Exploring the drivers and the utility of road tolling in Zimbabwe

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ABSTRACT

The issue of road tolling is a topical subject, especially for developing countries who are being affected by paltry budgetary allocations towards highway infrastructure investment. The Zimbabwean Government took almost a decade before implementing road tolling. It was thus needful to come up with innovative, long-lasting solutions to address the financial constraints towards highway infrastructure investment hence the introduction of road tolling systems in Zimbabwe. To this effect, the study unpacks the drivers and the utility of road tolling in Zimbabwe. Through the usage of a case study research design which triangulates both the qualitative and quantitative methods, the study collected data using a survey questionnaire, document analysis and in-depth interviews with key informants. Data was analysed using the SPSS, content analysis and thematic analysis techniques. The results revealed that the dwindling budgetary allocations towards highway infrastructure investment, hyperinflation, and backlog in the maintenance and construction of trunk roads were the key factors that led the Zimbabwean Government to introduce road tolling. Additionally, the study highlighted that road tolling was introduced primarily to generate revenue for the construction, rehabilitation, and maintenance of highway infrastructure in Zimbabwe. Recommendations were made to enhance the adoption and operationalisation of road tolling systems.

INTRODUCTION

Different countries across the globe are embarking on introducing road tolls for different purposes. Road tolling has been introduced for different reasons across different countries in the world and key of these reasons are to regulate pollution levels, demand management, congestion management employment creation and to generate revenue among others (Chilunjika, 2023; Chilunjika, Uwizeyimana & Auriacombe, 2019; Chilunjika, 2018; Zhou & Chilunjika 2013; Persad, Walton & Hussein, 2007; Ergas and Greig, 2012; Eliasson, 2008). In light of the above, the regulation of pollution levels is done by reducing greenhouse gas emissions and increasing air quality whilst demand management implies the need to encourage the motorists’ more use of public transportation and carpooling. Moving on, congestion management places a price on the limited road way space in proportion to demand where during peak periods the price tends to be high hence making the motorists to directly bear the full cost of their travel. Regarding revenue generation, road tolling is undertaken for the purposes of recouping the costs of building, operating and maintaining the facility and in the process creating employment for the toll collectors, toll enforcers, toll managers among others who will be working on the road tolls (Chilunjika, 2023; Chilunjika et al., 2019; Chilunjika, 2018).

The idea to introduce road tolling in Zimbabwe was first discussed in the late 1990s to early 2000 after concerns were raised regarding the poor condition of the country’s roads as well as the many incomplete road projects around the country. This saw the then Parliamentary Committee on Transport shelving the idea after unfruitful discussions around the matter until 2008 (Second Session Seventh Parliament First Report, 2009, p.13). During this period, there were economic sanctions that were imposed on the country by the West in response to the controversial Fast Track Land Reform Programme (FTLRP). This was accompanied by the emergence of a severe economic crisis which resultantly depleted the government coffers such that there were no surplus funds to support road maintenance (Chilunjika et al., 2019; Chilunjika, 2018, p.8; Zhou & Chilunjika, 2013, p.193). In addition, the donors such as the
World Bank who were also instrumental in financing capital highway infrastructure projects pulled out in the early 2000s (Zimbabwe National Roads Administration-ZINARA, 2017, p.4; Zhou & Chilunjika, 2013, p.189). Zimbabwe was therefore left with no other option but to rely on the domestic or internal means to finance its highway infrastructure.

In demonstrating the severity of the need to introduce the road tolling project the Government of Zimbabwe’s Mid Term Fiscal Policy (2016, p.67) states that Zimbabwe has a road network of 85 000 km, comprising surfaced, gravel and earth roads; approximately 8 900 km of the total network constitutes the primary and regional trunk road network. The average age of the primary and regional trunk road network is over 40 years and many roads have outlived their design life and are in need of rehabilitation. In addition, only about 24% of the total network is still in good condition, while over 40% is in a very poor condition (Chilunjika, Uwizeyimana & Auraicome, 2019; Chilunjika 2018; Government of Zimbabwe’s Mid Term Fiscal Policy Review, 2016, p.68). It was thus difficult to address the attendant road maintenance challenges by only relying on the limited revenue of fuel levies, transit fees, overloading fines and abnormal load fees alone.

The Government of Zimbabwe therefore turned to the Road Fund, ZINARA, to bankroll the tolling project. Given the need to implement the tolling project speedily and the fact that it did not have the capacity, ZINARA had to engage the Zimbabwe Revenue Authority (ZIMRA) to administer and collect the toll revenue for the highway network investment (Chilunjika, 2023; Zhou & Chilunjika, 2013, p.89). Maintenance requirements were so high that the revenue inflows could not address the road infrastructure needs sufficiently. As such, the introduction of road tolling would bolster public funding outside the national fiscus (Chideme, 2013, p.1). The Zimbabwean road tolling system was hurriedly implemented without the requisite feasibility studies to assess the vehicular volumes, neither were there consultations with the motorists, nor were there standard provisions like alternative untolled routes among others. Despite these discrepancies, the project was successfully implemented.

