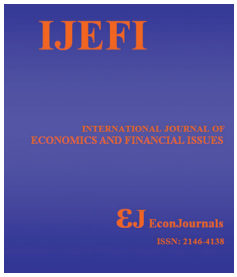

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Road Tolling and Domestic Revenue Mobilisation in Zimbabwe

Alouis Chilunjika[1]*, Dominique E. Uwizeyimana[1], Sharon R.T. Chilunjika[2,3]

[1]School of Public Management, Governance and Public Policy, Johannesburg, University of Johannesburg, South Africa, [2]University of Johannesburg, School of Public Management, Governance and Public Policy, Johannesburg, South Africa, [3]Department of Governance and Public Management, Midlands State University, Gweru, Zimbabwe. *Email: chilunjika@gmail.com

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ABSTRACT

The study analyses the effectiveness of road tolling-systems as an instrument for mobilising domestic revenue in Zimbabwe. The study assessed the effectiveness of road-tolling systems in mobilising revenue to recoup the costs of building, operating and maintaining road infrastructure. Revenue performance was rated using the internal and external dimensions of toll revenue, which revolve around activities such as toll revenue collection, administration (remittance) as well as the Zimbabwe National Road Administration's (ZINARA's) distribution and usage of the toll revenue. 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 the Zimbabwean road tolling model as a hybrid conventional tolling model is a progressive, effective and reliable tool to raise revenue for constructing road infrastructure and related road-related capital investments in Zimbabwe and that the internal toll revenue performance is up-to-date with reduced toll revenue leakages and increased toll revenue yield. However, the study found that there is no meaningful investment on the road network and related highway infrastructure thus making the performance of external toll revenue questionable. The study recommended the strengthening of toll revenue collection, management, remittance and toll fees usage.

Keywords: Road Tolling, Domestic Revenue Mobilisation, Revenue Collection, Performance, Revenue Yield, Zimbabwe
JEL Classifications: G0, O1, O2

1. INTRODUCTION

Road tolling systems have been used to generate revenue for financing highway infrastructure projects, internalisation of external tolling costs and demand management, among others. In line with this, Persad et al. (2006:6) cited in Chilunjika et al. (2019) state that tolling helps generate revenue to recoup the costs of building, operating and maintaining road infrastructure. With finance from tolling, projects can be completed in a shorter timeframe, instead of waiting for tax revenues to accumulate. Since tollgates serve as instruments for financing highway infrastructure construction and rehabilitation, they have become policy instruments for raising additional revenue for the Government of Zimbabwe.

The issue of toll roads was first discussed in 2000 after concerns were raised regarding the poor condition of the country's roads. This problem was further aggravated by several incomplete road projects around the country (Chilunjika, 2023; Chilunjika, 2018:8; Zhou and Chilunjika, 2013:199). However, the proposal to introduce the tolling systems was shelved until 2008. Two reasons for this were that the Government had embarked on the Land Reform Programme which attracted intense opposition from the West, as well as the emerging voice of the Movement for Democratic Change (MDC), the country's main political opposition. According to Biti (2015:9), Zimbabwe's economy shrank significantly during this period, as Western powers had imposed sanctions to show their opposition to the Land Reform Programme. Subsequently, Zimbabwe faced an increasingly severe economic crisis characterised by rapid hyperinflation and corresponding devaluation of the local currency. During this severe economic downturn, government coffers were so heavily depleted that there were no surplus funds to support road maintenance (Zhou and Chilunjika, 2013:193).

Government action was necessary, as the country's road infrastructure needed urgent attention. Zimbabwe had fallen behind in its obligations to build and preserve road infrastructure. Most of its roads are approaching the end of their design life. The country's highway transportation infrastructure has shown major signs of aging due to heavy use and minimal maintenance over the past 16 years (from 2000) (Chilunjika, 2018). Subsequently, the Government of Zimbabwe turned to the Road Fund, the Zimbabwe National Roads Administration (ZINARA), to bankroll the tolling project. According to Sithole (2014:1), ZINARA was established by the Government of Zimbabwe in July 2001 by an Act of Parliament, the Roads Act No.18 of 2001 to mobilise funds for the upkeep of the country's road network in a maintainable state. In addition, Zhou and Chilunjika (2013:190) noted that, prior to the establishment of ZINARA, the country relied on budgetary allocations and donor support, by the World Bank (WB) among others, for road maintenance and infrastructure development. The donors pulled out from investing in Zimbabwe's road infrastructure in the early 2000s due to their opposition to the Land Reform Programme.

