

POTHOLES IN ZIMBABWE: A HINDRANCE TO ECONOMIC DEVELOPMENT

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ABSTRACT

The study sought to investigate the effects of potholes on economic development in Zimbabwe with a view to recommend practical strategies that can be put in place to deal with the problem. Using the qualitative research methodology, the study benefited from face to face interviews from twelve (12) key stakeholders from the following key sectors of the economy; tourism, transport, manufacturing, construction, agriculture, insurance and mining that were selected through purposive sampling. The researcher also interviewed two (2) road engineers from the Ministry of Transport and Infrastructural Development, and in addition secondary data was necessary as evidence to prove that indeed potholes are in existence in Zimbabwe. The study focused on two main roads; the Beitbridge-Chirundu road, the Harare-Beitbridge -Victoria Falls road. These roads connect with Zambia and South Africa respectively and both are Zimbabwe's main trading partners. Findings indicate that these roads are infested with potholes, a situation that has affected economic growth in Zimbabwe. Tourists and haulage trucks from neighbouring countries cannot drive through potholes, vehicles are depreciating at a faster rate and transporters are losing a lot of money through vehicle maintenance. Goods meant for production are being delayed, with some being lost through accidents. Insurance pothole accident related claims have increased and this entails hindrance of economic development in Zimbabwe. The study recommends government to consider developing a consistent approach for determining economic costs and benefits of highway maintenance. The government should also consider an appropriate measure of reporting potholes which is informative of an efficient approach of road maintenance. The government should put in place a sound system of tracking roads which are aging and prioritize them for preventive maintenance.

Keywords: Economic Development, Potholes, Road, Transportation.

INTRODUCTION

A pothole by definition is a problem (PotholeInfor, 2017). The media in Zimbabwe has been awash with the problem of potholes, with some claiming they have infested Zimbabwean roads. This is not a disputable fact, the biggest challenge is that there is no literature that covers the effects of potholes on economic development in Zimbabwe. Studies carried out in countries such as Michigan, Nigeria and Zambia have proved that potholes can indeed hinder economic development. The study, therefore, sought to establish if potholes are a hindrance to economic development in Zimbabwe.

Background and Motivation to the Problem

There is a public outcry over the poor state of roads in Zimbabwe (Nqobile, 2014). The media, both state and private are raising concerns over potholes which they claim have 'infested' Zimbabwean roads, in particular the highways. The Newsday Zimbabwe

Newspaper, on 25 January had a headline, “*Potholes a state of emergency*: In the report, a local government Minister was quoted as saying most roads in Zimbabwe have outlived their lifespan, and they were constructed during the colonial era (Newsday Zimbabwe, 27 January 2017). The Zimbabwe Independent Newspaper, on 3 January 2017, had an article entitled, “*Zimbabwean roads have outlived their lifespan, which normally 20 years and are now over 60 years old and they are not getting the necessary maintenance*” (Independent, 3 January 2017). This shows that potholes are now a menace to the country, and they are a threat to the development of the Zimbabwean economy as the infrastructure (roads included) enhance economic growth.

Potholes are posing a danger to an extent that the public are now calling for a declaration of a state of emergency. Local Government Minister was quoted by the Newsday Zimbabwean Newspaper (27 January 2017) as saying Zimbabwean roads are in a deplorable state. These roads include the Harare-Beit bridge-Victoria falls road, which connect Zimbabwe with its neighbouring country, South Africa and Victoria Falls a popular tourist destination. South Africa is currently Zimbabwe’s main trading partner. The Beitbridge-Chirundu Road has also been infested with potholes, and this road also connects Zimbabwe with Zambia, another trading partner. Zambia, Tanzania and Democratic Republic of Congo all rely on these roads, as such the problem of potholes has negatively affected Zimbabwe’s trading partners as well.

