Mobilising Domestic Revenue through Toll Gate Systems in Zimbabwe

Zhou Gideon
University of Zimbabwe
Department of Political and Administrative Studies

Chilunjika Alouis
University of Zimbabwe
Department of Political and Administrative Studies

Abstract

There is a global shift to tolling systems as alternative means of mobilising domestic revenue for the development and maintenance of the road infrastructure. With most developing economies at various levels of fiscal fragility, the tolling route has the potential to reduce fiscal stress. This study examines the effectiveness of toll gate systems in Zimbabwe as alternative avenues of mobilising domestic revenue. Effectiveness was assessed on the basis of institutional capacity, tolling yields, easiness to administer and comparative performance of toll gates vis-à-vis other revenue heads. Data was collated through questionnaires, interviews, toll site visits and desk research. Trend analyses of tolling revenue contributions in Zimbabwe were conducted and then compared with experiences in other countries through generic benchmarking. Research findings suggest that tolling systems, if prudently managed, provide a potentially self-financing model for the maintenance of road infrastructure in Zimbabwe. Since their enforcement in 2009, tolling revenues have overtaken traditionally leading sources of revenue such as fuel levy, transit fees and other tax heads. Notwithstanding this, ensuring match between increased revenue inflows and improved road development and maintenance remains a challenge. A shift from manual to E-tolling systems will not only enhance efficiency in revenue collection but also reduce delays and attendant costs arising from the congestions often experienced at tolling booths.

Key Words: Toll gates, revenue collection, user pay principle, manual and e-tolling systems

1.0. Introduction

Although tolling revenue collections are a recent development in Zimbabwe, their enforcement in other parts of the world can be traced as far back as the 4th century, with terms such as toll way, toll gates, road tolls and turnpikes used interchangeably (http:www.tollroadsnews.com). Tolling systems are now in use in countries such as South Africa, Lesotho, Mozambique, United States, the United Kingdom, Italy, Greece, France, Spain, Portugal, Germany, Japan, and Thailand, among others; operating as privately or publicly built road structures in which users of roads are required to pay tolls (fees) on passing. Tolls are thus a form of user tax. Tolls vary by vehicle type and weight while toll collection methods range from manual to electronic tolling in which tolls are prepaid or collected automatically. Zimbabwe adopted tolling systems in 2009. The rationale, as gleaned from the Zimbabwe 2009 Mid-Year Fiscal Policy Statement was that tolls would present "additional alternative financial resources from private players through Public-Private Partnership (PPP) arrangements in support of broadening and expediting the trunk road network rehabilitation as well as construction of roads." While in some countries toll gate systems are run by private sector operators (Kimball, 1999), in the case of Zimbabwe, tolling is the responsibility of the state corporation (Zimbabwe National Road Authority). The issue of road tolls was first discussed in Zimbabwe in the early 2000 amid growing concerns over the deteriorating state of roads and several incomplete road projects. At the close of 2008, the Portfolio Committee on Transport and Infrastructural Development conducted an enquiry into how the Zimbabwe National Roads Administration (ZINARA) Fund was operating. ZINARA had been established in July 2001 by an Act of Parliament, the Roads Act (Chapter 18:18) to mobilize funds for the upkeep of the country's road network. Prior to the establishment of ZINARA, the country relied on donor support for road maintenance and infrastructure development. When donors pulled out in the post 2000 era, ZINARA was created as a Board Corporate to mobilize funds through collection of road user fees for road works. Due to limited institutional capacity at inception, ZINARA tasked the Zimbabwe Revenue Authority (ZIMRA) to collect revenue from the toll gates on its behalf.

1.2. Rationale

The global shift to tolling revenue collection systems reflects protracted efforts toward broadening non-tax revenue bases. Toll gate systems mops up idle funds from the domestic market for national road maintenance. In Zimbabwe, studies on toll gate systems are still budding. This study is therefore timely and worthwhile as it generates information needed to inform and guide collection and utilisation of toll gate funds. This research should also serve as a springboard for further research in areas of public revenue mobilization and fiscal policy. The need to interrogate toll gate systems is also imperative given the celebrations that accompanied the introduction of toll gates in Zimbabwe and regional countries. Viewed from this angle, this study serves as a post implementation examination of toll gates.

The implementation of toll roads, as gleaned from Levinson (1998); Hau (1992); Munroe, Schmidt, Westwind (2006), and Clower & Weinstein (2006) allow people who are using the roads to pay for them and internalize the externalities associated with driving. Toll roads accelerate the availability of initial funding for construction, thereby providing a perpetual and convenient source of funding unlike tax based funding. Mickesell (1986) explains that when toll fees can be applied they have advantages beyond the pragmatic one of providing additional revenue for public services. These advantages include both the important efficiency effects of appropriately designed toll gate structures and improved equity from direct pricing. The implementation of road pricing and the improvement of highway capacity concurrently provide net benefits that are derived from the capital investments in tolling infrastructure and toll operations. Jobs such as traffic supervision and toll collection are generated through highway operations funding. In short, the construction of any new infrastructure generates local economic activity supporting jobs, labour income and tax revenues.

1.3. Methodological Framework

This article examines the effectiveness of toll gate systems as alternative avenues for mobilising domestic revenue in Zimbabwe. This entails analysing the nature, management, and performance of the toll gate systems as revenue collection instruments. It essentially raises the following questions: What is the rationale of toll gate systems? How are toll gate systems operated? What is their performance in terms of revenue collection? What are the soft spots for revenue leakage? To what extent do they compare with regional and global experiences? What measures should be adopted to strengthen toll gate revenue collection? Data collection combined documentary and field research. Documentary research entailed extensive review of ZIMRA pamphlets, newspaper articles, academic and professional journals and Revenue Reports. There was also use of electronic media in the form of internet sites, that is, e-library where journals, books, articles, magazines and other corpus of material online in soft copy format. Formal visits were also made to the selected six toll sites in order to observe how tolling transactions were done as well as tracing how they are remitted to ZINARA and the Ministry of Finance.

Field research entailed use of face-to-face interviews, questionnaires, direct observation and documentary research and in this way enabled triangulation which as defined by Bryman (2001:509) involves the use of more than one method or source of data in the study of a social phenomenon so that findings may be cross checked. Questionnaires used open and closed-ended questions to solicit for responses from target respondents. Out of the 40 questionnaires that were administered to ZIMRA officials (that is, management and toll collectors), 30 were returned, indicating a 75% response rate. Questionnaires solicited data on issues such as the performance of toll gates in terms of revenue collection, the rationale of toll gates, and performance gaps in the enforcement and management of toll gates. Complimenting the questionnaires were in-depth face-to-face interviews with sampled individuals assumed to be well versed in the subject of toll gates and public finance. Research subjects were selected through purposive sampling, a process in which the researcher purposely selects certain groups or individuals for their relevance to the issue being studied (Williamson et al, 1997: 111).

The study utilized this technique to select eminent academics in the field of public finance, motorists, the CEOs of ZINARA and ZIMRA, toll collectors and senior officials as well as the chairman of the Parliamentary Committee on Transport and Infrastructural Development. The respondents were selected on the basis of their knowledge of the toll gate systems and their involvement in the enforcement of tolling collections. Using the adopted purposive sampling framework, a total of six toll gates were selected from the existing twenty-four toll gate centres countrywide, however with all located in the Harare Metropolitan Province for the sake of research convenience.

Collated data was analysed using the Statistical Package for Social Sciences (SPSS, a computer based statistical programme which allows quantitative analysis of data. The SPSS package enabled the researcher to determine frequencies in various responses to research questions. A proportional analysis test was done to test the hypothesis that toll gate systems enhance the effectiveness of revenue collection. Trend analysis was carried out in addition to generic benchmarking in which toll gates were compared with toll gate experiences elsewhere. Content analysis was also employed in this study as well. Data presentation entailed use of graphs, pie charts and tabulations.