After the donors pulled out, the only option for the Government to maintain the country's road network and develop new road infrastructure was to introduce road tolling, a mechanism that made it possible to source finances from road users by collecting toll fees or toll charges (Chilunjika, 2023; Chilunjika 2018; Mwanawashe, 2017:1). Twenty-two tollgates on major highways and trunk roads across the country were introduced on August 2009 through Statutory Instrument 39 of 2009. This was meant to provide an on-going revenue source that is not tied to Government's annual budgetary process (Zhou and Chilunjika, 2013:199). Road tolling was introduced in a bid to augment the inadequate ZINARA-administered revenue sources, which include fuel levies, transit fees, overloading fines, abnormal load fees among others (ZINARA, 2017:1; Zhou and Chilunjika, 2013). It was also noted that it was impossible to address the current road maintenance challenges by only relying on the limited revenue of fuel levies, transit fees, overloading fines and abnormal load fees alone. Maintenance requirements are so high that the current revenue inflows cannot address the road infrastructure needs sufficiently. According to Chideme (2013:2), Government tasked ZIMRA with the responsibility of collecting road tolls at the designated tolling points (tollgates) throughout the country. Thereafter, 90% of the toll collections were remitted to ZINARA every week until October 2013 when ZINARA eventually took over operationalisation of road tolls at full throttle.

For many years, the mobilisation of domestic revenue was neglected, despite being a better long-term option. Existing research on toll-revenue collection reflects many gaps (empirical, theoretical and methodological) that need to be filled and which this study attempts to fill. Limited research has been conducted on Zimbabwe's toll revenue system; most related studies focus on developed countries (Kirk, 2017:2; Butcher, 2017:5; Munroe et al., 2006:9). Despite the upsurge in the overall toll revenue yield, there are visible signs of laxity in the usage of toll revenues (Kunambura, 2016:2; Ruwende, 2014:2; Mbara et al., 2010:18) and road infrastructure remains poor. It is important to close the funding gap to attend to road infrastructure maintenance (Kunambura, 2016:2). In light of this, the research seeks to analyse the toll revenue performance in Zimbabwe and to examine the effectiveness of road tolling as a domestic revenue-collection instrument in Zimbabwe.

2. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

This section reviews literature and the conceptual framework governing road tolling and domestic revenue mobilisation. The section includes the conceptual framework, i.e., the user-pays principle, it also unpacks the concept of road tolling, the general reasons for implementing road tolling, mobilising toll revenue and toll revenue performance.

2.1. Conceptual Framework

2.1.1. The user-pays principle

The user-pays or beneficiary-pays pricing approach is based on the idea that the most efficient allocation of resources is when consumers pay the full cost of the goods they consume (Zhou and Chilunjika, 2013:193; Mbara et al., 2010:45). In this scenario, toll fees have to be paid based on the direct benefit of the service to the user or consumer. Gildenhuys (2010:361) states that there is a direct benefit, as the user receives a service equal to the value of the amount paid. Tolling is an unbiased method for motorists to pay only for the section of road they use. Hence, the system facilitates the individual design of each road section to be linked with the specific needs for that particular section of the road.

The user-pays principle represents a fair, precise way of paying for transportation facilities, as the toll fees are charged for the distance travelled. Therefore, motorists pay an amount proportionate to the service they use (Venter, 2011:45). Similarly, the road-use charge is in direct proportion to how often people travel. Bull and Mauchan (2014:7) argue that, by applying the user-pays principle, governments can distribute limited budget resources elsewhere. Road-users pay for the road service offered to them in the same way that railways, fuel pipelines, power grids, water, broadcasting and broadband networks are paid for (Kaul, 2017:10; Ostrom and Ostrom, n.d:5). These public goods and services are provided by the public sector at a fee. The same applies to the tolled highways, where motorists or road-users bear at least part of the costs they impose by using the roads. The above-listed public goods and services are provided at a fee in the same way toll roads charge motorists according to the user-pays principle. As such, the beneficiary-pays principle has been used for a range of services. Therefore, road tolling is a manifestation of adopting the user-pays principle in road infrastructural capital improvements (Foley, 2017:1).

However, there are divergent views on the user-pay principle. In this regard, the user-pays principle has been described as an inherent evil that entails the commoditisation of public goods, by applying "free market principles" to public roads (Cronin, 2015:3). In this respect, roads are an example of public goods and non-contributors should not be excluded from enjoying them.

Accordingly, introducing tolling systems implies that the roads prohibit non-paying motorists from using tolled road network. Therefore, there is a need to recover the initial cost of the tolling-system infrastructure, for instance. However, these initiatives should not be based on the profit-making principle or the cost-recovery basis, given that it is necessary to uphold equitable distribution of public goods among motorists. According to Yang et al. (2012:92), the road use charge is directly proportional to the frequency of the journeys made by motorists. Despite the institution of this equitable arrangement, there is a need to ensure that the fee remains affordable, given the effect that the recession and the cost pressure of paying tolls have on motorists.

3. LITERATURE REVIEW

3.1. Understanding the Concept of Road Tolling

It is important to clarify terminology that is used in tolling discourse. According to the Chilunjika et al., (2019) citing the Connecticut Report (2009:4) the words "tolling" and "pricing", among others are sometimes used reciprocally, but have taken on subtly different meanings in transportation discourse. On one hand, tolling is a general term that refers to any sort of direct client charge on highway and parkway transportation (Chilunjika, 2018; Hau, 1992). On the one hand, tolling becomes an equitable method for a road-user (motorist) to make a direct payment for using a particular road. On the other hand, road pricing entails using toll funds to accomplish a target or objective, such as alleviating traffic congestion (Chilunjika et al., 2019; Chilunjika, 2018; Sweet et al., 2015:78).