There are also substantial claims that potholes have cost some precious lives. Many accidents, attributed to these potholes have been reported in Zimbabwe. Statistics released by police in 2016 indicated that roads have become death traps with an average of 2000 people dying each year (Herald Newspaper, 25 April, 2016). The police have tried to convince the public that these accidents are due to human error, but the Zimbabwe Independent Newspaper (3 January 2017) insists that several accidents in Zimbabwean highways are caused by potholes, as the “*nation’s major highways are infested with gaping potholes*”. Edwind (2015) also argues that these potholes have had a negative effect on the Zimbabwean economy and caused traffic congestion.

Some motorists have claimed that they are losing a lot of money due to costs of maintaining their vehicles. The most extensive types of damage that have been caused by potholes on vehicles are alignment problems, damages to the under carriage, mufflers, shocks, axles, tyres, and rims (Mississippi Municipal Service Company, 2017). Similarly, it would appear there is a public outcry over vehicle servicing expenses. In 2010, the Supreme court paved way for motorists to sue council for damages caused to their vehicles (Herald Newspaper, 14 October, 2014). The Harare Municipality received lawsuits and recently, in one interesting case, a Harare motorist successfully won a lawsuit after being involved in an accident due to a potholes.

It is against this backdrop that the researcher was motivated to carry out a study of this magnitude on the effects of potholes on economic development in Zimbabwe. Some have argued potholes are a hindrance to economic development in Zimbabwe for example, in the tourism sector, neighbouring countries cannot drive to Zimbabwe fearing breakdown of their cars. For some, potholes have resulted in breakdown and delay of haulage trucks carrying important equipment and imported goods. Consequently, the industry is losing a lot of business due to delays. Currently, there is no literature that exposes potholes as a hindrance to economic development in Zimbabwe, a knowledge gap that this study seeks to fill.

Statement of the Problem

There has been a public outcry over the state of roads and potholes in Zimbabwe, with the media claiming that Zimbabwean roads have been infested with potholes. As a result of the current incessant rains, potholes are scattered all over Zimbabwean roads. These include Harare-Beit bridge-Victoria falls Road, connecting Zimbabwe with South Africa and the Beit bridge - Chirundu Road connecting Zimbabwe with Zambia. Both countries are Zimbabwe's main trading partners. Therefore, it can be inferred that the Zimbabwean economy is suffering a major setback because of these potholes. The study therefore sought to answer the question; to what extent have potholes hindered the economic development in Zimbabwe?

Aim and Objectives

The aim of the study was to investigate the effects of potholes on economic development in Zimbabwe. The following were the specific objectives of the study;

- To find out how potholes are affecting road motor transportation in Zimbabwe
- To establish how potholes are affecting industrial growth and economic development in Zimbabwe
- To recommend strategies of dealing with potholes

LITERATURE REVIEW

The study carried out an analysis of how potholes affect road motor transportation and establish how they affected economic development. The study also examined strategies of dealing with the problem of potholes.

Potholes and their effects on the road transportation

A pothole by definition is a problem (PotholeInfor, 2017). John & William (2003), Eaton & Joubert (1989), Chitiyo, Schweitzer, De waal, Lambert & Ogilvie (2008) have defined a pothole as a structural failure in an asphalt pavement caused by presence of water within the underlying soil structure as well as the presence of the traffic which passes over the affected area. Allan (2017) claims that potholes are holes in roadway which differ in shape and size. For Thesaurus (2017), a pothole is a deep hole, a pit. Sainz (2016) states that a pothole can be defined as a localised distress in an asphalt-surfaced pavement resulting from the breakup of the asphalt surface and possibly the asphalt base course. From these definitions, it can be inferred that a pothole is a depression, a hollow that is found in a road surface which is caused by wear of substance. Pieces of asphalt pavement are broken by the action of climate and traffic on the weakened pavement and then removed under the action of traffic, leaving a pothole (Wilson and Romine, 1994). To be considered a pothole, the distress must be a bowl-shaped hole with a minimum plan dimension of six inches. Low severity potholes are less than one inch deep, moderate severity are one to two inches deep, and high severity potholes are more than two inches deep (Johnson and Snopl, 2000). Therefore, what causes potholes? Eaton & Joubert (1989) claim that potholes result from an insufficient thickness which is supposed to support traffic during the freeze/thaw periods without localized failures. The authors also argue that potholes are a result of insufficient drainage. In Michigan, potholes happen when snow and ice melt and the resulting water then seeps beneath cracks that are caused by wear and tear of roads. Due to temperatures that cool to freezing during the night, water becomes ice and expands underneath forcing the pavement to rise. Traffic continues to pound on the rising section and consequently, a shallow divot then occurs underneath, resultantly breaking the pavement to break, forming a pothole (Michigan Department of