2.0. Literature Review

2.1. Conceptual Issues

2.1.1. Toll Gate Systems

Teknomo and Gerilla (1999) explain that toll gate systems can be open or closed. In open toll collection systems, the road users usually pay at the entrance gate or exit gate while in the closed toll collection system, the road users take the ticket in the entrance gate and pays the toll in the exit gate. Zimbabwe uses the open toll collection system. The extent of revenue collection in any country is largely dependent on the capacity of the designated receivers of revenues. These should be capacitated institutionally, legally, technologically, financially and manpower wise. According to Devas, Delay, and Hubbard (2001) in all cities the toll system is operated by a public company which transfers the net revenue to the road authorities. This is consistent with scenarios in Zimbabwe where ZIMRA executes the collection and then transfers the net revenues to the Zimbabwe National Roads Agency (ZINARA).

Kidd and Crandall (2006:98) view the shift to tolling collections as ways of boosting domestic mobilisation of resources, strengthening national ownership of development policies and outcomes and reducing state vulnerability to reductions in revenue arising from trade reforms. Domestic resource mobilization in the form of toll gates provide effective ways of financing long-run sustained growth and development. When governments derive a significant portion of their revenue from their taxation and non-revenue sources, they are most inclined to be more accountable and more efficient in the use their resources. Bloch (2009:B3) also argues along this line of thinking, highlighting that domestic resource mobilization in the form of toll gates enhances government revenue (public savings) and fiscal space; in this way, increasing the capacity and ability of governments to perform their functions effectively. However, critics call for rational assessment of externalities before establishment of toll gates. A primary requirement for well-balanced financial relations is that each government level should command sufficient revenue. A lack of funds may put a government institution at any level in an invidious position, especially vis-à-vis the public which is not easily satisfied by the excuse of a lack of funds despite the fact that the same public is not prepared to pay more fees and tax. In this regard Fishbein and Babbar (1996) noted that public resistance to tolling is an inevitable phenomenon.

2.1.2. Revenue Leakage

Tolling systems are prone revenue leakages. They need prudent management. According to Hamet (2005:5) in the majority of toll road operating countries, the traditional approach to ensuring that toll payments are made has been through the use of physical barriers. Each tollgate is manned by a toll collector who permits cars to proceed once full payment has been made. However, this approach does not prevent a variety of fraudulent acts from being committed. For instance, while the use of this system prevents anyone who does not have any means of payment from immediately passing through the toll lane, it does not prevent abuse of methods through the use of an acknowledgement of debt. This is critical if ZIMRA is to effectively plug revenue losses arising from toll evasion, toll avoidance, and congestion, and ticket swapping.

Toll evasion entails the non-payment of tolls at a toll booth or in cases of electronic collection it involves the concealment of a toll electronic tag at toll roads. On the other hand, toll avoidance alternatively known as "shunpiking" has been defined by http://en.wikipedia.wiki/toll_roads as a practice of finding another route for the specific purpose of avoiding payment of tolls, the goal being to transmit and apply the financial stress of lost toll revenue to the authority determining the levy. Pilferage of the toll revenues is another form of revenue leakage at the toll gates.

Often Governments have considered privatization of toll collection because of the difficulty of ensuring that toll revenues are not removed illegally by members of the collection or counting team. It is assumed that private sector profit incentives will prevent this pilferage. Zharare (2009) asserts that toll revenue leakages call for efficient administrative capacity on the part of the revenue collectors (in this case, ZIMRA) as well ensuring tight control and monitoring endeavours at the revenue collection points/ or toll booths. There is need to highlight the relative contribution of toll fees to the total national fiscus so as to enhance and improve its performance. There is need to rationally widen the coverage thereof so that as much as possible revenue is generated. There is also a greater need to highlight the fact that this non-tax measure cannot operate in isolation it has to be complemented by other fiscal tools in a bid to ease revenue problems in Zimbabwe (Doran, 2009). However, toll revenue collection must strike a balance between the need to increase revenue inflows and the need to ensure sustainable social welfare levels. Implied here is that revenue collection must not impose untenable burdens on society.

2.1.3. Revenue Performance

According to Visser and Erasmus (2002:131), revenue performance indicates the relative change in yield from tax and non-tax revenues and thus accounts for the changes in rates, base and coverage related to the structure of revenue sources. Government revenue should increase sufficiently over a period of time. Sustainable revenue enhancing measures in the toll gate sector must be implemented. There is need to ascertain whether the revenue of a government is increasing at a rate higher than the rate of increase of Gross Domestic Product (David, 1973). Efforts are also made to find out whether the generated revenue is sufficient enough to finance capital formation, to increase the rate of economic growth in the short run and to impart automatic stability to the economic system in the medium run. In this arena, there is need to identify the conspicuous efforts of governments to mobilize resources, such as any move to rationalize the rate structure, eliminating unwanted and misused toll gate exemption provisions or provisions that make the administration of the toll fees structure complex and complicated.

2.1.4. The Concept of Effectiveness

Analysis of the toll gate system implies assessing effectiveness thereof. The Development Assistance Committee (DAC, 2002:139) defines effectiveness as the measure of the extent to which a project's set objectives were achieved, or are expected to be achieved. Gildenhuys (2010:244) postulates that effectiveness entails the extent to which inputs accomplish outcomes or the achievement of maximum outcomes by selecting optimal mixes of inputs. In this vein, the main focus is on measuring the outputs of the toll gate system in terms of revenue collection where there is a greater need to mobilize as much revenue as possible with minimum leakage and irregularities hitherto. The concept is actually a gauge of project achievements against what was planned. In a way, it "takes stock" between the planned and the actual. From this background, the study uses the concept to establish the extent to which toll systems are performing to expected standards.

On the other hand, there is the concept of efficiency which as defined by Chambers et al (1988:83) entails the attainment of the best possible use of scarce resources. Thus, economic efficiency is concerned with the use of society's resources to achieve maximum net benefit. Litman (2011) asserts that road pricing increases efficiency by rationing road capacity with less waste than queuing. From an overall economic efficiency perspective, the revenue must be used to benefit society; the more beneficial the more economically efficient the programme. In order to enhance economic efficiency, the road pricing system should be able to charge directly-as closely as possible- the external costs arising out of road use. Thompson (1990:56) argues that zeroing in on usage directly would help capture and internalize congestion externalities better in contrast to merely focusing on a proxy to usage via indirect charges.

2.2. Theoretical Issues

2.2.1. User Pays Principle

Tolling systems should be analysed within the 'user-pay' or 'beneficiary-pay' theoretical framework, a pricing approach premised on the idea that optimum efficient allocations of resources occur when consumers pay the full cost of the goods that they consume. In this scenario, toll fees have to be paid basing on the direct benefit of the services to the user or consumer. As noted by Gildenhuys (2010:361), there is a direct quid pro quo, that is, the user receives an equal value in services to the amount paid.

In public finance, the user- pay principle stands with another principle of "ability to pay" which states that those who have the means should share more of the burden of public services. According to Musgrave and Musgrave (1989:223) people should contribute to the cost of government in line with their ability to pay. Under this approach, the toll fee problem is viewed by itself, independent of expenditure determination. The principle of 'user pay' supports the idea of horizontal equity which states that those in similar wealth and income positions should be treated equally by the tax system. According to Litman (2011:2), horizontal equity is concerned with fairness between individuals and classes with comparable needs and resources. It assumes that "like should be treated alike." Horizontal equity is often interpreted to mean that individuals should "get what they pay for, and pay for what they get." This is the reason that many people instinctively feel that road pricing revenues should be dedicated to road improvements or to provide other benefits to people who pay the fee.