In light of this, the study examines the drivers or the factors that necessitated the introduction of road tolling in Zimbabwe as well as critically analyse the rationale for establishing road tolling systems in Zimbabwe. In doing so, the study is organised as follows: the first part is the introduction, and the second part is the literature review which deals with the theoretical and conceptual background of the study. The study also captures the research methodology, which captures the methods and approaches that were used in selecting the research participants and respondents, the data collection and data analyses methods that were used in the study. The study also presents the research findings and discussions. Then lastly, the study proffers a conclusion.

**Literature Review**

**Theoretical and Conceptual Background**

This section reviews literature that is associated with the drivers and the utility of road tolling. It therefore forms the theoretical and conceptual background of the study.

**Defining Road Tolling**

Zhou and Chilunjika (2013, p.188) define toll gates as privately or publicly built roads for which a driver pays a toll (a fee) to use. As such, motorists do pay some fees for using a particular road in a usage-based arrangement. Tolling is a general term that refers to any sort of direct client charge on highway and parkway transportation (Kirk 2017, p.12; National Cooperative Highway Research Programme, 2008, p.108; March, 2007, p.23). Tolling is thus an equitable method for a road-user (motorist) to make a direct payment for using a particular road. Pickford and Blythe (2006, p.1) observe that tolling or toll collection helps mobilise road-use fees on certain roads, bridges or tunnels to recover all or part of the capital, operating and maintenance costs for that road. In this vein, road tolls are levied for specific admittance and infrastructure. The term “tolling” has been applicable to parkway or highway transportation since its inception in Zimbabwe and its primary aim was not to realise targets such as congestion relief and reliable traffic flows. Instead, the aim of tolling in Zimbabwe is to charge motorists for using the roads in order to raise revenue for road infrastructure development and maintenance in Zimbabwe (Chilunjika et al., 2019; Chilunjika 2018). In regards to this, road tolling generally serves as a policy instrument for achieving government’s objectives towards transport infrastructure investment. Road tolling as a tool for highway infrastructure investment has been adopted in line with the user pays principle.

**Rationale for Road Tolling**

Tollgate systems are established for various reasons across the globe. As such, this section explores the reasons for undertaking and implementing road tolling systems.

**Demand Management**

Road tolling is conducted with the aim to regulate or control the demand for road access and usage by the motorists. According to Persad et al., (2007, p.1), 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, as Persad et al., (2007, p.1) puts it “vehicles are charged to enter inner London, England, as a way of regulating the demand in the region”. Road access management is however a secondary if not tertiary reason why toll gates were introduced in Zimbabwe. The regulatory effect in the Zimbabwean context is by and large indirect and subtle as it excludes those motorists who do not have the money to pay for the toll gates from gaining

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*671*
passage (Chilunjika et al., 2019; Zhou & Chilunjika, 2013). And eventually these motorists are either forced to defer their journeys or to make use of public transport. Deferment of journeys by burdened motorists leads to the management of demand for road access. In line with this, tolling systems are then seen to be indirectly managing demand for road access. This is however different from developed countries that have demand management as the primary purpose for setting up road tolls since the regulatory effect upon the motorists in the Zimbabwean model is not premised on the need to minimise traffic volumes in the CBD as is the case with the Singapore congestion charging scheme. In addition to demand management, road tolling is also undertaken for the purposes of reducing emissions.

Reducing Emissions

Tolling provides opportunities for greenhouse gas emission reductions through mode shift, diminished travel frequency and better fuel efficiency due to congestion relief (Booz, Allen and Hamilton, 2009, p.9). Mode shift contributes to regional greenhouse emission reductions by moving passenger trips from less efficient single occupancy vehicles (SOVs) to more efficient public transport, cycling or walking. The fuel efficiency of a fully occupied bus is six times greater than that of the average commuter automobile (Corson, 2009, p.78). To this effect, variable tolling reduces greenhouse gases emissions by encouraging people to combine or consolidate trips and thus drive less frequently. It also reduces emissions by reducing fuel wasted by vehicles in congested networks. This objective does not however apply to the Zimbabwean context as road tolls were not established for the sole purpose of regulating pollution. This is catered for in a different arrangement where motorists are made to pay carbon taxes and this initiative is spearheaded by the Environmental Management Agency. Countries like Italy, Singapore among others have established road tolling systems with the aim to regulate pollution and this has served as a control mechanism for demand for access of certain roads in some given localities (for example the Milan Area C) which then serves as an environmental initiative to reduce traffic growth and resultantly pollution (Albalate & Bel, 2008). The Milan Area C scheme regulates the emission of pollutants by vehicles as such road tolls are used to enhance the regulation thereof.