Therefore, road pricing helps fund road infrastructure, manage transportation demand by reducing peak hour travel and associated traffic congestion, as well as manage external factors such as air pollution, greenhouse gas (GHG) emissions, visual intrusion, noise and road accidents (Johnson et al., 2012:3). The term "tolling" has been applicable to parkway or highway transportation since its inception in Zimbabwe. However, unlike pricing, its primary aim was not to realise targets such as congestion relief and reliable traffic flows. Instead, the aim of tolling was to charge motorists for using the roads in order to raise revenue for road infrastructure development and maintenance in Zimbabwe. While the terms like road pricing and road charging can be used interchangeably with the term "tolling", the current research this research uses the term "tolling" for the sake of consistency. Road tolling is a type of taxation to help recover the cost of road infrastructure development and maintenance. It generally serves as a policy instrument for achieving government's objectives towards transport infrastructure investment.

Vickrey (1968:454) highlights that a road becomes "worthless" precisely because it is free. In line with this, many economists regard road pricing as an instrument to help ensure that resources are used more effectively. It is economically unviable if road users impose costs on others, as is the case in congested conditions. Among these costs are road costs (construction, maintenance and lighting), congestion (the delay the motorist causes to others) and social costs (risk, noise and fumes), time wasted, wear and tear on vehicles, fuel costs etc. (Smeed, 1964:11). The primary economic problem regarding road use is that the person making the journey does not face the total cost of each road journey (Chilunjika, 2018; Kakkad and Rositer, 2007:21).

3.2. The General Reasons for Implementing Road Tolling

Chilunjika (2018:76) citing Persad et al., (2007:1) highlighted the following main reasons for implementing tolling or road pricing:

- Demand management: Tolling costs are used as tools "to moderate the growth in demand on the transportation system". In addition to this, tolling as a demand management tool is also used "to encourage more use of public transportation and carpooling," both of which reduce the number of private cars on public roads and highways. For example, "vehicles are charged to enter inner London, England, as a way of regulating the demand in the region".
- Congestion management: This tolling method is used in order "to place a price on limited roadway space in proportion to demand. In this application the toll increases with the level of congestion". Tolling is used as a congestion-management tool in order to encourage "drivers to appreciate the costs they impose on others as a result of the congestion [and the associated environmental damage] they cause". This type of tolling ensures "that road users bear the full cost of their travel directly, by pricing the externalities which also requires continued tolling" (Persad et al., 2007:1).
- Finance/revenue generation: To recoup the costs of building, operating and maintaining the facility. Road pricing is becoming a more appealing means of funding transportation, since revenues from federal and state gas taxes have not kept up with growth in demand for infrastructure. Moreover, toll financing allows projects to be built sooner instead of waiting for tax revenues to accumulate.

Whether tolling is used to generate finance/revenue, manage demand or manage congestion, it remains an important means for generating revenue from the road users (Zhou and Chilunjika, 2013). Thus, road-user charges or tolling not only provide a mechanism for road users to pay the cost of the damage they cause on the road and the benefits of using the road, but it also provides a source of revenue for government and road-tolling agencies (Abbas, 2003:1). Since tolls provide an on-going revenue source that is not tied to the annual government budgetary process, funds from toll revenues can be dedicated to supporting the construction and maintenance of a particular road. This ensures that maintenance funds do not compete with the requirements of other roads in the network. Governments are legally bound by laws and statutes that give some guidelines on how to use toll fees. According to AFRODAD (2011:11), mobilising domestic resources through road tolls has become an important development issue.

3.3. Mobilising Toll Revenue

Hau (1992:7) states that tollgates are a feasible way of raising funds. Cronin (2015:2) adds that tolling can enable off-budget road maintenance and construction, thereby relieving the budget for other priorities like health, education, public transport infrastructure or seriously underfunded (and inherently untollable) rural roads. This can be particularly important for raising debt

finance outside the national accounts. The funds from toll revenues can be dedicated to supporting the construction and maintenance of a particular road, thereby ensuring that maintenance funds in particular do not compete with the requirements of other roads in the network.

According to Persad et al., (2006:1), tolling is also done in a bid to raise finance or to generate revenues. In this regard, tolling is crucial to help recoup the costs of building, operating and maintaining road facilities (Zhou and Chilunjika, 2013:188; Blythe and Hills, 1994:113). Non-toll roads are financed by funds from the National Treasury. Some existing roads are tolled in order to provide revenue for the construction of new segments in the network (cross-subsidy between different parts of the network). Tolling can assist in releasing funds for new construction; it is also possible that resources can be misallocated to cross-subsidies because there is insufficient consideration of the effects (Chilunjika, 2018:78). This reinforces the need for significant Government involvement in enacting road and transport policy, as well as infrastructural design. Careful project evaluation is required to find out whether there is an existing revenue stream from which new roads can be built. Without this, there is a danger that better investments are missed or even that private sector resources that are channelled into road development might crowd out other more important investments in the country.