However, horizontal equity is further complicated by the existence of external costs from motor vehicle use, including accident risk, environmental degradation, parking subsidies, resource consumption externalities, and reduced mobility for non-drivers (to www.wws.princeton.edu/~ota). Repetto et al (1990) asserts that horizontal equity requires that road price revenue be returned to vehicle users after external costs are compensated. Another criterion that deals with fairness and equitable distribution of road pricing revenue is vertical equity which as argued by Litman (2011), is concerned with the treatment of individuals and classes that are unlike. By this principle, the distribution of costs and benefits should reflect people's needs and abilities. Most people seem to recognize vertical equity as being a legitimate social goal, but there is little agreement as to what constitutes the correct allocation of resources by this criterion. Road pricing is usually considered vertically inequitable because fixed charges impose a larger burden on the poor. For example, a $4 per day toll might be horizontally equitable (everybody pays the same amount), but vertically inequitable because it represents a larger portion of income for low-income driver than for a high-income driver. Accordingly, Hu and Young (1993) argue that this impact is tempered by the fact that lower income people drive less on average than those with higher incomes.

2.3. Experiences in selected countries

Review of tolling experiences in regional and global countries provides the researcher with an informed base to discern departures or compliances with global practices. Below are synoptic reviews of tolling experiences in South Africa, USA, and Lesotho.

2.3.1. South Africa

South Africa has a history of toll roads as far back as 1700 when the governor of the Cape Colony collected tolls to effect road repairs (SANRAL, 2009). Tolls were levied on roads in the former provinces of Natal and Orange Free State up to the 19th century. Toll roads in South Africa are run by a state agency called, the South African National Roads Agency Limited (SANRAL), created by an Act of Parliament, namely the National Roads Act Chapter [7:1998]. The SANRAL was transferred into a public owned company wholly owned by the state and has a mandate to manage and control the Republic of South Africa's road system and to take charge of the development, maintenance and rehabilitation of national roads within the framework of Government policy (Choruma, 2009).

There are fifty one toll gates in the entire country spread out throughout the provinces (www.nra.co.za). The SANRAL does not itself run toll gates; they are run by contracted private companies (such as N3 Toll Concessions, TransAfrica Concessions, Intertoll, Concor Marib, Tuncor among others.) which have appropriate technology, infrastructure and human capital to run toll gates on their behalf. This is part of the public-private partnerships. To ensure transparency and accountability in the running of the toll gate system in South Africa, the SANRAL is required by the Act to annually submit business and financially plans thirty days before year end, strategic plans every financial year, audited financial statements within five months after end of financial year and an annual report to Parliament, which is tabled for discussion by Members of Parliament (Choruma, 2009).

Roads form the main artery of economic competitiveness, growth and social development. Toll roads have assisted in the acceleration of the availability of initial funding for construction, compared to traditional tax based funding (hhtp://www.arrivealive.co.za). Through this initiative more than 64% of the road infrastructure has been renovated, thus serving as a convenient source of revenue outside annual budgetary allocations (http://allafrica.com).

Following the successes noted in the South African toll gate system, the SANRAL proposed to install more toll gates and ramp plazas in the metro. This move was however thwarted by the Transport Minister Sibusiso Ndebele arguing that as much as the country requires good road infrastructure to meet its economic growth targets, this must not put a huge financial burden on the shoulders of the consumers. According to http://allafrica.com/stories/html while the first phase of the Gauteng Freeway Improvement Plan delivered good road infrastructure, it was an expensive exercise that drew sharp views from the public.

The installation of electronic toll gates faced enforcement problems as they required accurate records of car owners' addresses that are not always available. According to a World Bank online source http://www.worldbank.org/transport/roads/toll_rds.htm electronic tolling faced some opposition because of the level of information which it allows road operators to collect about individual users movements. Problems of toll evasion and pilferage of toll revenues were also noted in South Africa. On a more positive note, the Gauteng Electronic Toll Collection (ETC) was adopted which saw the widening of the freeways to four, and in some instances up to six lanes in each direction and the upgrading of a total of thirty-four interchanges. This ETC system is operated as an Open Road Tolling (ORT) system is a multi-lane free flow system that allows for tolls to be charged without vehicles having to stop or slow down

(http://www.tollgatepetition.org.za/sanral%20_toll_tariffs.pdf). This is beneficial in that road users are given an opportunity to travel safer, faster and smoother with reduced congestion and almost zero delays.

2.3.2. United States of America

In the USA, usage of toll roads has increased substantially from the late 1990s with FasTrak automatic toll collection systems that automatically bill commuter accounts electronically for tolls (CalTrans, 2000). Transport Corridor Agencies (2005:11) notes that "two thirds of all toll transactions are done through the Fastrack systems which allow vehicles to pass through any of the system's toll gates without stopping. These include the E-Z Pass electronic toll collection system used on most toll bridges, toll tunnels, and toll roads in the eastern U.S. from Virginia to the south, to Maine to the north, to Illinois to the west; California's FasTrak; Florida's SunPass; Kansas's K-Tag; Oklahoma's Pikepass; Houston's EZ Tag; Texas's TxTag; Texas's TollTag; Louisiana's GeauxPass; and Georgia's Peach Pass and Cruise Card. In the Smeed Report (1964) as quoted by Ieromonachou et al (2006:51) the concept of road pricing was seen as one of the few solutions left to deal with the ever-growing problems associated with road congestion. However, traffic and toll levels failed to sufficiently cover all costs, including construction, operation and maintenance. States such as Oklahoma, Ohio and Kansas have adopted partnerships with the private entities to operate tollgates.

2.3.4. Lesotho

In Lesotho, the toll gate system is managed by the Lesotho Road Fund (LRF) which was set up in 1995 under the name Roads Relief Fund Nnanna et al (2003). The collection of toll gate fees was enacted by an Act of Parliament, Toll Gates Act No.2 of 1976. The LRF was established by Legal Notice No. 16 of 15 February 1996 with its primary objective being to shift the fiscal burden for the maintenance and rehabilitation of the road network from the Government to the users of public roads (http://www.nlpi.net/pdf/the %20%callfortollgates). Toll gate fees are levied on entering Lesotho at all border posts.

According to http://www.armfa.org/CD%2002005/.../Lesotho_tolls.pdf , toll gates have been established at nine border posts out of twelve official ones. In 2001 there was the installation of three electronic toll collection systems at three busiest border posts while the other nine toll fees collection points are still being done manually. According to Symon (2005), at the introduction of the mechanized toll collection system in 2001, the Road Fund realized significant improvements on the toll gate fee income- a performance that was attributed to increased tariffs and also better-controlled collection systems. There are four sources of revenues in Lesotho that is, road toll gate fees and border fees charged on all foreign trucks entering Lesotho, annual license fees and road maintenance levy. According to Africon Lesotho (2003) toll gates are the highest source of income after road maintenance levy charged on fuel and they make up about twenty-four per cent of the LRF total revenue per annum. However there are challenges with regards to the operationalisation of toll gates in Lesotho and these include exposure of mechanized toll collection machines to dust and other harsh conditions thus, leading to breakdowns and increased costs of spare parts. There are some reported cases of toll gate pilferages by personnel, general problems of leakage and non-collection of toll gate fees at manually operated border posts.

According to Tsekoa and Michel (2007) administration costs consume a significant part of the generated revenue. It is in light of these administrative problems faced by the Government that the LRF has engaged the Lesotho Revenue Authority (LRA) to collect fees on its behalf. By and large, it was noted that toll gate fees are an expedient revenue stream for financing road maintenance in Lesotho.

