME AND ALLOCATION OF ROAD TOLL FEES TOWARDS MAINTENANCE OF ROADS

6.1 Introduction

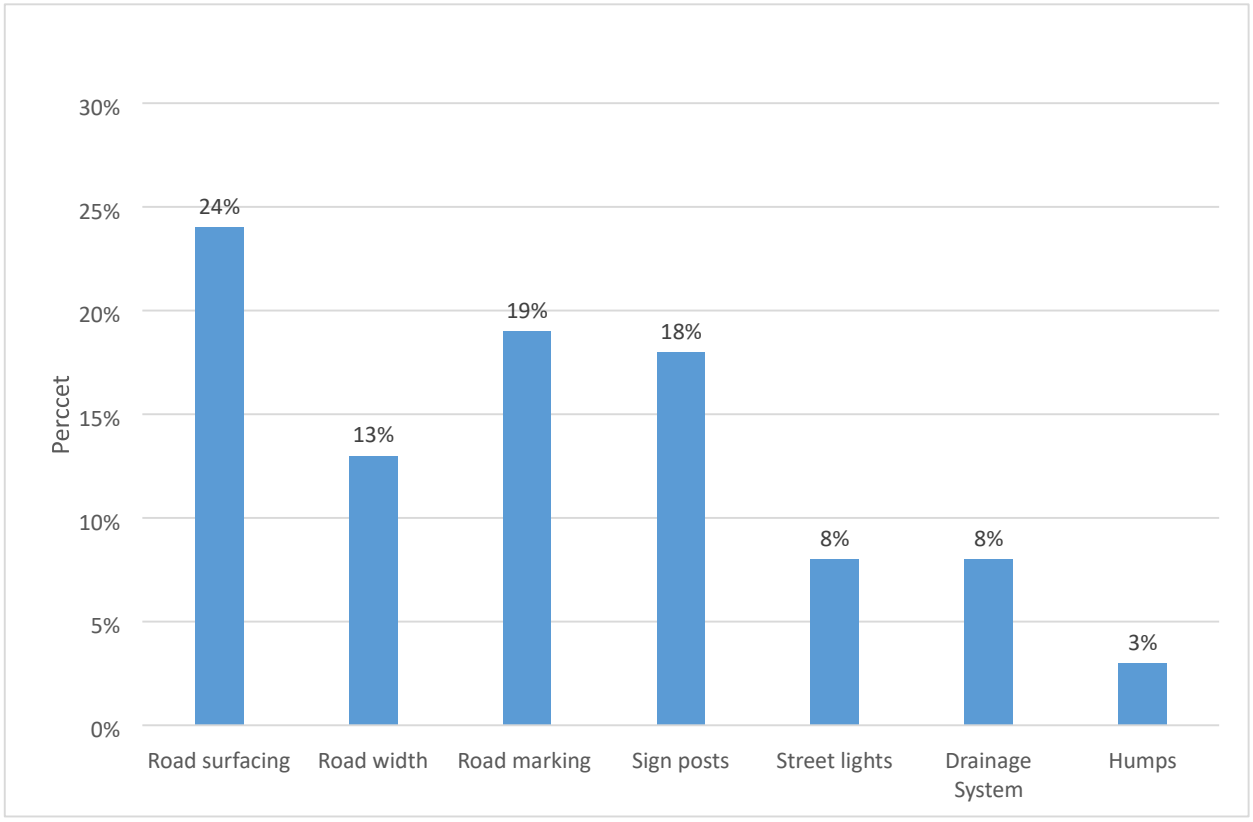
The purpose of this chapter is to present and discuss the findings relating to the third specific objective which reads: To assess the extent to which the National Road Tolling Programme maintains roads in Lusaka Province. In order to achieve its purpose, the chapter has been divided into four sections. The first section is the introduction. The second section assesses the extent to which the introduction of road toll fees has improved the state of roads from the motorists' perspective, the third section discusses the problems of the National Road Tolling Programme. Finally, a conclusion of the chapter will be given.