Congestion Management

Congestion limits both access and connectivity. It causes people to bypass or avoid areas. According to Cronin (2015, p.3) if there are effective public transport networks in place, e-tolling infrastructure can be used for congestion charging. It is easier to transform e-tolling infrastructure into congestion charging systems. Congestion is viewed as a “natural” by-product of economic growth. In reality, beyond economically efficient levels (when traffic flows slowly but still at maximum throughput) it destroys the economic vitality of a city. According to the Connecticut Report (2009, p.56) congestion pricing aims to improve transportation system efficiency by charging different rates during different times of the day (or based on different real congestion levels) to encourage shifting demand from peak (or rush) hours to off peak hours, less congested routes, other modes or to reduced overall travel. The reality can be much more complicated since pricing one facility can have effects on other facilities and the benefits of pricing may accrue to one population while additional burdens are borne by others.

For example, the London Congestion charging scheme, where vehicles are charged higher toll fees to enter the CBD. Only those motorists who are prepared to pay higher toll charges can enjoy access to the CBD or the road network (Chilunjika, 2018; Ergas and Greig, 2012; Eliasson, 2008; Emmerink, Nijikamp and Rietveld, 1994). In like manner, there is the control of motorists’ travelling patterns and behaviours as they are charged relatively higher toll fees than they are charged on any other section of the road (Cronin, 2015, p.2; Emmerink, et al., 1994). Pricing is one remedy of addressing congestion. Congestion charging is only one tool among many to relieve congestion, but only in Singapore, London, Milan Area C and Stockholm has congestion been effectively managed to strategically determined targets. In contrast, congestion pricing as a travel demand management initiative results in reliable travel time and reduced delays. In addition to congestion management, it can also be argued that road tolling is also established for the purpose of mobilising revenue.

Finance/Revenue Generation

Tolling is also established in a bid to recoup the costs of building, operating and maintaining the road highway infrastructure. 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” (Chilunjika et al., 2019; Chilunjika, 2018; Chilunjika, Chikova and Uwizeyimana, 2016; Eliasson, 2008; Persad et al., 2007, p.1). According to the World Bank (1996) covering construction or rehabilitation costs requires a long period of tolling. The time it takes to raise enough money to build a new road or to rehabilitate the existing one will depend on the financial or toll pricing structure, the construction costs, and the amount of traffic. Unlike the toll revenue raised for constructing a new road or rehabilitating the existing one which might be stopped when the necessary funds have been reached, the toll revenue raised for the purpose of covering maintenance and operations costs requires continued tolling. As long as the road infrastructure is in use it will require continuous maintenance.

Research Methodology

Since tollgates are a relatively new phenomenon in Zimbabwe, this study adopts an exploratory research approach. As such, it aims to discover new ideas and gain insights into the subject under investigation. The study was hinged on the case study research design
which triangulated both qualitative and quantitative data collection methods (mixed methods). The study selected respondents from the ZINARA management (purposively), toll collectors and motorists. Respondents in the management category were purposively sampled based on their knowledge of automated road tolls. Quantitative data was collected from toll road users (motorists) as well as the toll collectors, and these respondents were chosen through stratified systematic sampling. Quantitative data from researcher-administered questionnaires was complemented by qualitative data from in-depth interviews with key participants, as well as documentary content analysis. In this study, the researcher made use of content analysis, thematic analysis, as well as the Statistical Package for Social Sciences (SPSS) in analysing the data.

Findings and Discussions

The findings in this study are derived from questionnaires, face-to-face interviews, as well as documentary research. The key informants interviewed were experts and strategic resource people on tolling issues and public finance. Questionnaires were distributed to the toll managers and the toll road collectors. Motorists also participated by providing information captured on structured questionnaires. Table 1 presents the statistics on the questionnaire response rates.

<table>
<thead>
<tr>
<th>Category</th>
<th>Questionnaires Distributed</th>
<th>Questionnaires Returned</th>
<th>Response Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toll managers</td>
<td>45</td>
<td>33</td>
<td>73%</td>
</tr>
<tr>
<td>Toll collectors</td>
<td>72</td>
<td>72</td>
<td>100%</td>
</tr>
<tr>
<td>Motorists</td>
<td>150</td>
<td>100</td>
<td>66.67%</td>
</tr>
<tr>
<td>Total</td>
<td>267</td>
<td>205</td>
<td>76.78%</td>
</tr>
</tbody>
</table>

Source: Authors’ Own Construction

A total of 72 questionnaires were administered to 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 approached a total of 150 motorists with structured questionnaires. Since the questionnaires were researcher administered, the researcher successfully completed 100 questionnaires (which accounts for a 66.67% response rate) for the motorists who were passing through the tolling points. 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 respondents.

Factors That Necessitated the Introduction of Road Tolling in Zimbabwe

Several factors that necessitated the introduction of road tolling in Zimbabwe are discussed in the sections below.