Transportation, 2017). What it shows is that, potholes are not an issue to Zimbabwe only, but the world over. However, in Zimbabwe Edwind (2015) believes potholes are caused by incessant rains which have been pounding the country of late. Allan (2017) also argues that potholes are a result of the expansion and contraction of water underground. What then are the effects of potholes on road motor transportation?

Potholes are one of the public main concerns. This include the business society, the government, local authorities and members of the public. According to a survey carried by Highway Maintenance Efficiency Program of London (2012), repair of roads, footways, and cycle ways was mentioned as very important to the members of the public. Potholes are by nature a pronounced nightmare because they are unpredictable (Chitiyo et al, 2008). Potholes disrupt traffic through repairs and this can cause further costs to the economy as traffic is delayed (Highway Maintenance Efficiency Program of London, 2012). Driving over potholes causes property damage to vehicles or bodily injury to the members of the public (Ericksson, Girod, Hull, Newton, & Balakrishnan, 2008) and (Mississippi Municipal Service Company, 2017). Damaged roads are perilous to drivers and pedestrians. What then are the effects of potholes on economic development?

Effects of potholes on economic development

Studies have shown that potholes are a hindrance to economic development by governments. In Michigan, Ericksson et al (2008) claim that in 2005, the State of Michigan had more than 7 500 pothole related claims which were filed against it. What it shows is that the state suffered huge loses as a result of pothole related lawsuits. The same paper reports that insurance companies in Michigan receive more than 500 000 pothole related claims each year, a huge setback to the insurance industry. According to the Highway Maintenance Efficiency Program of London (2012), there is a wider cost to the economy that arises from potholes and this include costs associated with highway users and business which comes in the form of increased number of accidents and the subsequent compensation of insurance claims.

Driving in potholed roads increases consumer costs because it accelerates vehicle deterioration and depreciation. This increases the frequency of the much needed maintenance and additional fuel consumption (Ericksson, et al 2008). In a study on the economic effects of bad roads on vehicle maintenance in Nigeria, Enwerem & Ali (2016) observed that in Nigeria, the industry was making annual losses from vehicle maintenance due to bad roads. They estimated a loss of over N133.8 billion a year, which is outside all other economic losses from bad roads such as air pollution, delayed movements, armed robbery and incessant accidents. In Zambia, in 1992 the Zambian Road Hailiers carried out a study on the effects of bad road conditions on vehicles's operating costs that were delivering products to the market or bringing input products for production. Findings revealed that the increase in operating costs to the Zambian companies due to unmaintained roads were over \$14 000, 00 (Roth, 1996). Zimbabweans are currently suffering the same consequences due to a poor road network system and potholes.

TRIP (2015) adds, if a municipality or state is pockmarked with rough pavements, it takes a long time for goods to be delivered in and out of the region, a similar consequence which the researcher believes Zimbabwe is suffering from. Economic forces are increasingly dependant on the quality of roads and goods delivery (TRIP, 2015). Pothloed roads in Zimbabwe are affecting its trading partners, South Africa, Zambia, Democtratic Republic of Congo , Botswana just to mention but a few. Rioja (2001) also argues that a country's road is the

foundation on which an economic activity takes place. Studies show that poor road infrastructure is the major impediment towards economic growth and productivity in developing countries such as Zimbabwe (Otegbulu, 2011). Some researchers argue that there is a strong link between a good economy and good roads (PotholeInfor, 2017) and Alton (2015) sums up by saying; bad roads hurt economic development. The study now seeks to answer the final question; what are the strategies for dealing with potholes?