6.2 Extent to which the introduction of toll fees has improved the state of the roads in Lusaka Province from the Motorists' Perspective

The aspects of the roads given in this chapter are road surfacing, road width, road markings, sign posts, street lights, drainage systems and road humps. The levels of improvement in these aspects of the roads are shown in figure 6.1. In analysing individual aspects of the roads, 24% of the motorists had seen improvement in road surfacing, 13% had seen improvement in the road width, 19% said there was improvement in road markings, 18 % said there was improvement in sign posts, 8% had seen improvement in street lights, 8% considered drainage system to have improved while 3% perceived improvement in road humps. Generally, all the aspects scored less than 50% implying that the extent to which the roads were being maintained was low. The aspect which recorded the highest improvement is road surfacing implying that the road surfaces were in a fairly maintainable condition while the aspect which recorded the lowest improvement was road humps implying that the road humps were not being maintained. This finding implies that payment of toll fees has made very little difference in the condition of both the Kafue and Great East roads in Lusaka Province. The finding also agrees with the observations by Republic of Zambia (2022) that many roads from which funds were being collected were being disadvantaged in terms of maintenance as more funds were being allocated towards construction of roads. This is also

similar to the findings by the Zambia Task Force (2021) that roads in the Copperbelt of Province of Zambia had no proper signage and drainages due to lack of maintenance.

Figure 6.1 Levels of Improvement in the Condition of Roads



Source: Field Data

6.3 Problems of the NRTP from the motorists' perspective

Figure 6.6 Problems of the NRTP from the motorists' perspective

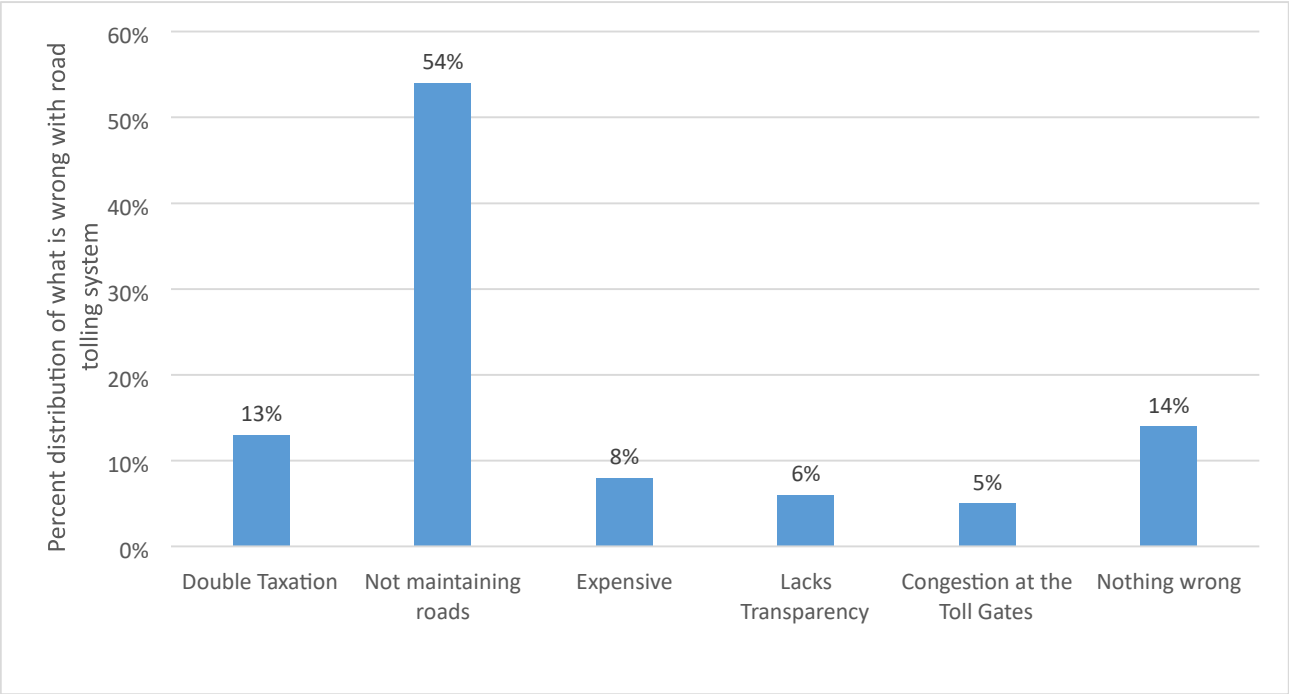


Figure 6.6 shows the various problems of the NRTP which were cited by motorists using both the Kafue and Great East Roads. It can be seen that the most common problem of the NRTP which was given was the non-maintenance of roads. This response was given by 54% of the motorists. These motorists argued that the roads were not being maintained despite toll fees being collected from motorists. This is similar to findings by Foya (2022) that despite the collection of tolls from road users in Zimbabwe, there is limited impact on road development and its subsequent maintenance.