Increasing transport networks and tolling points can serve as another way of harnessing the toll revenue and enhancing the country's revenue-generating abilities. It is generally noted that tolling provides a reliable and a faster source of revenue than traditional tax-based revenues. According to the Connecticut Report (2009:15), traditionally, tolling was purely seen as a means to build new bridges, tunnels and roads. This was done by leveraging the revenue stream from tolls over many years. That notable historic policy driver remains to the present day. Likewise, tolls are progressively being seen as a method of supplementing tax funding to repair, preserve or operate existing transportation infrastructure. Notably, tolling is liable to covering the construction or rehabilitation costs. This makes it necessary to establish a long-term tolling system (depending on financial structure, the construction costs and the amount of traffic).

Current budgetary allocations are well below the levels needed to maintain road networks over the long term. Thus, it is important to gain public support for more road funding. According to Heggie (1993:3), support for more road funding through user charges requires that steps be taken to ensure that road agencies (ZINARA and SANRAL, among others), do not operate as public monopolies and that development is within budget. This, therefore, calls for an adequate and stable flow of funds. All governments in Africa are seriously short of fiscal revenue and budget allocations for road maintenance, which rarely exceed 30% of requirements. It is not feasible for governments to increase these allocations under present fiscal environments and conditions (Heggie, 1993:5 cited in Chilunjika, 2018). Enhanced revenue mobilisation through tolling systems is indispensable for sustainable infrastructural development endeavours. Once road users are concerned with, and involved, in the management of roads, they generally advocate for the adoption of sound business practices to ensure value for money. Accordingly, toll roads ensure high-quality road networks. According to Richards (2006:21), in addition to contributing to improved road safety, toll roads generally reduce travelling distances. As such, substantial savings are made on the running costs of vehicles and on travel time (Richards, 2006:21).

3.4. Toll Revenue Performance

In this study, toll revenue is assessed according to internal and external revenue performance. Internal revenue performance directly refers to the internal mechanisms (computerisation or automation of toll collection as well as centralised electronic monitoring (CEM) and reconciliation of toll transactions) adopted in a bid to minimise revenue leakages, unchecked discounts and exemptions and to enhance the throughput of the vehicles to the greatest extent possible (Chilunjika, 2023; Chilunjika, 2018; Twitchen, 2014). These mechanisms include the computerisation of the tolling systems, where vehicles are identified and scanned electronically, thereby making it easy to reconcile the motor vehicles and the toll fees collected. Accordingly, some tolling points (such as Norton, Eskbank, Ruwa, Kadoma and Skyline) have been widened in a bid to enhance maximum possible throughput of vehicles. This initiative was meant to eliminate the attendant delays and queuing during peak periods (Musarurwa, 2015:2).

External toll-revenue performance implies the usage of toll revenue to create visible development with regard to road construction and maintenance. In other words, external toll revenue performance denotes the usage of toll revenue in undertaking road construction and other related and visible road projects. Toll-revenue performance is manifested in the system's ability to generate revenue to quickly recoup the starting up (construction) costs, as well as continue with the developmental, reconstruction and maintenance work on the given highways. Accordingly, Chilunjika (2018:121) advise that the toll facility must be able to generate sufficient revenues from operations to cover the cost of debt services and have the potential to fund projects and maintenance costs during its lifecycle before it will be seen as financially viable and/or attractive to potential investors. This implies that external toll performance requires that tolling projects provide a reasonable return on equity (Chilunjika, 2023; Chilunjika et al., 2019; Chilunjika, 2018; Twitchen, 2014).

4. METHODOLOGY

This study adopts an exploratory research approach as it aims to discover new ideas and gain insights into the subject under investigation. The study was hinged on the pragmatic research philosophy which relied on the case study research design which triangulated both qualitative and quantitative research methods (mixed methods). The study relied on purposive and stratified systematic sampling techniques to select the Participants from the ZINARA management (purposively), toll collectors and motorists (systematically). Participants in the management category were purposively selected based on their knowledge of automated road tolls. Quantitative data was collected using researcher-administered structured questionnaires which were

complemented by qualitative data from in-depth interviews with key participants, as well as documentary content analysis. The study used the Statistical Package for Social Sciences (SPSS), content and thematic analysis techniques in analysing the data.

5. RESULTS

The findings in this section are derived from questionnaires, face-to-face interviews, as well as documentary research. The key informants interviewed (Participants) were experts and strategic resource people on tolling issues and domestic revenue mobilisation. Questionnaires were distributed to the toll mangers, toll collectors and motorists. Table 1 below presents the statistics on the questionnaire response rates.

A total of 72 questionnaires were administered to the ZINARA pool toll collectors and all the questionnaires were returned, with a 100% return rate. The researcher also distributed 45 questionnaires to ZINARA toll functional managers and 33 questionnaires were returned, thus accounting for a 73% response rate. The researcher completed 100 structured questionnaires with motorists who passed through the tolling points. A total of 150 motorists were approached by the researcher, which accounts for a 66.67% response rate. In aggregate terms a total of 267 questionnaires were distributed, while 205 were returned and successfully completed. Therefore, the overall response rate for the questionnaires was 76.77%. In addition to the questionnaires, the researcher interviewed 10 key informants, thus bringing the total sample size to 215 Participants.