<table>
<thead>
<tr>
<th>Category</th>
<th>Total Number of Respondents per each category</th>
<th>Dilapidated Roads and Highway Infrastructure Maintenance Backlog (frequencies and percentages)</th>
<th>Conformance to International Practices and Economic Challenges (frequencies and percentages)</th>
<th>Dwindling budgetary allocations (frequencies and percentages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toll managers</td>
<td>33</td>
<td>18 (55%)</td>
<td>5 (15%)</td>
<td>10 (30%)</td>
</tr>
<tr>
<td>Toll collectors</td>
<td>72</td>
<td>28 (39%)</td>
<td>23 (32%)</td>
<td>21 (29%)</td>
</tr>
<tr>
<td>Motorists</td>
<td>100</td>
<td>53 (53%)</td>
<td>21 (21%)</td>
<td>26 (26%)</td>
</tr>
<tr>
<td>Total</td>
<td>205</td>
<td>99 (48%)</td>
<td>49 (24%)</td>
<td>57 (28%)</td>
</tr>
</tbody>
</table>

Source: Authors’ Own Construction

Run-Down Road Infrastructure and Maintenance Backlog

This section focuses on the factors that necessitated the GoZ to adopt a road-tolling system. In capturing the factors that contributed to the introduction of the road-tolling systems in Zimbabwe, it can be noted that the highway infrastructure had out-lived its lifespan. As such, there was a need to construct new roads and to repair existing ones, since most roads had been constructed during the colonial era. In highlighting the factors that necessitated the introduction of road tolling in Zimbabwe, Table 2 above, which shows the questionnaire responses posits that 55% of the toll managers (18 out of 33 respondents), 39% of the toll collectors (28 out of 72 respondents) and 53% of the motorists (53 out of 100 motorists) respondents from the toll managers’ category (that is 18 respondents) were all of the view that the dilapidated roads and the maintenance backlog were the key drivers for the adoption of road tolling. In combining the responses from the motorists, toll collectors and toll managers the category of the dilapidated roads maintenance backlog had 99 out of 205 respondents which accounted for 48% of the total responses.
In support of this notion, Interviewee A, noted that, “…there was general highway infrastructural dilapidation from 2005 to early 2009 and the Zimbabwean Government had much pressure since the citizens wanted to make sure that the road network was in good shape. The major challenge for the Zimbabwean Government was where to obtain financial resources for road construction going to come from. This was the problem that made them settle for road tolling as an instrument to raise finances for road maintenance and construction and to put it in place in August 2009”. In line with this, Gumbie and Kudenga (2009, p.15) state that the average age of the regional trunk road network is over 40 years. As such, many roads have outlived their design life and are in need of rehabilitation. Mbara, Nyarirangwe & Mukwashi, (2010) reinforce this point by highlighting that the overall quality of the country’s road infrastructure has continued to deteriorate over the years, as evidenced in the visible structural failures. As such, there was need for innovative ways to ensure that highways and trunk roads are brought to their pristine states.

In light of the above, it can be argued that the inability of the GoZ to raise revenue for road maintenance and the deteriorating state of regional trunk roads compelled it to introduce toll fees. The unacceptable state of the roads was also worsened by the maintenance backlog. After Zimbabwe’s independence, the Government paid little attention to highway network construction and maintenance. Interviewee J stated that, “…the state of the road infrastructure in Zimbabwe is deplorable as a result of it not being attended to. Actually the Government neglected the road infrastructure for long”. To reinforce this notion, Interviewee B stated that, “…there was a backlog of road network maintenance and the Government had to come up with the user-pays principle which saw road-tolling systems being adopted in Zimbabwe”.

Conformance to International Practices And Economic Challenges

As indicated in Table 2 above (which shows the data from the questionnaires), fifteen percent of the respondents (5 toll managers) were of the view that conformance to the international standards coupled with economic challenges led to the adoption of road tolls in Zimbabwe. From the toll managers and motorists’ categories, it was noted that 32% and 21% of the respondents respectively were of the view that the need to join the international bandwagon and economic challenges had propelled the adoption of road tolling in Zimbabwe. In cumulative terms, the category of international conformance and economic challenges consisted of 49 respondents (that 24%). With regard to the factors that led to the adoption of road-tolling systems in Zimbabwe, Interviewee C shared the same sentiment as Interviewee G. They noted that, “…the introduction of road-tolling systems in Zimbabwe was actually long overdue and it was imperative for Zimbabwe to join the global bandwagon of road tolling as many countries such as the USA, the UK, Japan, China, Sweden, Portugal in the developed world have toll gates in place, and if we come closer home, our neighbour, South Africa, has operational road tolling”. To the two respondents (interviewees), the introduction of road tolling was to keep pace with international developments and best practices of financing road infrastructure using the user-pays principle.

In addition, Interviewee E added that, “…with the state of the road network being already deplorable and being further worsened by sanctions and the hyperinflationary period that Zimbabwe went through indeed this called for interventions to mobilise revenues for highway infrastructure investment”. According to Musarurwa (2015, p.3), the seventeen-year sanctions imposed by the US and EU after Britain’s relationship with Zimbabwe soured over its land reform programme have made efforts to rehabilitate the local road network daunting. Musarurwa (2015, p.5) reinforces this notion by postulating that, “…when things were hard in Zimbabwe, especially during the period when Western countries imposed sanctions on Zimbabwe, we had to look inwards; hence we had to use what we have to make what we need, which is trafficable roads that come as a result of tolling systems”. These sanctions suffocated all the sectors in Zimbabwe and resulted in economic meltdown characterised by the closure of companies, a high unemployment rate, the massive brain drain and hyperinflation, among other characteristics. This made it difficult to set aside money for road infrastructure development, as the Government was struggling to meet citizens’ basic needs, such as food and shelter, among other essential amenities.