3.0. Presentation, Analysis and Discussion of Research Findings

Presentation and analysis of research findings is theme-based.

3.1. Rationale of Toll Gates

Sampled respondents were presented with a questionnaire in which they were asked to express their views on what they thought was the primary reason for establishing toll gates. Their responses were tabled as shown below.

Table 1: Response Frequency

	Frequency	Per cent	Valid Per cent	Cumulative Frequency
Revenue Collection	26	86.7	86.7	86.7
Employment Creation	3	10.0	10.0	96.7
Catering for specific Access	1	3.3	3.3	100.0
Total	30	100	100	

The frequency of responses in table 1 suggests that the majority (86.7 %) of the respondents were of the view that the rationale of toll gates is mobilising revenue earmarked for road maintenance. These views are consistent with those of Hau (1992) who argues that toll gates are feasible way of raising revenue. Employment creation constituted 10 % thereby showing that it is not the primary reason why toll gates were established. The category for catering for specific access is another major traditional reason for their establishment, however constituting a departure from the results on the table since it has the least frequency of 3.3 per cent. This might have been attributed by the fact that the concept of 'specific access' is mainly used in developing countries such as the USA, the UK and Japan. This practice is rare in Zimbabwe so most of the respondents were not familiar with it. Basing on the above information one can safely conclude that the rationale for toll gates is to raise revenue for the maintenance of roads without suffocating the national fiscus.

3.2. Effectiveness of the Toll Gate System

The concept of effectiveness was used to establish the extent to which toll systems are performing to expected standards. This entailed analysing the general performance of toll gates as well as their comparative contribution vis-à-vis other revenue heads. A one tailed test was used in the experiment because the study was in search of a change (definite increase or decrease) in the parameter. In the one tailed test, a hypothesis concerning the effectiveness of toll gates as a fiscal instrument was put forward and this hypothesis is called the null hypothesis denoted by Ho. As a rule, if a study rejects the null hypothesis it does so in favour of the alternative hypothesis. This study used a 5 per cent level of significance, meaning that the probability of wrongly rejecting Ho when it is in fact true is 0.05. according to the standard statistical values, when using a 5 per cent level of significance the critical values are +1.645 and -1.645, meaning that any value falling within the acceptance region leads to the acceptance of the null hypothesis. If it falls outside this acceptance region it falls into the rejection region and leads to the rejection of the null hypothesis and consequently to the acceptance of the alternative hypothesis. The revenue yield theme was tested in a bid to determine its effectiveness. In this study it was assumed that the population was normally distributed with (p) and a variance of pq/n and n= 30. The test statistic was z where Z= P^-P/ (Pq/n). In this regard, n= 30, p= the claim or expected value, P^ = the observed value and q= 1-p, slash sign (/) represents division.

Revenue Yield

The initial claim was that at least 0.90 of the population will agree to the fact that toll gates have a high revenue yield.

H_0: p = 0.9 (0.9 of the population say it's true and toll gates have a high revenue yield)

H_1: p< 0.9 (less than 0.9 of the population say it is true and Ho is not true).

Now if Ho is true, the sampling distribution of the proportions P^~N (p, pq/n) with n= 30.

Under Ho, p = 0.9, q= 0.1

So p~N [0.9, (0.9) (0.1)/30] that is, p^~ (0.9, 0.003)

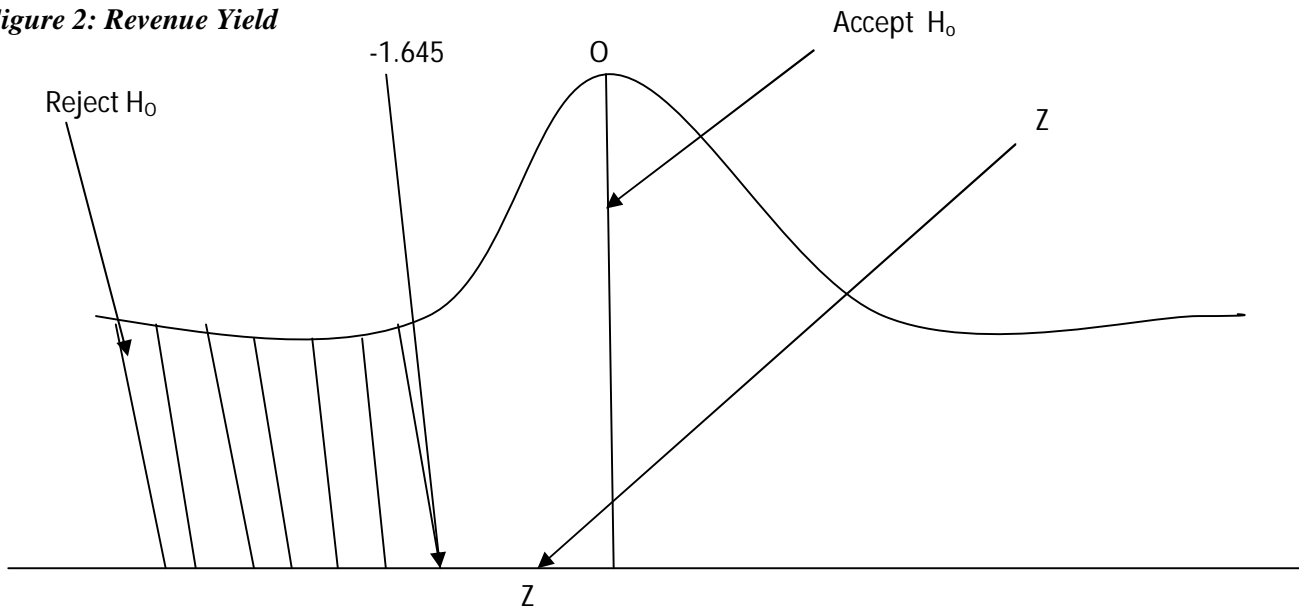*Table 2: Sample Results*

	Frequency	Per cent
Very Good, Good and Fair	26	86.667%
Poor	4	13.333%

Testing at 5% level of significance and considering the test

statistic $Z= \dfrac{P-P}{\sqrt{Pq/n}}$ is rejected if /z/ < -1.645

Therefore $Z = \dfrac{0.8666-0.9}{\sqrt{0.003}} = -1.6087$

Figure 2: Revenue Yield

From the above results z > -1.645, the study does not reject Ho and it concludes that toll gates have a high revenue yield.

3.4. Performance of Toll Gates

Table 3: Performance of Toll Gates

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Very Good	9	30.0	30.0	30.0
Good	12	40.0	40.0	70.0
Fair	5	16.7	16.7	86.7
Poor	4	13.3	13.3	100.0
Total	30	100.0	100.0	

Revenue performance indicates the relative change in yield from tax and non-tax revenues (Visser and Erasmus, 2002). Review of the statistics in the table suggest that a cumulative total of 70 % of the revenue officers appreciated the performance of toll gates. This could possibly be accounted for by the fact that the toll officers actually witnessed the revenues collected from the toll gates since their inception. The 30 per cent cumulative total in the 'Fair' and 'Poor' categories can possibly be attributed to the fact that the respondents are not seeing any remarkable improvements in terms of road maintenance. The effectiveness of toll gates in terms of revenue performance is noted when there is the realisation of a high revenue yield. In this case since the toll gate system is still a new phenomenon in Zimbabwe there is still need to strengthen and redesign certain aspects of the tolling process which might see the performance being very good in the long run. Government should increase revenue collection sufficiently over a period of time. Revenue generated should be sufficient enough to finance capital formation, to increase the rate of economic growth in the short run and to impart automatic stability to the economic system in the medium run. There is also need to look at the revenue statistics realised from toll gates since they were introduced in 2009 August.