Strategies of dealing with potholes

Several researchers believe that the major integral part of sustainable development of a road network is the provision of an environmentally sound road network (Otegbulu, 2011). Unfortunately, the maintenance of current road network systems has often been neglected at the expense of new infrastructure in developing countries, such as Zimbabwe (Rioja, 2001). Ericksson et al (2008) have argued that highway preservation and rehabilitation provide significant economic benefits by improving travel safety, speeds and capacity. Rehabilitation of roads also help to reduce operational costs for people and businesses.

The Highway Maintenance Efficiency Program of London (2012) believes that governments and local authorities must have an effective public communication process which provide clarity and transparency in their policy approaches of repairing roads with potholes. It also suggests that there must be a published policy with details of implementation plans. A government must have prevention plans, reporting procedure (of potholes identified), identification, tracking and repairing of potholes.

Highway Maintenance Efficiency Program of London (2011) offers the following suggestions;

- Government and local authorities should consider developing a consistent approach for determining economic costs and benefits of highway maintenance.
- Governments should also consider a more appropriate measure of reporting potholes to encourage a more efficient approach of maintaining roads.
- Governments and local authorities will benefit from a lifespan approach to funding of highway maintenance.

PotholeInfor (2017) suggests intervention strategies over causative factors; water, time, traffic and neglect. To manage water, which is from nature, governments must manage drainage. More roads with crowning centres must be built and create better drainage at the low spot on underpasses. PotholeInfor (2017) also suggest tracking of roads which are aging and prioritize them for preventive maintenance. Governments should also monitor traffic and avoid neglecting aging roads.

RESEARCH METHODOLOGY

Research Setting

Zimbabwe is a landlocked country in the southern region known for its dramatic landscape and diverse wildlife, much within parks, reserves and safari areas. There are two main highways, Harare-Beit Bridge Road, which connect Zimbabwe with South Africa and the Beitbridge-Chirundu Road which connects Zimbabwe with Zambia. Both roads drive past Harare, the capital city of Zimbabwe where the majority of businesses are located. The Harare-Beit bridge-Victoria Falls Roads drive past Bulawayo, the second largest city of Zimbabwe and connects with Victoria Falls, considered to be the main tourist attraction in Zimbabwe. The Beitbridge-Chirundu road also drives along Kariba Town, another tourist

attraction area. Government Ministers have confirmed that both highways are in a bad state, and to this end, the researcher focused on these multi potholed roads.

Research Methods, Design and data collection

To answer the research question, the study opted for the qualitative case study research design, described by Weist (2011) as a useful tool in understanding the nature of the problem, for instance, the extent to which potholes are hindering economic growth in Zimbabwe. Mutanana (2016) states that researchers need to examine common and unique features of a case, with a strong emphasis on defining these features, for instance potholes and economic development. The researcher identified two (2) road engineers and twelve (12) key stakeholders from various sectors of the economy using purposive sampling technique. The following sectors were identified; tourism, transport, manufacturing, construction, agriculture, insurance and mining. Consistent with Mack et al (2005)'s affirmation, data was collected using in-depth interviews and participant observation. Secondary data was also appropriate for the inquiry because of the nature of the study and health information that was available (Mutanana, 2016). As such, the researcher had to make use of published newspaper reports and records from the key participants' offices that were made available.

Study Limitations

This study is mainly based on in-depth interviews carried out with fourteen (14) key informants in the various sectors of the economy, which is not unusual in qualitative research studies. The study nonetheless, discovered how potholes are affecting road motor transportation, effects of potholes on economic development and managed to come up with strategies of dealing with these potholes.

Data Analysis

The researcher recorded in-depth interviews and typed them in Microsoft Word. He then carried out content analysis to analyse these interviews and read these interviews several times after which recurring themes were then identified. Finally, data was analysed by the researcher.

Research Findings and Discussions

The purpose of the study was to find out how potholes are affecting road motor transportation in Zimbabwe and to establish how potholes were affecting industrial growth.

Potholes and their effects on road motor transportation

The researcher has been wondering if the government and local authorities were concerned with the existence of potholes in Zimbabwe, or they cannot identify a pothole? What is a pothole? The researcher started by quizzing both road engineers. Key Informant one (1) understood a pothole simply as a deep hole on a road. Key Informant two (2) was a bit technical in his response.