5.1. Effectiveness of Road-Tolling Systems as a Domestic Revenue Generating Tool

The Table 2 below explores the effectiveness of the road tolling systems as a domestic revenue generating tool in Zimbabwe.

On the effectiveness of road-tolling systems as a domestic revenue-generating tool, toll managers as the overseers of the tolling systems were of the view that they are "Very Effective". This is reinforced by the 93.94% (31 out of 33 Participants) response rate. In the "Effective" category, 6.06% of toll managers (2 out of 33) subscribed to the notion that toll road systems serve as a revenue-generating instrument. In addition, in the category of toll collectors, 81.94% of Participants (59 out of 72) subscribed to the notion that road-tolling systems are "Very Effective" tools for generating public revenue. The remaining 13 Participants (18.06%) constituted the "Effective" category. In both the toll managers' and toll collectors' categories, none of the Participants were of the view that road-tolling systems are not effective revenue-generating tools. The motorists showed an interesting response pattern in that the majority (64 out of 100 or 64%) agreed that road-tolling systems are "Very Effective" tools for generating toll revenues. Of the motorist Participants, 17% of Participants (17 out of 100) were of the view that road-tolling systems are an "Effective" tool for Government to generate revenue, while (19 out of 100 or 19%) of motorists posited that road tolling was not effective as a tool for raising public revenue.

Table 1: Questionnaire responses

Category	Questionnaires distributed	Questionnaires returned	Response rate (%)
Toll managers	45	33	73
Toll collectors	72	72	100
Motorists	150	100	66.67
Total	267	205	76.78

Source: Authors' own construction

Figure 1 above gives aggregate responses which reflect that 72.12% of all Participants (154 Participants out of 205) were of the view that road tolling is a "Very Effective" tool for generating revenue. As toll collectors and toll managers are involved in the collection and administration of toll fees, they are aware of the huge sums of money that are generated from road-tolling systems. In line with this, Zhou and Chilunjika (2013:191) state that, "Road-tolling systems in Zimbabwe is a worthwhile project. Since its inception in August 2009 to February 2012, a total of US$51.2 million has been collected from all toll gates countrywide. The first five months recouped US$7.4 million, which was 14.4% of the total revenues. Within the first three weeks of the introduction of the toll gates, they raked in US$688.766.07. Such a big amount was raised in such a short space of time, thereby showing the potential of revenue to be collected from toll gates. The year 2010 realised US$19.9 million, which is 38.9% of the total revenues. The year 2011 realised US$20.8 million, which is 40.5% of the total revenues collected nationwide. Revenue performance indicates the relative change in revenue yield, so it can be noted that from 2010 to 2011 there was a 1.6% increase hence satisfying expectations of effectiveness of the toll gate system in terms of an increase in revenue collection".

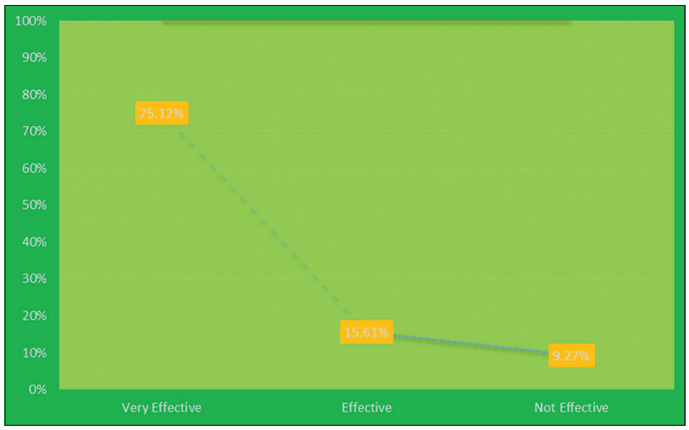
Similarly, in 2010, ZIMRA-operated tolling systems recorded US$19 912 705.54; in 2011, US$ 20 757 753.01; in 2012, an increase in toll collections (US$23 153 680.22) was recorded. There was a marked increase in the toll collection figures in 2013 after ZINARA took over from ZIMRA as -collecting agency. According to Mbiba (2014), revenue rose by almost 80% since ZINARA took over the collection of toll fees. A total of US$7 612 183 was collected between October and December 2013. In October 2013, ZINARA collected US$2 330.943, compared to US$1 613.941.41 in October 2012. According to the then Acting ZINARA CEO, Moses Juma, toll revenues increased significantly with the computerisation of the tolling points in 2013, with

Table 2: The effectiveness of road-tolling systems as a revenue-generating tool

Category	Total number of participants	Very effective (%)	Effective (%)	Not effective (%)
Toll managers	33	31 (93.94)	2 (6.06)	-
Toll collectors	72	59 (81.94)	13 (18.06)	-
Motorists	100	64 (64)	17 (17)	19 (19)
Total responses	205	154 (75.12)	33 (15.61)	19 (9.27)

Source: Authors' own construction

Figure 1: The effectiveness of road-tolling systems as a domestic revenue-generating tool



Source: Authors' own construction

monthly toll revenue increasing from US$1.2 million to about US$2.1 million per month (Mbiba, 2014). Ruwende (2014) states that the then Minister of Transport noted that the Government collected US$40 million annually from tollgates. In line with this, a total of US$200 million had reportedly been collected since the inception of the tolling project in Zimbabwe (Kunambura, 2016).