Table 4: Revenue collection statistics

PERIOD	TOTAL REVENUES- USD
August-December 2009	7 398 966,45
January-December 2010	19 912 705,54
January-December 2011	20 757 753,01
January-February 2012	3 153 680,22
Total	51 223 104,22

Source: ZIMRA REVENEWS, 2012

Since their inception in August 2009 to February 2012, a total of USD51,2 million was collected from all toll gates countrywide. The first five months recouped USD7,4 million which was 14.4 per cent of the total revenues. Within the first three weeks of the introduction of the toll gates they raked in USD688 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 USD19,9 million which is 38.9 per cent of the total revenues. The year 2011 realised USD20,8 million which is 40.5per cent of the total revenues collected nationwide. Revenue performance indicates the relative change in revenue yield. From 2010 to 2011, there was a 1.6 per cent increase hence satisfying expectations of effectiveness of the toll gate system in terms of an increase in revenue collection. For 2012, only two months figures are present hence they constitute a 6.2 % of the total amount. Looking at the 2009 performance it had only five months which amounted to USD7,4 million. Forecasting arithmetically, using simple proportion of 5 months is equivalent to USD7,4 million then (twelve)12 months is equivalent to more, that is, USD17 755 921,08; although this computation assumes that all activities and factors were held constant.

3.5. Operation and Management of Toll Gates

The twenty-two fully functional rudimentary structures are operated on a twenty-four hour basis countrywide with four shifts rotating at an eight-hour interval throughout the twenty-four hours. One shift is always off-duty in order to provide for continuity. There are two collectors on each station, a supervisor and two armed police officers for each shift and toll centre. The collectors issue tickets to account for all vehicles that pass through the toll booth. The cost or price per ticket depends on the type of vehicle (that is, $1 for light motor vehicles, $2 for minibuses, $3 for buses, $4 for heavy vehicles and $5 for haulage trucks).

A vehicle is allowed to pass through after the payments have been made. However cases in which some notorious motorists decelerate their vehicles upon reaching the booth only to accelerate their vehicles before paying were also experienced. Hence there is need for boom gates which will be opened after the payment is done as is the case with South Africa. Some motorists upon paying the fee do not wait for the ticket hence the likelihood of the same being used repeatedly thereby reducing revenue collection.

At the change of shift, records are written on a petty cash warrant (PCW). Reconciliations are then made to ascertain whether the tickets tally with amount collected. Tickets are then taken to the Head Office (Kurima House, in case of those in Harare) for reconciliations and aggregate record keeping with the Accountants who serve as general overseers/ or managers of the respective toll gates. These accountants pay some timely visits to the toll sites to monitor the progress thereof. Some officials from ZINARA also pay some regular visits to the toll sites in a bid to monitor, manage and assess progress in terms of revenue collection at the toll centres. This is similar to the South African practice where SANRAL officials manage all tolling activities. However this constitutes a departure from the Lesotho case where the Lesotho Revenue Authority has the ultimate responsibility to monitor, supervise and handle all toll revenues.

3.6. Responses of Motorists to the introduction of Toll Gates

Table 6: Motorists' Responses

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Supportive	4	13.3	13.3	13.3
Indifferent	6	20.0	20.0	33.3
Hostile	20	66.7	66.7	100.0
Total	30	100.0	100.0	

The above information show the reactions that the motorists exhibit in relation to the system of toll gates. From the given statistics it is evident that the whole initiative was received with a hostile response by the toll payers as reflected by the 66.7% rate and this was possibly attributed to the fact that road networks were still in bad condition hence depriving the motorists of value for the toll fees as well as delays and in worst case scenarios diversion of drivers' attention at some point during the process of using the system (Hau, 1992). On the other hand 20per cent of the respondents noted that the toll payers were indifferent to the toll gate system. Then 13.3 % were noted as being supportive to the system because they really felt and understood that it was a noble engagement. It was noted that there is need for a country to have sufficient revenues and this can be achieved by increasing throughput of vehicles as well as enhanced efficiency via direct charging. In as much it is essential to realise more revenue from toll gates there is also need for sensitivity to the motorists that is, to say the tolling system must user-friendly (that is, simple to understand and convenient for the motorists to use). The system must be publicly perceived as fair hence toll fees have to be paid basing on the direct benefit of the service to the road users.

3.7. Easiness to Administer for Motorists or Toll Payers

The initial claim was that at least 0.5 of the population will say it is true that toll gate systems are not easy to administer for the motorists. This test reinforces the aspect of toll payers' response to the toll gate system. Ho: p= 0.5 (0.5 of the population say it is true and toll gates are easy to administer for toll payers)

H1: p<0.5 (if less than 0.5 of the population say it is true and H0 is not correct). Non if Ho is true, the sampling distribution of the proportion's p^~N (p; pq/n) with n=30. Under Ho: p=0.5, q=0.5 so p~N [0.5(0.5)0.5/30] that is, p~ (0.5, 0.00833).
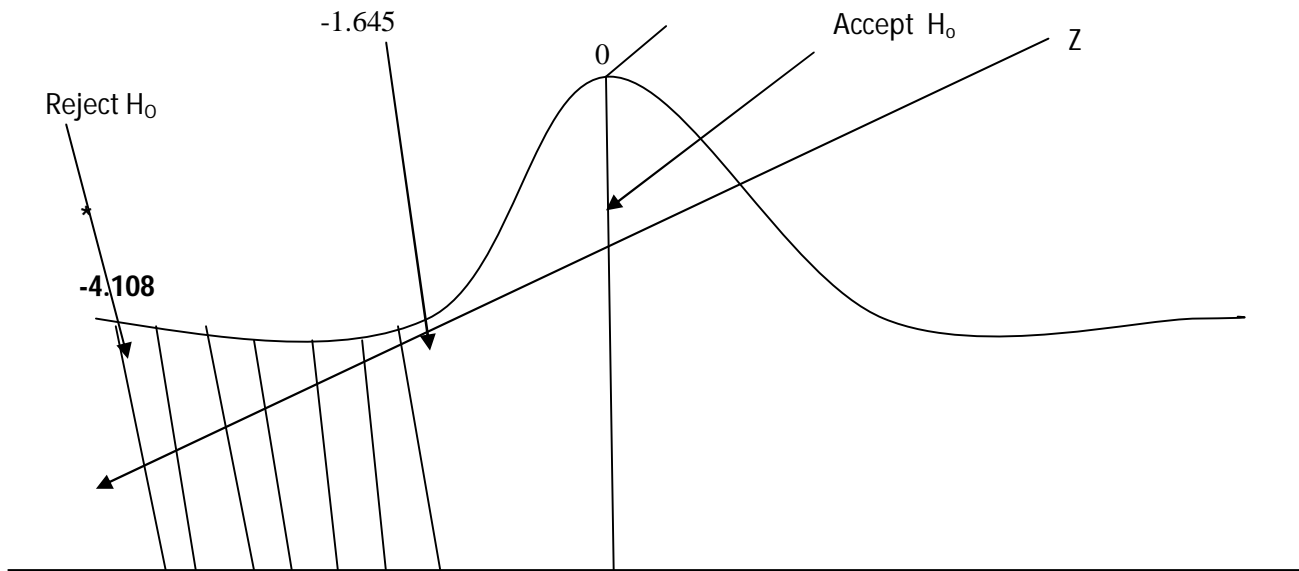
Table 7. Sample Results

Very Supportive and Supportive	4	13.333%
Indifferent and Hostile	26	86.667%

Testing   at 5% level of significance and   considering   the test

statistic $Z = \dfrac{P - P}{\sqrt{Pq/n}}$ is   rejected   if $/z/ < -1.645$

Where H_o rejected   if $/Z/ <- 1.645$

Therefore $/z/ = \dfrac{0.1333 - 0.5}{\sqrt{(05)(0.5)/30}}$ $= \dfrac{-0.3660}{0.091287} = \underline{-4.018}$

Since $Z < -1.645$, the study rejects Ho and it concludes that toll gate fees is not an easy instrument to administer for toll payers.