With regard to the aforementioned, Interviewee D noted that, “The economic challenges that the country has experienced in the last decade did not leave us unscathed. Our reservoir of funds, which is called the Road Fund, was wiped out by hyperinflation in 2008. This then meant that our ability to fund Road Authorities, which are responsible for the preservation, enhancement and expansion of the national road network, was paralysed”. During the hyperinflation era, it became practically impossible to maintain the national road network. This meant that when the country adopted the multi-currency system we already had a maintenance backlog. The hyperinflationary period wiped off the national road financial reservoir and during the introduction of the multi-currency regime, the road fund was also affected by the shoestring budgetary allocations made by Treasury towards highway capital expenditure (Zhou & Chilunijika, 2017). To support this, Interviewee F averred that “there was virtually no money left in the Government coffers, thereby exacerbating and aggravating the backlog in highway infrastructure development and maintenance. This led to the road infrastructure becoming dilapidated and being in a visibly broken-down state”. The fact that there was no money left in the national purse implied that there was limited capacity to even procure and acquire equipment and critical human resource skills. This, coupled with the high cost of road construction, made it difficult for the GoZ to conduct road construction projects as well as routine periodic highway infrastructure maintenance exercises.

The Dwindling Budgetary Allocations

The ever-declining state of the national highway infrastructure was further exacerbated by the dwindling budgetary allocations that failed to meet road infrastructure construction and rehabilitation requirements. It was imperative to adopt road-tolling schemes, as budgetary allocations to the Ministry of Transport and Infrastructure Development and ZINARA-administered revenue heads such
as the fuel levy and vehicle licensing, among others, were inadequate to support extensive road maintenance programmes for trunk roads, major arteries leading into the urban centres and rural roads. From the Table 2 above, which shows the questionnaire responses, indicates that thirty percent of the respondents (10 toll collectors), 29% of the toll collectors (21 respondents) as well as 26% of the respondents (26 motorists) respectively were of the view that the dwindling budgetary allocations towards highway infrastructure investment was the key driver to the introduction of road tolling in Zimbabwe. The aggregate responses to the category of dwindling budgetary allocations the motorists, the toll collectors and toll managers was 28% (57 of the total 205 respondents).

The 2010 Mid-Year Fiscal Policy Review Statement (2010, p.10) noted that large requirements for road maintenance had necessitated the introduction of tollgate fees to supplement the limited budget resources. The current study established that there has been a trend towards limited budgetary allocations to the Ministry of Transport and Infrastructural Development in general and towards road infrastructure construction and rehabilitation in particular. Similarly, Interviewee I asserted that, “…there is a general trend of shrinking budgetary allocations to the Ministry of Transport and Infrastructural Development”. Table 3 below provides the relevant budgetary allocations to the Ministry of Transport and Infrastructural Development from 2006 to 2016.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total budgetary allocation</th>
<th>Allocation towards the Ministry of Transport and Infrastructural Development</th>
<th>Capital expenditure in the Ministry of Transport and Infrastructural Development</th>
<th>Allocation towards the Ministry of Transport and Infrastructural Development as a percentage to the total budget</th>
<th>Capital Expenditure as a percentage of the budgetary allocation towards the Ministry of Transport and Infrastructural Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>ZWD430 836 273</td>
<td>ZWD430 836 273</td>
<td>-</td>
<td>3%</td>
<td>-</td>
</tr>
<tr>
<td>2007</td>
<td>ZWD6 233 879 397</td>
<td>ZWD6 233 879 397</td>
<td>-</td>
<td>4%</td>
<td>-</td>
</tr>
<tr>
<td>2008</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2009</td>
<td>ZWD3 092 029 360 000 000 (Equivalent to US$ 88 343 696)</td>
<td>ZWD3 092 029 360 000 000 (Equivalent to US$ 88 343 696)</td>
<td>ZWD430 836 273 000 000 000 (Equivalent to US$ 88 343 696)</td>
<td>5%</td>
<td>15%</td>
</tr>
<tr>
<td>2010</td>
<td>US$2 250 000 000</td>
<td>US$ 2 250 000 000</td>
<td>US$86 060 000</td>
<td>4%</td>
<td>20%</td>
</tr>
<tr>
<td>2011</td>
<td>US$1 905 900 000</td>
<td>US$ 1 905 900 000</td>
<td>US$12 650 000</td>
<td>2%</td>
<td>31%</td>
</tr>
<tr>
<td>2012</td>
<td>US$2 053 800 000</td>
<td>US$ 2 053 800 000</td>
<td>US$16 800 000</td>
<td>2%</td>
<td>39%</td>
</tr>
<tr>
<td>2013</td>
<td>US$ 3 482 995 000</td>
<td>US$ 3 482 995 000</td>
<td>US$11 384 200</td>
<td>3%</td>
<td>36%</td>
</tr>
<tr>
<td>2014</td>
<td>US$ 5 166 000 000</td>
<td>US$ 5 166 000 000</td>
<td>US$38 200 000</td>
<td>3%</td>
<td>25%</td>
</tr>
<tr>
<td>2015</td>
<td>US$5 245 000 000</td>
<td>US$ 5 245 000 000</td>
<td>US$40 307 000</td>
<td>2%</td>
<td>33%</td>
</tr>
<tr>
<td>2016</td>
<td>US$4 578 400 000</td>
<td>US$ 4 578 400 000</td>
<td>USD 23 200 000</td>
<td>0.8%</td>
<td>64%</td>
</tr>
</tbody>
</table>