A pothole is a structural failure in an asphalt pavement that is caused by the presence of water within the underlying soil structure. It is also caused by the presence of heavy traffic which passes over the affected areas.

As shown on figure 1 below, potholes are in existence in Zimbabwe. All the participants did not dispute the existence of potholes along the Chirundu-Beitbridge Road and the Harare-Beitbridge-Victoria Falls road. Participants noted that these roads were important in as much as the Zimbabwean economy is concerned because they connect with its trading partners, South Africa and Zambia. Participants three (3) and four (4), both drawn from the tourism sector explained that both roads connect with Zimbabwe's main tourist attraction centre's, Victoria Falls and Kariba.

Figure 1: Pothole identified along Beitbridge-Chirundu Road (Zimbabwe)



Source: www.thezimbabwedaily.com

What it shows is that the Zimbabwean government appreciates the existence of potholes in Zimbabwe. The definitions by key informants one (1) and two (2) were consistent with John & William (2003), Eaton & Joubert (1989), Chitiyo, Schweitzer, De waal, Lambert & Ogilvie (2008)'s definitions. They defined a pothole as a structural failure in an asphalt pavement caused by presence of water within the underlying soil structure as well as the presence of the traffic which passes over the affected area. Key informants argued that of late, Zimbabwe has been experiencing some incessant rains resulting in these pothole formations. Edwin (2015) and Allan (2017) agree with this finding when they state that potholes in Zimbabwe are caused by incessant rains. They also contend that potholes are a result of the expansion and contraction of water underground. What are the effects of potholes on road motor transportation?

Figure 2: Potholes becoming sources of water for cattle!



Source: <https://twitter.com/NehandaTV>

As shown on figure 2, potholes are rampant in Zimbabwe to an extent of being sources of water for cattle during the rain season. Participants therefore argued that they were having serious challenges in transporting their goods. For participants five (5) and six (6), both in the transport industry, driving over potholes has resulted in vehicle damages. According to the Highway Maintenance Efficiency Program of London (2012), potholes disrupt traffic through repairs and this can cause further costs to the economy as traffic is delayed. Erickson et al (2008) adds, driving over potholes causes extensive damage to vehicles and accidents to members of the public.

Effects of potholes on industrial growth

The study now seeks to answer the next question, what are the effects of potholes on economic development in Zimbabwe?

As shown on figure 3 below, vehicles are having a torrid time in trying to reach their destinations. Key informants three (3) and four (4), both in the tourism sector believe these potholes are affecting the growth of the tourism industry. As indicated by participant three (3);

Both roads connect with the country's main centre of attraction; Victoria falls, Matopo, Kariba just to mention but a few. Tourists from a neighbouring country, South Africa like driving to these centres of attraction in their 4 x 4 vehicles, but they currently cannot because of these potholes. They are afraid many accidents have and still are occurring along these roads.

Figure 3: A haulage truck driving past numerous potholes



Source: www.sundaymail.co.zw

Participant four (4) agreed with his counterpart on this assertion. Key stakeholders from the transport industry (key informants 5 and 6) were at pains in narrating their ordeal. They said they were losing out in maintaining their vehicles. They were failing to satisfy their customers because of late deliveries. Vehicles were getting involved in road accidents due to potholes and were deteriorating faster. Key informant six (6) gave an estimation loss of over \$7 000 a month on vehicle maintenance due to bad road conditions.

Key informants seven (7) and eight (8), both from the manufacturing sector made an outcry over the delay in goods that are transported in the country for production and those that are transported outside the country for export. Participant eight (8) claimed that in the month of December 2016, the company had made a loss of over \$20 000 which was associated with transport delays and accidents on the roads. Exportation and importation of goods has become a challenge in Zimbabwe due to poor road conditions.