By forecasting arithmetically/using simple proportions, 5 months are equivalent to US$D7,4 million and twelve months are equivalent to US$17.755.921.08. However, this computation is undergirded by the assumption that all activities and factors were held constant. It can also be noted that since the computerisation of the tolling systems and the ZINARA's subsequent takeover of the toll operations in October 2013, the revenue yield increased by almost 80% and this saw ZINARA collecting US$ 2.330.943 in October 2013, compared to US$ 1.613941.41 in October 2012 (Mbiba, 2014:3). This implies that ZINARA has collected US$40 million in 2014 and 2015, respectively. It was reported that revenue at the ZINARA surged by more than 50 percent in the last two months of 2016 because of the computerised toll revenue collection (The Herald, 2016).

The toll revenue figures also increased since ZINARA no longer had to remit 10% to ZIMRA, while there was also an increase in the number of tolling points from twenty-two in 2009 to twenty-six. This also shows that road-tolling is very effective in generating revenue. As road tolling is compulsory and there are no untolled routes in Zimbabwe, it has a great potential to yield the highest possible revenue. This therefore makes road tolling a reliable and effective source of public revenue. Consequently, Participant I was of the view that, "…toll financing has become an important source of revenue complementing budgetary resources in the road maintenance programmes". As such, toll fees cover the gap that created by the dwindling budgetary allocations.

Of the toll collectors, 15.61% (33 out of 205) fell within the "Effective" category. According to Mbara et al., (2010:623), there is growing evidence of good payback advantages associated with toll roads across the world. Toll roads are now associated with relatively low default or failure rates, thereby justifying the suitability and efficacy of road tolling as an instrument for generating revenue. It is imperative that toll facilities are managed effectively to help facilitate adequate, sustainable revenue inflows. The "Not Effective" category included 19 Participants (9.27%). Collectively, the view that tolling systems are not effective might have been premised on the fact that there is no visible and meaningful work being done to construct and repair the road network. This notion was supported by Participant C who stated that "…the state of the road network is in a deplorable state and we really wonder where the toll fees that we are made to pay each time we use the highway is being taken to". Such sentiments reveal that the responsible authorities should strive to put the financial resources generated from the road-tolling systems to good use.

Development work on roads should be visible and satisfactory in the eyes of stakeholders. As such, it can be noted that the effectiveness of road-tolling systems can also be determined by considering other elements such as the usage of toll revenues. In certain scenarios, the mobilised revenue is channelled towards full road construction and maintenance endeavours of the routes on which they are collected. For example, Nyamukondiwa (2014) asserts that ZINARA has successfully purchased 80 motorised graders that were used to grade 24 105 km of gravel road countrywide. In addition, the resealing programme for the 10.7 km Harare-Masvingo stretch, the 11.5 km Harare-Chirundu stretch, as well as the construction and rehabilitation of Little Sebakwe bridges were successfully completed, showing that there are circumstances where collected toll revenue is put to good use (Mid-Year Fiscal Policy Review, 2016:16). The levels of disbursements and allocations to local authorities can determine the extent to which toll revenues are being used in specific localities. In addition, effectiveness is also measured by determining whether toll revenues are adequate to meet the road infrastructure requirements in terms of the condition of the road, as well as factors that impede the Road Fund's objectives of building a quality road network.

However, 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 rehabilitation. The rehabilitation and development of the country's road network continues to be hampered by inadequate financial resources and skilled personnel. The issue is exacerbated by the growth in road traffic volumes, particularly after the economy started to stabilise in 2009, which continues to overstretch the existing infrastructure. Notably, this compromises road safety and provision of efficient transport services. To reinforce this, the 2012 National Budget Statement (2011:139) asserted that the poor state of the road network was further exacerbated by the rapid growth of vehicle traffic. This, in itself, reflects some positive economic gains that were realised after the hyperinflationary era ended. Participant A contends that, "…the financial allocations towards road maintenance and rehabilitation tend to be meagre, insufficient and are inconsistently disbursed such that these allocations and the disbursements will then be outweighed and eroded by the road infrastructure requirements each time they are disbursed". When these insufficient allocations are released to Road Authorities on either a quarterly or an annual basis, funds will only cater for a small portion of the road network.

As such, by the time Local Authorities receive their next annual allocation the portion they would have repaired would have been dilapidated. The cycle of disbursing financial resources falls short in addressing the rehabilitation gap in a sustainable fashion. Similarly, Participant A states that the money that is expected to be raised from road tolling is a drop in the ocean and is far outweighed by the road construction and maintenance requirements.