In capturing the dwindling budgetary allocations to the Ministry of Transport and Infrastructural Development for road infrastructure capital expenditure, Table 3 above provides an outline of the budgetary allocations from 2006 to 2016. In 2006, the total budget allocation was around ZWD430 million, but the Ministry of Transport and Infrastructural Development only received around ZWD14 million. As such, the Ministry had a meagre 3% of the total budget at its disposal. In 2007, the total budget allocation stood at around ZWD6.2 billion, but the Ministry of Transport and Infrastructural Development was allocated only ZWD257 million, which was 4% of the total national budget.

According to the National Budget Statement (2009, p.56), hyperinflation reached its peak in 2008, which led to the depletion of national reserves and the demonetisation of Zimbabwe’s currency. As such, there are no budgetary figures to that effect. The overall budget for 2009 was around US$88.3 million, while the Ministry of Transport and Infrastructural Development was allocated US$4.244 million (5% of the total budget). Of the US$4.2 million, US$1.5 million was channelled towards capital expenditure (National Budget Statement 2009, p.67), 35% of the total allocation to the Ministry of Transport and Infrastructural Development. In 2010, the total national budget was US$2.25 billion, while the Ministry of Transport and Infrastructural Development received US$20.737 million (4% of the total budget). The capital expenditure as a percentage of the total ministerial allocation in that same year stood at 20%.

The total national budget for 2011 was around US$1.9 billion, while the Ministry of Transport and Infrastructural Development received around US$41 million (2% of the total budget). As such, there was a 50% decline from the 4% allocation in the previous year. The total capital expenditure vis-à-vis the Ministry’s allocation stood at 31%. In 2012, the total national budget was around US$2 billion, while the Ministry of Transport and Infrastructural Development was allocated US$42 million (2% of the total budget).
The percentage of the capital expenditure in relation to the Ministry’s allocation was 39%. For 2013, the ministerial allocation was 3% of the national budget. During the same year, the capital expenditure vis-à-vis the budgetary allocations to the Ministry of Transport and Infrastructural Development was 35%.

The total national budget allocation for 2014 was around US$5 billion, with US$150 million being allocated to the Ministry of Transport and Infrastructural Development (3% of the total budget). In the same year, capital expenditure amounted to 25% of the ministerial allocation. In 2015, the total national budget was US$5.2 billion, with the Ministry of Transport and Infrastructural Development receiving US$122 million (2% of the total budget). US$40 million, which translates to 33% of the total allocation to the Ministry of Transport and Infrastructural Development, was set aside for roads and other capital expenditure. In 2016, the national budget was US$4.578 billion, while the Ministry of Transport and Infrastructural Development received US$36 million. This translates into 0.8% of the total national budget, which is a very constrained allocation. From the allocated US$36 million, US$23.2 million was set aside for capital expenditure, which constituted 64% of the total ministerial allocation.

In reality, the allocations towards the Ministry are generally dwindling. Percentage-based allocations to the Ministry barely exceed 5% of the total national budget (see Table 3 above). This trend has recurred since 2006, which has created a gap between budgetary allocations to the Ministry and the road infrastructure requirements. This has worsened the backlog in road infrastructure maintenance and construction in Zimbabwe and has created a strong necessity to introduce road-tolling systems to supplement the limited budgetary allocations. According to Mbara et al. (2010, p.622), Government’s quick response to introduce road tolls was a bid to save the roads from total collapse, as evidenced by the numerous visible potholes and vehicle accidents along trunk roads. These provided adequate justification and urgency for introducing the toll road charges.

Over and above, as indicated in the introduction, Chilunjika (2018, p.6) postulates that the Zimbabwean system is unique, as it was hurriedly implemented without consulting the key stakeholders, such as motorists and other related organisations. In addition, no feasibility studies were conducted before the operationalisation of the tolling project. No standard regular or rational approach was followed, such as providing alternative routes, standard distances between tolling points, rational determination of the toll fees and traffic volumes. Despite these deficiencies, the tolling project was implemented successfully. After having examined the key factors that led to the successful adoption of road tolling in Zimbabwe it is prudent to examine the actual purpose for road tolling in the Zimbabwean context.