This was followed by the problem of double taxation which was mentioned by 13% of the motorists. These motorists said they were being taxed twice because they were paying road toll fees despite having paid road tax. This is similar to findings by the Zambia Force (2021) that some stakeholders felt that paying of toll fees had increased the number of taxes they had to pay. The next problem which was identified was that of toll fees being expensive which was cited by 8% of the motorists. These motorists considered toll fees to be expensive because the motorists were required to pay toll fees at every toll gate they passed. Apart from

the above listed problems, there was also the issue of lack of transparency which was cited by 6% of the motorists. The argument was that there were no reports on how the toll fees were being utilised. This is similar to the findings by the Zambia Task Force (2021) that the NRFA did not state when a road was being constructed or rehabilitated using toll fees. Similarly, Foya (2022) argues that most people in Zimbabwe were sceptical about the uses of the financial resources as there is serious lack of transparency in the disbursements of funds such that the general public have no idea as to how much money was raked in, in every six months or per annum and how this money was being used or distributed to various local authorities for the purposes of road maintenance and development. The least mentioned problem was the issue of congestion at the toll gates which was cited by 5% of the respondents. These respondents cited the manual collection of toll fees as the cause of the congestion at the toll gates. This problem is also faced in Zimbabwe where there are experiences of delays and congestion on tolling points especially during peak hour as the manual nature of ticketing fails to timeously suffice the traffic volumes (Foya, 2022).

However, despite a large number of motorists having problems with the programme, 14% of these motorists said the programme did not have any problems. This means that a few motorists were happy with the NRTP.

6.4 Challenges faced in the maintenance of roads

Despite the implementation of the NRTP, there are challenges faced to maintain the roads in Lusaka Province. The first challenge is lack of autonomy. The Chongwe Toll Gate Manager indicated that “the programme is not autonomous and this effects decision making”. This means that the NRFA has no total freedom to make decisions in the implementation of the programme as it was under the control of the Central Government who also had a hand in running the operations of the programme. The second challenge is lack of coordination between the different institutions responsible for the collection and maintenance of roads.

One of the Toll Collectors indicated that “there is no coordination between the collection of funds and the maintenance programme, NRFA and RDA should work together to ensure that the programme is a success”. The third challenge is inconsistence in the financing of roads. A Toll Collector indicated that “financing of roads has not been consistent as most of the roads are

in bad condition". This is similar to findings by Quintino (2018) that Managers at the Kafulafuta Toll Gate in the Copperbelt did not see any improvement in roads in the Copperbelt Province of Zambia especially around places where the toll gates have been stationed.

6.5 Conclusion

The findings show that the extent to which the National Road Tolling Programme maintains roads in Lusaka Province is low. This is because all aspects which were used to measure improvement in the condition of roads scored below 50%. The aspects of the roads which were used to measure improvement in the condition of the roads where the toll gates are located include; road surfacing, road width, road markings, sign posts, street lights, drainage systems and road humps. The findings further show that there are number of problems of the National Road Tolling Programme from the motorists' perspective. These are lack of maintenance of roads, double taxation, programme being expensive, lack of transparency and congestion. It can be seen that of all the mentioned problems of the programme, lack of maintenance of roads scored the highest while congestion ranked the lowest. The findings further show that the programme experienced some challenges with regard to maintenance of roads. These challenges are lack of automony of the NRFA which affects or limits its ability to make decisions regarding the operations of the NRTP and the lack of coordination between the NRFA and RDA, the key road sector agencies affects the collection of the road toll fees and the road maintenance programme.

CHAPTER 7
CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

The purpose of this chapter is to present a summary of the conclusions and recommendations of the dissertation. In order to achieve its purpose, the chapter begins with a presentation of the summary of the conclusions. Thereafter, recommendations are given.