3.8. Comparative Performance of Toll Gates

Comparison with other national revenue heads

Table 8: Performance of Toll Gates in relation to other revenue heads (such as VAT, PAYE, Excise and Customs Duty)

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Good	13	43.3	43.3	43.3
Fair	17	56.7	56.7	100.0
Total	30	100.0	100.0	

Respondents were asked to rate the performance in comparison with other national revenue heads such as VAT, PAYE, Customs Duty, etc. Review of statistical spread in the table above suggests that toll gates received a fair performance rating (56.7%) in relation to other revenue heads. The 'Good' category has a 43.3 % response rate. This is consistent with revenue statistics shown in table 9 below where in 2010 the ratio of aggregate toll revenues in relation to aggregate tax revenues is for every \$1 realised in toll gates, there is \$49.6 under tax revenues while in 2011 for every dollar realised in toll gates there was a corresponding \$107.8 realised in aggregate taxes. Variations in responses might be attributed to the fact that the respondents might have little knowledge on the real performance of the other revenue heads vis-à-vis toll gates since the aggregate information relating to revenue is handled and processed by other departments within ZIMRA. Since tolling collection is not the core business in ZIMRA, its officials were not in a position to make such detailed analyses in relation to other revenue heads.

Table 9: Comparative revenue statistics

YEAR	AGGREGATE TOLL GATE REVENUES (USD)	AGGREGATE TAX REVENUES (USD)	PROPORTION
2010	19 912 705,54	988 478 184	1: 49.6
2011	20 757 752,01	2 238 240 231,58	1:107.8

Source: ZIMRA REVENEWS, 2011.

Comparison with regional Tolling systems

In generic benchmarking, performance is measured in comparison with counterparts in other jurisdictions. In this study toll gate systems in Zimbabwe were compared with regional examples that is, South Africa and Lesotho.

Table 10: Comparison of Zimbabwean Toll Gates with Regional Toll Gates

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Good	1	3.3	3.3	3.3
Fair	13	43.3	43.3	46.7
Poor	16	53.3	53.3	100.0
Total	30	100.0	100.0	

The table shows that 3.3 % of the respondents were of the view that the comparative standing of toll gates is good while 43.3 % held that the comparative standing of toll gates in Zimbabwe and those in other regional countries is fair. The remaining 53.3 % gave it a poor rating. Variations in these ratings may be attributed to the fact that in other regional countries such as Lesotho and South Africa, there are permanent structures in place unlike in Zimbabwe where there are still using rudimentary structures. It can also be noted that in a bid to augment efficiency and effectiveness in the operationalisation of toll gates in both South Africa and Lesotho, SANRAL and Lesotho Road Fund have invited private companies with appropriate technology, infrastructure and human capital to run the toll gates on their behalf. This constitutes a departure from practices in Zimbabwe where the operationalisation of toll gates lies wholly in public hands. It should also be noted that according to the international practice, motorists who cannot afford toll fees should be provided with alternative roads (freeways).

However the Zimbabwean case constitutes a departure from these international practice as Zimbabwean toll gates are designed in such a way that everyone pays regardless of social class and status. Under vertical equity, road pricing is inequitable because fixed charges impose a larger burden on the poor. The other reason why the majority of the responses were on the 'Poor' category has to do with the results in relation to the fulfilment of the intended purpose, that is to say the toll payers must be given value for their money. Within this framework, toll revenues collected must be channelled towards the maintenance of the roads. In South Africa, this initiative saw more than 64 % of the road infrastructure being renovated and in this way serving as a convenient revenue source outside annual budgetary allocations. Scenarios in Zimbabwe suggest that a lot is still to be done in terms of upgrading the toll collection mechanisms and ensuring proper maintenance of roads. Unlike in Zimbabwe where tolling collections is manual, most regional countries have adopted automation systems which have gone a long way in increasing throughput as well as reducing delays and congestion on toll booths.

3.9. Observed Gaps in the operationalisation of the Toll Gates

Since their inception Zimbabwean toll gates are still relying on manual ticketing and collection system which has thus posed some challenges which are militating against the efficient and effective collection of revenues at the toll gates. The manual nature has created problems affecting traffic flow (that is, delays and congestion are conspicuous at the Zimbabwean toll points especially during peak hours) as it falls short in sufficing the traffic volumes. There is the challenge of change especially when the new shift commences work which makes it difficult for adequate revenues to be realised as vehicles will be parked by the booths as the motorists wait for their change. Revenue is also lost during heavy rainstorms since the toll officials abandoned the toll gates leaving vehicles to pass through without paying the fees as the current rudimentary structures do not provide adequate shelter against such elements of weather. There is also the absence of proper monitoring systems as the current collection system does not determine the type of vehicle that passes through the toll booth.

Thus creating irregularities between the fees collected and the vehicle type since there are monitoring mechanisms in that regard. The collection structure does not take into account that fees paid by different classes of vehicles should represent the amount. As noted earlier, in as much as the accountants are responsible for the overall management of the toll gates, they do have other core duties at the office how then are they going to know which kind of vehicle passed through the toll gates and tally it with the money collected since the numbers, the amount paid, and the rates are not filled in. There are also scenarios whereby upon payment of the fees the motorists do not wait for the ticket hence the same ticket is most likely to be used again and no one monitors such mal practices. There is also the challenge of human error whereby the toll collectors tend to overcast change and this challenge is rife during peak periods and in such scenarios motorists have proven to be unfaithful as they hardly return the extra monies to the toll collectors. In some cases it was observed that some motorists out rightly avoid paying the fees as they normally accelerate their vehicles and disappear without paying. In another case, it was noted that twenty-two ticket books were found at Eskbank toll gate. These books were alleged to have been issued from the stores without being recorded in the toll gates' register.

In an interview, it was noted with regards to this scenario, that about 23 443 ticket books were missing which amounts to more than a million toll gate slips. Thus all these slips were not recorded anywhere neither were they accounted for leading to revenue leakages. It was also submitted that ZIMRA officials were facing problems from government officials and the Central Intelligence Organisation who were failing to produce the required documents and were also refusing to pay toll fees. It was noted that all government vehicles bearing white number plates, diplomatic vehicles, ambulances and the presidential motorcade are exempted from paying tolls. However it was changed to include those with yellow number plates upon producing log books and identity cards. It was submitted that some government officials are unable to produce these documents. It was also noted that the roads are too narrow hence pausing risks to officers stopping the cars and this has also exacerbated delays during peak hours. On the humanitarian side it was noted that fumes and dust from motor vehicles are likely to cause health problems to officers operating toll gates. The toll collectors are also at the risk of physical danger. One toll collector at the Shamva toll gate was knocked down by a rear door of a delivery van which swung open as it took off.

3.10. Aspects of the Toll Gates that Need Strengthening or Redesigning

Table 11: Response Frequency on areas in need of strengthening

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Structures	8	26.7	26.7	26.7
Collection	14	46.7	46.7	73.3
Management	8	26.7	26.7	100.0
Total	30	100.0	100.0	

Response spread suggests that the most pressing need to strengthen the collection exercise. Almost forty seven percent (46.7%) expressed this view. This could be attributed to observed notable delays and congestion on tolling points especially during peak hours as the manual nature of ticketing fails to timeously suffice the traffic volumes and the resultant delays have led to what has been termed "economic sterility" (Savides, 2008). Visits to polling sites also revealed that there were gaps in terms of monitoring. It is not clear how ZIMRA officials back at the office would know the number and make of vehicle passing through the toll gates to enable them tally it with the money collected since the numbers, the amount paid and the rates are not filled.