**Rationale for Road Tolling**

Under this section, the study sought to ascertain the utility or purposes of road-tolling systems. Accordingly, the statistical responses from the questionnaires as well as the qualitative descriptions from the interviews and document analyses are presented below.

**Table 4: Rationale for Road Tolling (Questionnaire Responses)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Total Number of Respondents per each category</th>
<th>Revenue Collection (frequencies and percentages)</th>
<th>Employment Creation (frequencies and percentages)</th>
<th>Demand Management (frequencies and percentages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toll managers</td>
<td>33</td>
<td>28 (84.85%)</td>
<td>2 (6.06%)</td>
<td>3 (9.09%)</td>
</tr>
<tr>
<td>Toll collectors</td>
<td>72</td>
<td>51 (70.83%)</td>
<td>15 (20.83%)</td>
<td>6 (8.33%)</td>
</tr>
<tr>
<td>Motorists</td>
<td>100</td>
<td>80 (80%)</td>
<td>13 (30%)</td>
<td>7 (7%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>205</td>
<td>159 (77.56%)</td>
<td>30 (14.63%)</td>
<td>16 (7.85%)</td>
</tr>
</tbody>
</table>

**Source:** Authors’ Own Construction

From the above table, it is evident that 24 respondents from the toll managers’ category (84.85%) were of the view that the rationale for road tolling is to mobilise revenue. A total of 6.06% of the respondents from the toll managers’ category noted that road-tolling systems were established in a bid to create employment. The remaining 9.09% of the toll managers asserted that road-tolling systems were established to manage demand for road usage. In this regard, the need to regulate access, as well as travelling patterns and behaviour serves as the driving force for adopting and implementing road-tolling systems in Zimbabwe.

In the category of toll collectors, 70.83% were of the view that the motivation behind the adoption of road-tolling systems was the need to collect revenue, whilst 20.83% noted that road-tolling systems were established to create employment. This response can possibly be explained by the fact that most respondents in this category have benefited by securing jobs as toll attendants. Accordingly, the toll collectors believed that road-tolling systems created employment for them. Under this category, 8.33% of the respondents were of the view that road-tolling systems were established in a bid to manage the demand for road access.

In the category of revenue mobilisation, 80% of the motorists concurred with the notion that road-tolling systems were solely established to generate revenue for the Government. In turn, 13% were of the view that road-tolling systems were adopted to cater for the employment needs of citizens, while the remaining 7% agreed that road-tolling systems were introduced with the sole purpose of managing the demand for road access. The aggregate collations to these responses are presented in Figure 1 below.

Figure 1: Rationale for Road Tolling (Aggregated Responses); Source: Authors’ Own Construction

Figure 1 above shows that, of the 205 respondents, 159 (77.56%) were of the view that road-tolling systems were introduced to mobilise revenue. Interviewee F reinforced this by noting that, road-tolling systems in Zimbabwe were introduced for the purpose of revenue generation to ensure road construction, maintenance and compliance with international trends. In respect of this, it can be noted that the road-tolling systems were adopted in a bid to mobilise revenue to be used in the maintenance and construction of the road network. In addition, the same Respondent highlighted the notion of compliance with international standards, “where it is now common practice across the globe that additional revenue for road construction is now being raised through tolling systems”.

In light of this, Zimbabwe had to join the bandwagon and keep abreast with global tolling developments. Interviewee A posited that, “with companies closing down in Zimbabwe, tolling was a crucial instrument for collecting financial resources for the building and rehabilitation of highways”. Furthermore Interviewee A observed that “…the closure of companies was leading to a sharp decline in income taxes (corporate taxes and PAYE), a situation that ultimately affects the overall budget, given that the budget is financed from taxes. This left tolling as a crucial source for mobilizing funds towards capital expenditure in general and road maintenance in particular”. With this in mind, it can be affirmed that road-tolling systems were introduced to raise and mobilise money for road construction and maintenance.

A total of 30 (14.63%) respondents were of the view that employment creation was the main reason behind the establishment of road-tolling systems in Zimbabwe. The bulk of the toll collectors and some managers stated that the tolling systems had been established to create employment. Indeed, the establishment of road-tolling systems created some form of employment, as toll collectors are now employed by ZINARA to mobilise the toll revenues on its behalf. During the rehabilitation of the Plumtree-Mutare Highway, a special-purpose vehicle (Intertoll) that was formed out of ZINARA’s partnership with Group Five International created almost 2 500 jobs for the locals (ZINARA 2012, p.4). Similarly, downstream suppliers benefited from the rehabilitation process. Although road tolling in general has created some jobs, it must be noted that job creation is not the primary reason why road-tolling systems were established. The creation of employment, however, is a ripple effect, but is, nevertheless, a secondary issue with regard to tolling systems in Zimbabwe.