By and large, there are gaps in relation to the external dimension of toll revenue performance. In this regard, the study established that motorists, the key players in the tolling process, are disgruntled due to the dearth of meaningful investment on the road network and related highway infrastructure. The toll revenue collected and remitted to the Road Fund happens to be falling victim to abuse and misuse by ZINARA officials, as well as Government and political officials (Chilunjika, 2023; Chilunjika, 2018; Nyamukondiwa, 2014). The implication is that if funds are being raised effectively and efficiently through a robust accompanying remittance system to the Road Fund, no loopholes should be visible in the use of the funds. The chances of finances being diverted and channelled to uses that are unrelated to road construction, refurbishment and maintenance are visibly high. The expenses at ZINARA are more skewed towards consumptive recurrent expenditures and administrative expenses that take up the largest portion of the money raised from the toll fees. For that reason, the money left is inadequate for capital projects. The building and rehabilitation of roads are essentially capital intensive and require huge sums of money. Yet, the allocations are limited and inadequate.

It was also noted that discounts, toll exemptions and diversion impacts tend to have a negative effect on overall toll collection and administration process. Furthermore, these processes tend to have a negative impact on internal toll revenue performance. Motorists tend to be given discounts when they pass through tolling points. The tolling points are also determined by the area of residence and proximity to the tolling point. In Zimbabwe, those who stay within a 10-kilometre radius to the tolling points are made to pay a fixed monthly toll charge of US$10, where after they can make unlimited trips through the tolling point (Ruwende, 2014). Discounts tend to hamper the full revenue-generating ability of tolling systems. Toll exemptions are awarded to certain classes of vehicles and drivers, such as motor cycles, scooters, vehicles for the handicapped, army and police vehicles, as well as vehicles used for public and essential services such as the fire brigade and ambulances, among others. Additionally, there is traffic diversion, whereby vehicles are diverted into local roads as they seek to avoid toll plazas (Chilunjika, 2018). In the Zimbabwean context, no provision is made for un-tolled alternative diversion routes. All the routes are mandatory and every motorist that uses highways with tolling points is bound to pay the respective toll fees. Nonetheless, it must be noted that toll diversion leads to a loss in revenues that are supposed to accrue to the Road Fund as motorists use parallel routes.

Toll revenues are lost directly and in certain instances indirectly. As such, there are different types of toll revenue losses due to violations, scofflaws and system errors, among others. The distinct types of toll revenue losses and leakages include toll evasion and toll pilferage, which entails the non-payment of tolls at a toll booth, is a form of toll revenue leakage. Motorists tend to find another route with the specific intention of avoiding payment of tolls. The next type of toll revenue leakage includes unreadable and unbillable toll losses. This entails a filthy or corroded licence plate and/or tag, an obstructed licence plate, a bad video image due to poor lighting or weather conditions and scofflaws (Chilunjika et al., 2019; Chilunjika, 2018). In addition, there are uncontrollable toll losses, which stem from clients not paying their bills. Concerning system errors or problems encountered in identifying the customer, a toll facility operating a similar system can expect revenue loss ranging between 1 and 6% of the total revenue collected in a given tolling system. Therefore, toll collectors should strive to achieve and maintain an acceptable level of toll revenue leakage.

The study noted that challenges related to tolling systems can be categorised as challenges that affect the motorists, toll collectors or road authorities. With regard to the challenges motorists face, it was established that delays are still evident at Zimbabwean tolling points, regardless of the fact that the tolling systems are now automated or computerised. This comes as a result of the use of point of sale machines where motorists swipe toll cards (Kunambura, 2016). Delays seem to be exacerbated during peak hours when traffic volumes are naturally higher than at any other time of day (Chilunjika, 2018). These delays lead to long-winding queues. In addition, some tolling routes were seen to have narrow collection points that make it difficult for them to serve an increased number of vehicles. Similarly, with regard to the challenges faced by the road authorities and the management, the study established that dwindling lines of credit make it difficult for ZIMRA to rehabilitate the existing road networks.

In addition, public officials misuse exemption facilities, which weakens the revenue collection efforts of Government. The other challenges deal with incidences of corruption and nepotism in ZINARA's awarding of tenders. It was noted that there is serious flouting of tender procedures, which has in most cases resulted in prices being inflated and the siphoning of the toll revenue from the Road Fund (Chilunjika, 2023). It was found that political interference has led to corruption and nepotism, whereby some of the toll revenue was being used to fund political activities. There are also challenges regarding the distribution of toll revenues. It was evident that some funds are used for the mobilisation of the revenue that is diverted to benefit other places in the process. Furthermore, there is an asymmetrical development of roads, as some routes are getting more attention than others.