7.2 Summary of Conclusions

The summary of the conclusions is presented in line with the objectives of the research. The first specific objective of the research was to assess the extent to which the NRTP has improved the collection of road toll fees from motorists in Lusaka Province. The conclusions regarding this specific objective are that, the findings show that the National Road Tolling Programme is very effective in collecting road toll fees from motorists in Lusaka Province. This is because it collects 106% of the targeted amount. It can be seen that the programme collects road toll fees from all the eligible motorists (all the motorists not exempted by the Toll Act No.14 of 2011). This is made possible by the provision of two methods for paying road toll fees from the motorists. These are the cash method and the ETCs method. The cash method is convenient for those motorists using private cars and those who do not frequently use the toll roads as these do not have need of monitoring the road toll fees being paid. On the other hand, the use ETCs to pay toll fees is beneficial to large fleet operators as it makes monitoring of movements easier and avoids the tediousness of giving each driver money to pay tolls on everyday basis. Furthermore, this method is said to be fast, safe and secure. It can also be seen that the programme provides motorists with other alternatives to use to pay road toll fees in the event that they do not have cash when they reach a toll gate. These alternatives are the use of mobile service provider money accounts or borrowing cash from the toll gate workers to be reimbursed.

The second specific objective of the research was to examine the extent to which the National Road Tolling Programme allocates road toll fees towards road construction in Lusaka Province. Regarding this specific objective, the findings indicate that the extent to which the National Road Tolling Pragramme allocates road toll fees towards road infrastructure development in Lusaka Province is low. This is because the revenue contributed by the programme to road infrastructure development was only 45% of the targeted amount. Findings indicate that the funds received from toll gates are supplemented with other funds such as fuel levy, road tax and vehicle examination and license fees which together with toll fees form a road fund. However, despite this, it has been indicated that a number of road projects being implemented such as the Link Zambia 8000, Pave Zambia 2000 and L400 and all gravel roads in Chongwe District of Lusaka Province were benefiting from road toll fees collected in Lusaka Province. The findings in this chapter indicate that the mechanism used by road sector agencies to allocate resources to road projects is the Annual Work Plan which is generated by the road agencies who list projects to be carried out in a year and their associated costs. Findings also show that all the road projects constructed using toll fees from Lusaka Province were indicated in the Annual Work Plan as per requirement of the Public Procurement Act No. 8 of 2020. The Findings further show that road sector agencies, that is, NRFA, RDA and RSTA are the decision makers on how the collected revenue from the toll gates are utilised while being supervised by the Auditor General and other external auditors who ensure that the Agency is complying to all internal procedures and various pieces of legislation effecting its operations and all statutory instruments. One notable challenge faced in the allocation of road toll fees to infrastructure development is that the needs on the ground outweigh the revenue collected.

The third specific objective of the research was to assess the extent to which the NRTP allocated road toll fees towards maintenance of roads in Lusaka province. The conclusion regarding this specific objective is that, the findings show that the extent to which the National Road Tolling Programme maintains roads in Lusaka Province is low. This is because all aspects of the roads which were used to measure improvement scored below 50%. The aspects of the roads which were used to measure improvement in the condition of the roads where the toll gates are located include; road surfacing, road width, road markings, sign

posts, street lights, drainage systems and road humps. The findings further show that there are number of problems of the National Road Tolling Programme from the motorists' perspective. These are lack of maintenance of roads, double taxation, programme being expensive, lack of transparency and congestion. It can be seen that of all the mentioned problems of the programme, lack of maintenance of roads scored the highest while congestion ranked the lowest. The findings further show that the programme experienced some challenges with regard to maintenance of roads. These challenges are lack of autonomy of the NRFA which affects or limits its ability to make decisions regarding the operations of the NRTP and the lack of coordination between the key road sector agencies which affects the collection of the road toll fees and the road maintenance programme.

The general objective of the research was to evaluate the effectiveness of the NRTP in promoting road infrastructure development in Lusaka Province. In this regard, the general conclusion of this research is that the NRTP is very effective in collecting road toll fees from the motorists in Lusaka Province. This is because the programme collects more road toll fees than the budgeted amount. However, the extent to which the programme allocates the toll fees to road infrastructure development is low because the required revenue is far much more than what is collected from the toll gates. To a large extent, the NRTP does not adequately maintain the two roads where the toll gates are located. This because there has not been significant improvement in the condition of these roads since the programme was implemented.