The need to strengthen toll gate structures is also a pressing issue. Almost twenty seven percent (26.7 %) prioritised strengthening of the structures. Visits to polling sites revealed that there were some revenue losses during heavy rains as the current rudimentary structures cannot provide adequate shelter to the collectors during thunderstorms. Oftentimes toll collectors are forced to leave tolling points in search for shelter and in the process giving room for the motorists to pass without paying hence leading to revenue losses. Equally pressing is the need to revamp the overall management of toll gates. Almost twenty seven percent (26.7 %) of the respondents shared this view. Research ascertained that ZIMRA collects tolls on behalf of ZINARA. Since this is an auxiliary responsibility for ZIMRA, those overseers or managers do not wholly and solely concentrate on toll gates as they have their core duties in their offices to attend to. The set up is also prone to remittance flow problems.

4.0. Conclusion and Recommendations

4.1. Conclusions

Across the global spectrum, tolling collections are viewed as effective means of boosting domestic mobilisation of resources to finance the maintenance of road infrastructure. Toll gates are also increasingly viewed as means of strengthening national ownership of development policies and reducing institutional vulnerability to reductions in revenue arising from trade reforms. Viewed from this angle, concern with toll gate systems is part of ongoing search for excellence in the management of national revenue processes. The need for this is even more pressing given the challenges Zimbabwe is currently facing in mobilising external funding.

Against this background the study assessed the effectiveness of the toll gate system as a revenue collection instrument in Zimbabwe under the operational hypothesis 'Toll gate systems enhance the effectiveness of revenue collection'. The hypothesis was tested using a one tailed test in a proportional analysis test wherein the study's main hypothesis was the null hypothesis. The study accepted the null hypothesis thereby confirming that toll gates have significantly improved revenue collection in Zimbabwe. Review of revenue statistics from ZIMRA showed that there has been a steady flow of revenue from toll gates since their inception in 2009. Revenue performance of toll gates in relation to other revenue heads (such as, VAT, PAYE, Customs Duty, and Excise Duty) proved that toll gates are a worthwhile intervention as there was a notable increase of relative per cent contribution or proportion of toll gates to the total revenue since their introduction in August 2009. Toll gates have emerged as the leading non-tax revenue head. The study also established that while ZINARA also sources income from fuel levy, transit fees, overloading fines, abnormal load fees and toll gate fees-toll gate fees are the most convenient and the best performing in terms of revenue yield. In fact, toll gates raked a sum of USD676 000 in just twelve days of their introduction, thereby revealing their effectiveness in terms of revenue mobilisation.

The study concluded that the rationale of toll gates is to raise revenue for maintaining roads. This initiative serves as a convenient source of revenue outside annual budgetary allocations. It is evident that the roads can be seen as an expedient way to raise additional funds that is used for its maintenance. In other words this road use regime is believed to translate into a noble investment into the hard pressed road network in Zimbabwe. This approach will also see the country developing a sustainable road transport system that will not only feed into the relentless on-going economic revival efforts, but may also play a part in reducing the horrendous carnage on the roads. In as much as the toll gate system has proven to be a worthwhile engagement, there are still fundamental defects and performance gaps that are militating against the effectiveness of toll gates. These loopholes emanate from the usage of rudimentary structures, reliance on manual collection systems and weak management frameworks.

4.2 Recommendations

Structures

The country must put in place permanent and standard tollgate structures with enhanced security features that will help minimize pilferage. There must be a transition from the use of the current rudimentary structures which are leading to revenue losses in times of harsh weather (such as, thunderstorms) since they do not provide adequate protection to the toll collectors hence they end up abandoning the toll gates, thus leaving motorists to pass through without paying. Boom gates that must be installed such that they will be opened after all payments are completed; this will curb evasions at the tolling points. Permanent structures will help to preserve healthful working environments for the toll collectors as the risk of fumes and injuries would have minimized since they would be operating in housed environments. In as much as the toll road construction exercise is capital intensive it is advisable that the Government should embark on public-private partnerships (PPP) by inviting investors with private technology, infrastructure and human capital to finance the building, maintenance and operationalisation of toll gates on their behalf under the build-operate-transfer (BOT) arrangements. Accordingly, Underhill (2000:132) notes that "increasingly PPPs are recognized as an innovative tool to develop competitive infrastructure, improve public service delivery, reinvent governmental management, and promote efficient market structures for economic development."

Collection

There is need to computerise the collection systems. Automation of toll gates will lead to improved speed in terms of collection, thereby eliminating delays which are an inevitable phenomenon under manual collection.

In the event that scanners are used (in which case, vehicles fitted with electronic discs will be detected by a scanner at the toll sites) incidence of fraudulent activities will resultantly diminish as the scanners will monitor the number and type of vehicles passing through toll gates thereby making reconciliation of transactions easier. In short, there is a greater need to invest in information technologies that enhance efficiency in the operationalisation of toll gates. It is also expedient to introduce an all-encompassing prepaid payment system for Government and company vehicles to minimize delays. ZINARA should be given the mandate to collect toll gate and road access fees. In this vein ZINARA must be capacitated to run and manage wholly all toll gate operations. In the current set-up the ZIMRA is responsible for printing the tickets, collecting the funds at the toll gates and then pass 90 per cent of the money to ZINARA. In this vein responsibilities are concentrated, if not fused in ZIMRA hence impeding upon proper accountability, transparency and efficiency. It is therefore advisable for there to be separation of responsibilities in the management of toll gates whereby ZINARA should be responsible for the printing of tickets sold at toll gate points while ZIMRA should serve solely as the collecting agent. That way transparency and accountability is enhanced.

The whole idea of introducing toll gates was to raise money for the upkeep of roads and therefore exemptions to government vehicles would minimize the revenue to be collected. Only fire brigade vehicles, ambulances and Presidential motorcade should be exempted. In order to minimize the number of local people applying for exemptions, toll gates should be located about forty kilometres from town and when everything has been put in place funds permitting, alternative roads should be constructed for those who cannot afford to pay toll fees since this is in line with the international toll gate best practices.

Management

There must be a team of personnel whose core duties must be to manage and oversee the toll gate operations. The current system where accountants at ZIMRA double as monitors is not sustainable. Often times they tally revenue figures from their offices and in this way are partially detached from the real work on the ground. They do not make regular toll site visits. Revenues generated from toll gates must be channelled towards the development, expansion, rehabilitation and maintenance of our road network to meet regional and international standards and not and not divert toll revenues towards supporting consumptive Government expenditure. This will help provide the motorists with the much needed value-for-the toll fees. This therefore helps in fostering cooperation from the toll payers when they are satisfied that monies are being channelled towards the realisation of the intended purpose, that is, road maintenance.

References

Books

Africon Lesotho (2003). Review of Projected Road Needs. Berea: WB Publications.

Caltrans (2000) Freeway Performance Measurement System. Washington D.C: LECG.

Chambers, A, D., Selim, G, M., and Vinten, G. (1988) Internal Auditing. New York: Pitman.

Clower, T., and Weinstein, G. (2006). Case studies on the Developmental Impacts of Toll Roads: The North Dallas Toll-way and the President George Bush Toll-way. Washington, D.C: WB Publications.

Cochran, W, G. (1977). Sampling Techniques, 3rd Edition. New York: John Wiley.

David, L. W. (1973). Public Finance, Planning and economic Development. London: Macmillan.

Development Assistance Committee, (2002) Strategic and Performance Management in the Public Sector. Pretoria: Van Schaik Publishers.