Several challenges were identified that directly concerned the toll collectors. The structural design of the tolling points also leads to delays in the passage of vehicles through tolling points. Thus, it difficult for left-hand drive motorists to transact more speedily. In addition, it was also noted that motorists tend to produce larger denominations of currencies at tollgates, which then makes it difficult for the toll collectors to secure change. For security reasons, toll collectors are not allowed to keep large sums of money (Chilunjika, 2018). Some officials do not to co-operate, as they expect to benefit from exemptions regardless of whether they are on Government business. Furthermore, toll collectors have

to grapple with the challenge of defining what luxury cars are. The offshoot of this is that the accepted definition of luxury cars includes vehicles with a carrying capacity of more than 3 tonnes but less than 10 tonnes (Chilunjika, 2023 citing Chilunjika, 2018). The question of how to distinguish between light motor vehicles and luxury cars that weigh above 3 tonnes was seen to pose a challenge for toll collectors. Furthermore, there is uncertainty over the exact treatment that should be given to luxury vehicles in terms of the toll charges.

6. CONCLUSION

The study examined road tolling and its impact on domestic revenue mobilisation in Zimbabwe. The study established that toll fees have a great potential to generate revenue as witnessed by the toll revenue that has been on the rise since the introduction of road-tolling systems. In addition, toll revenue performance was also measured by the general toll revenue yield generated from the tolling systems. It was clearly noted that toll revenue increased with each passing year. The study established that toll revenue is used for road construction. The toll revenue is also used for the repayment of loans for projects such as the Plumtree-Harare-Mutare Highway, where ZINARA successfully raised a loan from the 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 confirmed the inadequacy of toll revenue to fund the rehabilitation of the country's road network singlehandedly. This is due to the fact that the road maintenance backlog has continued to widen, thereby widening the funding requirement gap. The study, therefore, concluded that the tolling system in Zimbabwe is a favourable strategy for generating revenue for the construction and maintenance of the road network. It can also be noted that Zimbabwe's tolling system, together with its internal toll revenue performance, is performing well. This is reflected in toll revenue collection efforts; the elimination of toll revenue leakages; the enhanced toll revenue yield; and sound monitoring efforts of the tolling processes across the nationwide tolling points. These positive developments are attributed to the country's centralised toll monitoring system.

Based on the findings and conclusions of the study the following recommendations are made:

- In relation to the use of the revenue collected from tolling systems, the study asserts that there is a need to earmark or ring-fence toll revenue, so that it is used solely for road construction, refurbishment and maintenance. In light of this, there is a need for legal stipulations outlining the use of toll revenues in the Constitution. It should provide legal restrictions on the use of toll fees and provide that they be channelled towards capital investment in the country's road network. The constitutional provisions should define the modalities governing collection, remittance, distribution and use of toll revenues, rather than leave everything to the discretion of ZINARA. In addition, the Constitution should also stipulate that all recurrent expenditure at ZINARA be covered by revenue from other sources that feed into the ZINARA Road Fund. Similarly, after a project is undertaken by ZINARA, its CEO should make a presentation to the Minister and the Permanent Secretary of the Ministry of Transport and Infrastructural Development, as well as Parliament. Fiscal prudence and transparency should be show by giving them a breakdown of the funds in relation to the completed projects. Correspondingly, there is a need for political commitment in dealing with toll revenue leakages and the embezzlement of public funds from the toll roads. To this effect, any official caught in unscrupulous activities with the toll revenues should receive a heavy penalty that would deter would-be perpetrators of such crimes. For greater effect, those proven guilty should be incarcerated and given jail terms of no <5-years in each case.
- ZINARA should also come up with clear criteria in terms of the disbursement, distribution and allocation of the revenues collected through toll roads. Toll revenue should be remitted to the Road Fund, where it becomes part of the common pool. Toll revenue should be distributed in proportion to the need within different localities. Correspondingly, the Road Authorities should be empowered to compile quality project proposals on a regular basis, so that they can benefit from ZINARA's acquittal-based disbursements. ZINARA should execute strict and consistent follow-ups on any road authorities lagging behind in order to compel them to submit their well-articulated applications. This would enable road authorities to access funds transparently, timeously and judiciously and make it imperative for the road authorities to ensure that respective projects are fully undertaken. This would create room for symmetrical and uniform development of road infrastructure across the country.
- Similarly, after the toll fees are ring-fenced centrally, local authorities should identify the specific roads to be worked on in any financial year. The drawdown from the Road Fund should be based on agreed projects for each road and should be accompanied by certified invoices for work done. Furthermore, it is also crucial to establish a robust monitoring and evaluation team from ZINARA to assess the project results from these road authorities on a quarterly basis.
- It is also imperative that ZINARA and the Ministry of Transport and Infrastructural Development work together to enhance the participation of key stakeholders, such as motorists and toll collectors. Transport Associations, among other associations, should be given information about the running of tolling systems, the management of toll roads, contractual arrangements, the remittance processes, as well as the use of toll revenues. There is a need for meaningful and reasonable involvement and buy-in by other key stakeholders ZINARA's affairs. Motorists are bound to support a particular system when they feel they are involved in the decision-making process concerning issues and policies that directly affect them (that is road-tolling projects).

- There is a need for a robust, transparent system of engaging contractors to ensure that tendering procedures are not flouted. In this vein, all major financial decisions that are taken at ZINARA should be subject to rigorous scrutiny and review by the Parliament, as well as the Minister and Permanent Secretary in the Ministry of Transport and Infrastructure Development, the parent Ministry that houses ZINARA.

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