7.3 Recommendations

The recommendations are in two categories. These are policy recommendations and areas for future research.

7.3.1 Policy Recommendations

The following are the policy recommendations of this dissertation:

1. Government should increase the annual budgetary allocation to road infrastructure development to supplement the revenue generated at the Toll Gates
2. Government should revise and amend the Tolls Act 14. of 2011 to exclusively dedicate tolls revenue to road maintenance and rehabilitation projects. This will ensure that there is adequate funds for the maintenance and rehabilitation of the existing roads. Under the current legal framework, revenue collected from tolls can also be used for road construction.
3. Road sector agencies should ensure that all the funds raised from toll gates are channelled towards road infrastructure development. This will lead to improvement in the condition of roads and thereby build stakeholder confidence
3. The road sector agencies that is, NRFA and RDA should be well coordinated to ensure harmony in the collection and allocation of toll fees to various road projects and the road maintenance and construction programme.
4. NRFA should increase sensitation of motorists on the benefits of using ETCs to pay for toll fees to ensure that a number of people start using cards. This will reduce congestion at the toll gates as paying using ETCs is faster than using cash. This will also be convenient for the motorists as they will be able to pay toll fees even without having cash at hand.
5. The NRFA should upgrade the E-Toll System (use of ETCs) so that road users should be able to tap and go as this will increase efficiency in the payment and collection of toll fees and also reduce the transmission of infectious diseases like corona virus diseases (COVID 19) which can be transmitted through the use of point-of-sale machines.

7.3.2 Areas for Future Research

This research was only conducted in Lusaka Province thus experiences from other Provinces are unknown. Another research can be done in other Provinces to bridge this gap. Similarly, this research only focused on the views of the motorists, another research can be conducted to get the views of customers of utility vehicles that pass-through toll

gates regarding how they are affected by the introduction of the NRTP and the condition of roads in Lusaka Province following the implementation of the programme. The research did not get the views of the motorists on the effectiveness of the NRTP in the construction of roads in Lusaka Province, it only focused on maintenance as the sample only comprised the motorists using the Great East and Kafue Road. Another research can be done to bridge this gap.

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APPENDICES

Appendix A: Interview Guide for the National Road Fund Agency Officials

Dear Respondent,

I am Nachi M. Mutungwa, a postgraduate student at the University of Zambia. I am carrying out a study to enable me partially fulfill the requirements of the Degree of Master of Public Administration (MPA).

You have been selected, and I would be most grateful if you spared a few minutes, to answer a few questions. This is a study on *the effectiveness of the National Road Tolling Programme in Zambia promoting road infrasture development in Zambia: A Case Study of Lusaka Province*. All the information you will offer will be handled confidentially. It will be exclusively for the use of the MPA Dissertation. I encourage you to be as frank as possible in answering the questions.

Instructions:

Circle the number against the appropriate response or fill in the blank space.

Part One: Personal Data

1. Gender

(1). Male (2). Female

2. Name of Organization……..

3. Position held in the Organisation

_____

Part Two: Strategies of collecting road toll fees

4. What method do you use to collect road toll fees?

……
……

5. How much are toll gate fees for the different type of vehicles?

……
……...

6. What determines a toll gate fee a particular motorists has to pay?

……
……....

7. What happens in an event were the motorist has no finances to pay at the toll gate?

……
……..

8. What category of vehicles is exempted from paying toll fees?

……
……

9. Why are these vehicles exempted from paying road toll fees?.....
.....

How much revenue is collected from Lusaka Province Toll Gates (Chongwe and Shimabala) monthly?

……
……...

10. What challenges do you face in the collection of toll fees from the motorists?

……
……

11. What do you think should be done to improve the collection of road toll fees?

……
……..