The mining, construction and the agricultural sectors are equally affected. In the construction sector, key informants nine (9) and ten (10) explained that at times they were delaying construction activities because of late supply of goods. In the agricultural sector, they indicated that agricultural production was under threat because they needed to import some of their herbicides. Key informants eleven (11) and twelve (12) said that of late, there was a shortfall of fertilizer, which could not be transported in time because of potholes. Transport companies have also increased their transportation fees alleging the existence of potholes which affected their vehicles. Consequently, prices of goods also have to increase. The insurance sector has equally been affected with these potholes. Key informants thirteen (13) and fourteen (14), both indicated insurance claims had increased and key informants indicated an upsurge in insurance claims.

Participants noted that the Beitbridge-Chirundu and Harare-Beitbridge-Victoria Falls roads have become terribly bad, and at various spots one can see queues of hazard flashing light

motor vehicles, most of which are forced off the road after losing tyres to the potholes. Participants agreed that driving along these roads have become a nightmare. Participant three (3) explained that in many times along the way, one can see vehicles meandering, trying to negotiate their way through pothole-infested highways that link Harare to South Africa, its biggest economic partner. Participant ten (10) had no kind words for the government;

The Beitbridge-Chirundu Highway has long been on the agenda for dualisation. It is in bad shape and causing deaths of hundreds of people due to potholes.

Key informant also narrated his ordeal along the Beitbridge-Chirundu road. He lost some tyres about 60km towards Masvingo after plunging in a pothole. A week later, he had to spend the whole night rescuing a friend at Featherstone who had also lost some tyres to potholes.

What this shows is that the roads are in a bad state and are affecting the growth of the Zimbabwean economy. These findings are consistent with findings by fellow researchers on challenges of potholes towards the economic growth. Studies have shown that potholes are a hindrance to economic development to governments. For instance, in Michigan, Ericksson et al (2008) claim that in 2005, the State of Michigan had more than 7 500 pothole related claims which were filed against it. It would appear Zimbabweans are still ignorant of their legal rights. But sooner, motorists may start to make these claims and the government will suffer a major setback. Erickson et al (2008) also posit that in Michigan, insurance companies receive more than 500 000 pothole related claims each year, a huge setback to the insurance industry.

Findings are also consistent with the Highway Maintenance Efficiency Program of London (2012) observation to the effect that there is a wider cost for the economy that arises from potholes. These costs are associated with highway users and business which comes in the form of increased number of accidents and the subsequent compensation of insurance claims. In a study on the economic effects of bad roads on vehicle maintenance in Nigeria, Enwerem & Ali (2016) observed that in Nigeria the industry was making annual losses from vehicle maintenance due to bad roads. The Zambian government also claims to have suffered the same consequences in 1992 (Otegbulu, 2011). As stated by TRIP (2015), the study also discovered that if a municipality or state is pockmarked with rough pavements it takes a long time for goods to be delivered in and out of the region. A country's road is the foundation on which an economic activity takes place.

CONCLUSIONS

Basing on these findings, the researcher observed that the Beit Bridge - Chirundu Road and Harare – Beit Bridge - Victoria Falls road are the main country's roads which connect Zimbabwe with Zambia and South Africa respectively. Both countries are Zimbabwe's main trading partners. These roads also feed into Victoria Falls and Kariba Town, Zimbabwe's two main tourist attraction centres. Both roads are infested with potholes, and this has affected economic development in Zimbabwe. In the tourism sector, clients from neighbouring countries cannot drive to the above mentioned tourist attraction destinations. In the transport industry, motor vehicles depreciating faster and they are losing out their money to vehicle maintenance. In the manufacturing, construction and agricultural sectors they are losing out business due to transport delays and accidents. The exportation and importation business has strongly suffered a huge setback. Insurance companies are receiving many claims related to pothole accidents. Potholes are hindering economic development in Zimbabwe.

RECOMMENDATIONS

Based on the findings and conclusions, the study recommends the Zimbabwean government and local authorities to consider developing a consistent approach for determining economic costs and benefits of highway maintenance. The government should also consider a more appropriate measure of reporting potholes to encourage a more efficient approach of maintaining roads. There is need to track roads which are aging and prioritize them for preventive maintenance.

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