In the demand management category, 16 respondents (7.85%) stated that road-tolling systems were introduced to manage motorist demands for road access and use. Interviewee J noted that road access management is a secondary, if not tertiary, reason why tollgates were introduced. In the Zimbabwean context, the regulatory effect is indirect and subtle, as it only accommodates those motorists who have the capacity and the ability to pay for tollgates to gain access to roads. Motorists who do not have the money to pay for toll gates are forced to defer their journeys or to make use of public transport. Accordingly, Chilunjika (2018) notes that as motorists use alternative routes, demand for road access is thus managed. In line with this, tolling systems are a way to manage demand for road access indirectly. This is, however, different from developed countries, where the primary purpose for setting up road-tolling systems is demand management. Notably, the regulatory effect upon the motorists in the Zimbabwean model is not premised on the need to minimise traffic volumes, as is the case with for example the Singapore congestion-charging scheme.

Correspondingly, Interviewee H noted that developed countries such as the UK, the US, Norway, and Sweden established road-tolling systems to control access to roads and portions of roads through mechanisms such as congestion charging. Similarly, congestion regulation implies that only certain motorists can access a road or certain portions of a road at specific times. Only motorists who are prepared to pay higher toll charges can enjoy access to the CBD or the road network. Likewise, there is some control over the travelling patterns and behaviours of affected motorists by charging them comparatively higher toll fees than they are charged on any other section of the road.
The fact that road access is premised on the need to firstly make a payment implies that those who do not have money to pay toll fees cannot pass the tolling points. In this manner, the system reduces the demand for the road by limiting access to the facilities. In addition to congestion charging, countries like Italy and Singapore, among others, have established road-tolling systems to regulate pollution. This has served as a control mechanism on the demand for access through certain roads in given localities (e.g. the Milan Area C), which then serves as an environmental initiative to simultaneously reduce traffic growth and pollution.

Conclusions

The Government [of Zimbabwe] introduced toll gates primarily to increase revenue for roads infrastructure investment. Hence toll gate systems are an essential tool for domestic revenue mobilisation. Toll gates were a feasible way of raising funds. Roads facilitate economic activity, link communities and provide access to vital services. This justifies using public funds to pay for the construction and maintenance of roads. In this regard, motorists are obliged to pay proportionate to how much of a service they use. The road-user charge is also in direct proportion to how often people travel. 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.

The results of the study show that the reasons that pushed the Zimbabwean government to adopt toll roads include conformance to international practices and economic challenges, dwindling budgetary allocations and dilapidated roads and highway infrastructure maintenance backlog. The study concludes that the major factor that necessitated or drove the Zimbabwean Government to adopt road tolling was the dilapidated roads and the subsequent highway infrastructure backlog. Largely, the maintenance backlog emanating from the fact that the road infrastructure has clearly outlived its lifespan this coupled by the shrinking revenue base in relation to road construction and maintenance due to paltry budgetary allocations from Treasury to the Ministry of Transport and Infrastructure Development has made the backlog to worsen.

Regarding the rationale/utility or purposes of road tolling in Zimbabwe, the study identified the three purposes for establishing road tolls which are revenue collection, employment creation and demand management. In addition, the study concluded that road tolling in Zimbabwe was introduced primarily for revenue generation and secondarily for job creation and demand management. The study established that the job creation and demand management aspects are rather ripple effects (that is secondary and tertiary objectives respectively).

The study therefore recommends that for developing countries that are facing highway infrastructure maintenance backlog as well as challenges in mobilising funds towards highway infrastructure investment due to paltry budgetary allocations, road tolling is a progressive, effective and reliable tool to raise revenue for constructing road infrastructure and road-related capital investments. To this effect, road tolling is hinged on the user-pays principle which requires motorists to pay for road usage thereby enhancing allocative efficiency of resources as motorists pay the full cost of the roads that they use. In light of this, the countries however should make sure that they consult the key stakeholders, such as motorists and other related organisations to get their input before they implement such a project so that there is adequate beneficiary buy-in which guarantees project success. In addition, there is need for feasibility studies to be conducted before the operationalisation of the tolling project so that they can gauge the vehicular volumes as well as to rationally determine the toll fees. Feasibility studies are essential because they confirm the suitability of the road tolling project in light of its revenue generating capacity.

Moving on, there is need for the road tolling authorities to adopt a standard regular or rational approach, such as providing alternative routes, standard distances between tolling points, rational determination of the toll fees and traffic volumes. These initiatives will give options to the motorists to choose between tolled and untolled roads, rather than making them exclusively compulsory which is the case with the Zimbabwean road tolling model. Additionally, in relation to the use of the revenue collected from tolling systems, there is 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. The constitutional provisions should define the modalities governing collection, remittance, distribution and use of toll revenues, rather than leave everything to the discretion of the road authority. This therefore eradicates issues relating to embezzlement of funds that would have been collected from the road tolls.

Acknowledgements

This article is partly based on a Doctoral Thesis completed at the University of Johannesburg under the supervision of Prof D.E. Uwizeyimana and co-supervision of Prof C.J. Auriacombe: Chilunjika, A. 2018. The performance of automated toll revenue mobilisation systems in Zimbabwe. Johannesburg: University of Johannesburg.

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