Part Three: Utilisation of toll fees

12. What mechanism is used to allocate the funds raised from toll gates to various projects or programme?

……
……

13. What percentage of the collected toll funds goes directly towards the development of the road infrastructure?

……
……

14. Who are the key decision makers in the utilisation of toll gate funds?

……
…… 15.Who supervises the utilisation of toll gate funds?……
…

16. What challenges do you face in the utilisation of toll fees collected from toll gates?.....
.....

17. In what ways do toll gates contribute towards road infrastructure development?.....
.....

18. What percentage of the collected toll funds goes to the national treasury?.....
.....

19. What percentage of the collected toll funds goes directly towards the development of road infrastructure?.....
.....

20. Where does the other percentage of funds collected from toll fees
go?.....
.....

21. Why is part of toll fees spent on other activities outside road infrastructure development?.....
.....

22. Do you think the introduction of toll fees has improved road infrastructure in Lusaka Province?

……
……..

23. Which road projects have been implemented using revenue from road toll fees in Lusaka Province?

24. In your opinion what are the shortfalls of the national road tolling programme in Zambia?.....
.....

25. What do you think should be done to improve the road tolling programme in Zambia?

……
……

25. What do you think should be done to improve the state of roads in Zambia?

…….....
..

END OF INTERVIEW.THANK YOU!

Appendix B: Interview Guide for the Toll Gate Managers and Toll Collectors (Shimabala Toll Gate and Chongwe Toll Gate)

Dear Respondent,

I am Nachi M. Mutungwa, a postgraduate student at the University of Zambia. I am carrying out a study to enable me partially fulfill the requirements of the Degree of Master of Public Administration (MPA).

You have been selected, and I would be most grateful if you spared a few minutes, to answer a few questions. This is a study on *the effectiveness of the National Road Tolling Programme in promoting road infrastructure development in Zambia: A Case Study of Lusaka Province*. All the information you will offer will be handled confidentially. It will be exclusively for the use of the MPA Dissertation. I encourage you to be as frank as possible in answering the questions.

Instructions:

Circle the number against the appropriate response or fill in the blank space.

Part One: Personal Data

1. Gender

(1). Male (2). Female

2. Toll Gate Name…….

3. Position held in the organisation……

_____

Part Two: Suitability of the strategies of collecting toll fees

4. What methods do you use to collect toll fees?

    1.Cash

    2.Point of sale machine

    3. Mobile phone payment system

    4.Other(specify)……

5. On average how many vehicles pass through Chongwe/Shimabala Toll Gate on a daily basis?

(1) Below 400 (2) 400-700 (4) 701-1000 (5) above 1000

6. How much are toll gate fees for different type of vehicles?

7. What determines a toll fee a particular motorists has to pay?

.....
.....

8. What happens in an event where a motorists has no finances to pay at the toll gate?

……
……

9. Do all vehicles that pass through the toll gate pay toll fess?

(1). Yes (Skip to q) (2) No

10. If no to question 9, which categories are exempted from paying toll fees?

11.Why are these vehicles exempted from paying toll fees?.....
...

12. How much revenue is collected from Chongwe/Shimabala Toll Gate Monthly?

K…….

13. What happens in an event where the motorist has no finances to pay at the toll gate?.....
    .....

14. What challenges do you face in the collection of toll fees from the motorists?

.....
....

15. What do you think should be done to improve collection of road toll fees?

.....
.....

16. In your opinion what are the shortfalls of the national road tolling programme in Zambia?.....
.....

17. What do you think should be done to improve the road tolling programme in Zambia?

……
……...

18. What do you think should be done to improve the state of roads in Zambia?

……
……...

END OF INTERVIEW.THANK YOU!

Appendix C: Research questionnaire for Motorists

Dear Respondent,

I am Nachi M. Mutungwa, a postgraduate student at the University of Zambia. I am carrying out a study to enable me partially fulfill the requirements of the Degree of Master of Public Administration (MPA).

You have been selected, and I would be most grateful if you spared a few minutes, to answer a few questions. This is a study on *the effectiveness of the National Road Tolling Programme in Zambia: A Case Study of Lusaka Province*. All the information you will offer will be handled confidentially. It will be exclusively for the use of the MPA Dissertation. I encourage you to be as frank as possible in answering the questions.

Instructions:

Circle the number against the appropriate response or fill in the blank space.