Doran P, E. (2009) Toll Roads in the United States: History and Current Policy. London: Longman.

Dooley, D. (2004). Social Research Methods, 3rd Ed. New Delhi: Prentice Hall.

Fishbein, A and Babbar, H. (1996). Private Financing of Toll Roads. Washington, DC: World Bank.

Gildenhuys, J, H, S. (2010) Public Finance Management. Pretoria: J.L. van Schaik.

Hau, T (1992) Economic Fundamentals of Road Pricing, Infrastructure and Urban Development. Washington DC: World Bank Publications

Hamet, P. (2005) Using the Revenue from Congestion Pricing. Washington DC: World Bank.

Hu, P and Young, J.(1993) NPTS Databook Volume 1, FHWA Washington, DC November 1993

Ieromonachou, P, Potter, S and Warren, J.P (2006). Evaluation of the Implementation Process of Urban Road Pricing Schemes in the U.K and Italy. London: Longman

Kimball, J (1999). Public Finance 8th. Boston: McGraw Hill.

Lindemann, P, E (2008). An Investigation of the Costs of Roadway Traffic Congestion. Berkeley: Institute of Transportation Studies.

Litman, T. (2011) Using Road Pricing Revenue: Economic Efficiency and Equity Considerations. London: Victoria Transport Policy Institute.

Levinson, D. (2002). Road Pricing and Compensation for Delay, Transportation Research Board Annual Meeting.

Mickesell, R, F. (1986) The Bretton Woods Debate: Essays in International Finance. Princeton: Princeton University Press.

Morra, L. G. I. And Rist, R. C., (2009) The Road to Results: Designing and Conducting Effective Development Evaluations, Washington D. C.: World Bank.

McNeill, S. W. (1985). Perspectives in Research Methods. London: Longman.

Munroe, T, Schmidt, R and Westwind, M. (2006). Economic Benefits of Toll Roads Operated by the Transportation Corridor Agencies. California: LECG.

Musgrave, R, A and Musgrave, P, B. (1989). Public Finance in Theory, 5th Edition. New York: McGraw Hill Book Co.

Office of Programme Policy Analysis and Government Accountability (1999). Winners and Losers in Transport Policy. Elsevier: OPPAGA Publishers.

Repetto, R, Rawls, J and Harvey, G. (1992). Green Fees: How Can A Tax Shift Work for the Government and the Economy. Washington, DC: World Resources Institute.

Smeed, R, J. (1964). Ministry of Transport: Road Pricing- The Economic and Technical Possibilities. London: Panel Report.

Symon, I (2005) N1-N4 Bakwena Toll-Road. Butha-Butha: Lestimes Publishers.

Transportation Corridor Agencies (2006). Roadway Traffic Congestion. Berkeley: ITS.

Thompson, W, R. (1990). Conflict, Inertia, and Reciprocity: Coping with Western Block. Beverly Hills: Sage.

Visser, C, B and Erasmus, P, W. (2002). The Management of Public Finance: A Practical Guide. Oxford: Oxford University Press.

Vorster, M. (2010). Road Safety Highlights: Gauteng's Prepaid Toll Solution to become the National Standard. Johannesburg: Arrive Alive.

Research Papers and Journals

Devas, N., Delay, S., and Hubbard, M. 2001. "Revenue Authorities: Are they the Right vehicle for Public Finance Administration?" Public Administration and Development, 21: 211-22. Gupta, S., and Tareq, S. (2008). "Mobilizing Revenue," Finance and Development, 45, 3: 44-7.

Heggie, I, G and Vickers, P. Commercial Management and Financing of Roads. Technical Paper 409. Washington, DC: World Bank. 1998

Kidd, M. and Crandall, W. (2006). "Revenue Authorities: an Evaluation of their Impact on Revenue Administration Reform" IMF Working Paper 6/240 Washington D.C: IMF.

Nnanna, O, J, Odoko, F, O, and Alade, S, O. (2003). Highway Maintenance in Nigeria: Lessons from other Countries. Research Department Occasional Paper No. 27. Abuja: LC Plc.

Second Session-Seventh Parliament First Report of the Portfolio Committee on Transport and Infrastructural Development on the Operation of the ZINARA Fund. 21 October, 2009. Harare: Government Printers.

Rodrik, D. (2000). "On the Causes and Consequences of Rapid Increases in Savings rates," The World Bank Economic Review, Vol. 14, No.3.

Teknomo, K and Gerilla, G, P. Simulation of Toll Collection System in Surabaya- Gempol Tollway. EASTS Journal; Volume 3, No. 6, pp343-56, 1999.

Tsekoa, M, K., and Michel, L. (2007). Kingdom of Lesotho- European Community Country Strategy Paper and National Indicative Programme for the period 2008-2013. Lisbon: EU Publications.

Underhill, G, R, D (2000). The State Market Relationship: Prospects for Change in World Order. Volume 76, No. 4. International Affairs.

Vickrey, W, S. (1963). Pricing in the Urban and Suburban Transport American Economic Review. Volume 55, pp452-65.

Newspapers

Bloch, R. "State of the Economy," Financial Gazette 21 August 2009.
Choruma, A (2009). The Herald 17 September 2009. Use Toll Fees Transparently.
Savides, M. "Toll Gates: Rational a Move?" Sunday Times, December 3, 2008.
The Financial Gazette, 24 July 2009.
The Herald, 13 June 2007
Zharare, H (2009). The Herald. Tolls Rake In USD676 000.00.
ZIMRA REVENEWS (2011). Commemorative Issue. Harare: PrintWorks.
ZIMRA, REVENEWS (2012). Special Edition. Harare: Print Works.

Government Publications

Audit and Exchequer Act Chapter 22:03. Harare: Government Printers, 1996.
Government of Zimbabwe Public Finance Management Act [Chapter 22:19]. Harare: Printflow, 2009.
National Roads Act [Chapter 7:14] Harare: Government Printers.
Revenue Authority Act [Chapter 23:11]. Harare: Government Printers.
Roads Act [Chapter 18:18]. Harare: Government Printers.

Websites

CBI Calls for Toll Roads to Boost Infrastructure. http:www.plcfin.co.uk/news/2011/04 [accessed 26 February 2012].
Minister Halts New Toll gates. Bua News (Tshwane) http://www.allafrica/toll-gates.html [accessed 23 April 2011].
Toll gates. Http public finance series. [Accessed 13 January 2012].http://www.iolnews.toll_gates3.html [accessed 17 April 2011].
State and Local Public Finance. http://pa5113.blogspot.com/2011/04/benefits-and-toll-toll-roads.html [accessed 23 February 2012].
Toll Roads in South Africa. http:www.arrivealive.co.za/pages. [Accessed 13 January 2012]. Why Tolling? www.sanral.co.za/gfip/index-php? [accessed 13 January 2012].
Roads and Highways: The World Bank Group Toll Roads and Concessions. http://www.worldbank.org/transport/roads/toll_rds.html [accessed 3 March 2012].
An Overview of Lesotho Roads. [Accessed 23 February 2012 http://www.armfa.org/CD%2002005/...pdf/tolls_Lesotho.pdf].
Gauteng Freeway Improvement Project (GFIP): E- Toll Tariffs [accessed 29 February 2012 http://www.tollgatepetition.org.za./sanral%_toll_tariffs.pdf]. http://zwnews.com [accessed 13 December 2011].http://www.zimra.co.zw [accessed 13 December 2011].
http://news.businesszimbabwe.com [accessed 15 December 2011].
www.wws.princeton.edu~ota [accessed 12 January 2012].
http://www.enotes.com/effectiveness-efficiency. [Accessed 12 January 2012].