Part One: Personal Data

1. Gender

(1). Male (2). Female

2. Age: …… years

3. Highest level of education attained

(1) Never been to school (5).Senior Secondary School

(2). Lower Primary School (6).College Diploma

(3). Upper Primary School (7). Bachelors Degree

(4). Junior Secondary School

4. Name of Road……

(1) Kafue

(2) Great East Road

5. Type of Vehicle being driven

(1). Small

(2).Minibus

(3). Big bus

(4).Heavy truck

(5).Abnormal load vehicle

(6).Other (specify)……

6. Has this vehicle paid road toll free?

1. Yes 2. No

7. If no to question 6, why was this vehicle exempted from paying the toll fees?

8. If yes to question 6, how much did you pay?

……...
...

9. Would you say toll fees are affordable to you?

(1)Yes

(2)No

Part Two: Impact of toll fees on road infrastructure development

10. Have you driven on this road before the toll gate was introduced?

(1) Yes

(2) No (If no do not proceed with interview)

11. To what extent do you think the introduction of toll fees has improved the state of this road?

(1). Low (2). Medium (3). High (4).No improvement at all

12. If there has been improvement, which aspects of the roads have improved the most?

(a).Road surfacing (d).Sign posts

(b).Road width (e).Street lights

(c).Road markings (f).Drainage System

(g). Road Humps

13. In your opinion, what is wrong with the road tolling programme in

Zambia?.....
.

14. What do you think should be done to improve the road tolling programme ?

……
…

15. What do you think should be done to improve the state of roads in Zambia?

……
…

END OF INTERVIEW.THANK YOU!

Appendix D: Follow-Up Interview Guide for the NRFA Key Officials

Dear Respondent,

I am Nachi M. Mutungwa, a postgraduate student at the University of Zambia. I am carrying out a study to enable me partially fulfill the requirements of the Degree of Master of Public Administration (MPA).

You have been selected, and I would be most grateful if you spared a few minutes, to answer a few questions. This is a study on *the effectiveness of the National Road Tolling Programme in promoting road infrastructure development in Zambia: A Case Study of Lusaka Province*. All the information you will offer will be handled confidentially. It will be exclusively for the use of the MPA Dissertation. I encourage you to be as frank as possible in answering the questions.

Instructions:

Circle the number against the appropriate response or fill in the blank space.

Part One: *Collection of road toll fees from motorists in Lusaka Province*

1. To what extent does the NRTP collect toll fees from eligible motorists?
   .....
   .....
   .....
   .....
   .....
   .....
   .....
2. In February 2022 you mentioned that, approximately 4.3 million is collected at Chongwe toll gate monthly, while 10.5 is collected from Shimabala toll gate monthly. What were the target or planned amounts to be collected at each of these toll gates monthly?.....
   .....
   .....
   .....
   .....

Part two: ***Construction of roads in Lusaka Province using road toll fees***

3. Which roads had been constructed using toll fees in Lusaka Province as of February, 2022?.....
.....
.....
.....
.....
.....
.....
4. Which of the above-mentioned roads were on the annual work plan?.....
.....
.....
.....
.....
.....
.....
.....
5. Which of the mentioned roads were not on the annual work plan?.....
.....
.....
.....
.....
.....
6. What proportion (Percentage) of the toll fees collected from Lusaka Province was planned for allocation to road construction?.....
.....
.....
.....
.....
7. What proportion (Percentage) of the funds collected from tolls in Lusaka Province were actually used for road construction?.....
.....
.....
8. What challenges were faced in the construction of roads using toll fees at that time(February,2022)?.....
.....
.....

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

Part Three: Maintenance of roads

9. Last time you mentioned that all roads in Lusaka Province had benefitted regular maintenance from road toll fees? Are you able to name some of these roads which had benefitted regular maintenance from toll fees collected in Lusaka Province?.....
.....
.....
.....
.....
.....
10. What aspects of the roads did you plan to work on? (road surfacing, road width, street lights, road marking, drainages, road humps, sign posts).....
.....
.....
.....
.....
.....
11. Which aspects of the road did you work on?.....
.....
.....
.....
12. Which of the above-mentioned roads were on the annual work plan?.....
.....
.....
.....
13. Which of the mentioned roads were not on the annual work plan.....
.....
.....
.....
.....
14. What proportion (Percentage) of the toll fees collected from Lusaka Province was planned for allocation to road maintenance in Lusaka Province?.....
.....

.....
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15. What proportion (Percentage) of the funds collected from tolls in Lusaka Province was actually used on road maintenance in Lusaka Province?

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.....
.....

END OF INTERVIEW.THANK YOU!