Road Infrastructure Investment and Economic Growth in the City of Johannesburg

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DECLARATION

I, Nondumiso Khumalo, declare that this research article is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the Graduate School of Business Administration, University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Nondumiso Khumalo

Signed at …J&W Rivonia …...........................................

On the …27…. day of …February … 2019....
DEDICATION

This Research Report is dedicated to my son Ayanda Khumalo and my parents, Thamisanqa Khumalo and Sebongile Khumalo.

Thank you for all the love and support you have given me.
ACKNOWLEDGEMENTS

With endless gratitude, I would like to thank the Almighty God for being with me through this journey. Your faithfulness gave me the strength to persevere.

My parents (especially mom), who assisted me by raising my son while I focused on my studies, thank you very much.

To my friends, Tammy Govinden for listening to all my complaints and those much-needed morning warm hugs over the past two years.

Nkuli Fihla for your endless encouragement, and my newly found MBA friend Philile, Zindela for being supportive during my pregnancy and being the best study buddy.

I am especially grateful to Velaphi Chauke, for his assistance in structuring the report and reviewing the content, you played a big role in me completing this research.

To my supervisor, Bongani Munkuli thank you, your supervision is greatly appreciated.
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DEFINITION OF TERMS

Infrastructure: “A wide array of public facilities and equipment required to provide social services and support private sector economic activity” (Moteff & Parfomak, 2004, p. 2).

Road It is a “route on land between two areas, which has been paved or otherwise improved to allow travel by some conveyance, including different mode of transport, (Moeketsi, 2017, p. 11).

Economic Development: Means introducing investment, business, employment, income, savings and population growth to a region (Joynt, 2004).
ABSTRACT

Road infrastructure is one of the basic infrastructures key to the economic growth of a region. An efficient road network system is an accelerator to the economic growth because it provides connectivity between different markets and consumers. The road network also attracts investment and creates job opportunities. The study analysed the relationship between road infrastructure development and economic growth in the City of Johannesburg. The primary objective of the study was to provide an insight as to how the road infrastructure investment impacted businesses and their ability to contribute to the economic growth of the City.

Data was collected using the qualitative research method. Interviews were conducted with representatives of businesses operating in the City of Johannesburg and government agencies responsible for the planning and maintenance of road infrastructure. The results of the study revealed that economic growth in the City of Johannesburg triggers the demand for road improved infrastructure. The study also revealed that the economy of the City of Johannesburg is growing at a faster rate than the development of road infrastructure.

A positive impact was recorded post road construction, which suggests that the development of road has a positive impact to the economic growth of the City of Johannesburg. The positive impact is attributed to improved connectivity which affects customer volumes to a business and contribution to the economy of the city.

Keywords: Road infrastructure; economic growth; business activity; productivity; City of Johannesburg.
ORIENTATION AND BACKGROUND TO THE STUDY

Introduction

Road infrastructure is essential for the economic growth of a region. The City of Johannesburg is located in the Gauteng province of South Africa, and its economy is rated as a growing economy largely reliant on road infrastructure to provide connectivity, and to facilitate market activities within the different economic hubs in the city.

The Integrated Development Plan review report (2017), indicates that roads are commonly used forms of transportation infrastructure in South Africa, accounting for 80% usage relative to other infrastructure such as rail and air with a share of 20% utilisation. Understanding the impact of road infrastructure on the economic growth of the city is thus crucial for sustainable future development.

This research report provides an insight into the impact road infrastructure has in the economic growth of the city. The qualitative research methodology was used to collect data. This research report consists of five sections; orientation and background to the study; literature review; research methodology; data analysis and interpretation; research findings; and conclusions and recommendations.

Purpose of the study

The study seeks to analyse the relationship between road infrastructure development and the economic growth in the City of Johannesburg. The South African Integrated Development plan review report (2017), states that economic activity and total productivity influence the economic growth rate of the City of Johannesburg and are crucial in achieving the mandated five percent annual economic growth rate for the city.

Similar views are expressed by Moyaki (2015) and Negota (2001), who concur that an efficient road network system is an accelerator of economic growth in any region, in that it provides connectivity between different markets, attracts investment and increases job opportunities.
In support of this theory, Johannes Fedderke and Garlick (2008), suggest that improved roads influence an economy’s total productivity factors by lowering production input cost and improving the living standards of the human capital which yields improved productivity levels. This means that the economic growth of a region is influenced by economic activity and efficiency of production inputs.

This study aims to provide an insight into how road infrastructure improvement impacts businesses and their ability to contribute to the economic growth of the City of Johannesburg. Productive businesses create jobs, increase investment and ensure adequate supply of goods in the market, and are thus key to the economic activity of a region.

**Context of the study**

Road infrastructure is one of the primary infrastructures that is viewed as key for promoting the economic growth of a region (Banerjee, Duflo, & Qian, 2012). According to Gutman, Sy, & Chattopadhyay (2015), road infrastructure drives structural transformation and facilitates industrialisation by connecting producers to markets, workers to jobs, students to schools, all of which are part of the process that influences economic and social growth.

The view expressed by Ndulu (2006), is that the infrastructure is especially crucial for landlocked regions as it is the most relied on transportation infrastructure to perform economic activities and enhance social condition of citizens in a region. From another perspective, Moyaki (2015), suggests that scholars and government officials accepting and promoting investment in road infrastructure to drive economic and social growth for the sole purpose of increasing investment and enhancing human capital. An overview of the study area and economic growth are discussed in the topics that follow.

**Overview of the study area**

The City of Johannesburg has a population of 4 434 827 people as stated in the Integrated Development Plan review report (2017). The Johannesburg 2040
Growth and Development Strategy report (2013), further elaborates that the city’s population is expected to grow by six to eight million people by 2040.

The projected population growth illustrates the importance of continuous economic growth for the city to meet government economic objectives and improve the social standards for the people of the City of Johannesburg (Tsikai, 2016). Mamabolo (2013), expresses the opinion that roads are key to economic activity, and it is therefore imperative that the condition and availability be prioritised to afford end users effective and efficient infrastructure to conduct business and contribute to the economic growth.

Over the past years, the City of Johannesburg has recorded on average an economic growth rate of 3.2% per annum (National Treasury, 2017). Economic data from the City of Johannesburg (2018), indicates that the city contributed 16% to the national economy and 40% to the Gauteng Province economy.

The report further highlights that three of the four key sectors: business service, retail and wholesale trade industries are reliant on road infrastructure and contribute hugely to the economy of the city. Understanding the impact road infrastructure has on the businesses ability to contribute to the economic growth is therefore essential for planning purpose and for future growth prospects.

**Problem statement**

According to Negota (2001), investigating the impact of road infrastructure investment on economic development is challenging. The author is of the opinion that available literature indicates varying results with some studies yielding a positive impact on economic growth, while others indicate a negative or insignificant impact. Several researchers also confirm that the impact of road infrastructure on economic development varies due to differences in economic and implementation structures of a region (Canning & Pedroni, 2008; Hlotywa & Ndaguba, 2017; Tonia Kandiero, 2009).

Recent studies have shown that rural or developing regions yield a positive impact from infrastructure development (Melia, 2018), while urban areas
experience either insignificant or negative impact depending on the effectiveness of the transportation system of that region (Van der Loop, Haaijer, & Willigers, 2015). Van der Loop, Haaijer, & Willigers (2015) argue that users of the infrastructure may not realise the positive economic development envisioned as new roads increase traffic congestion, increasing the time people spend travelling on roads in developed urban areas such as the City of Johannesburg. These negative impacts affect a business ability to contribute towards the economic growth of the city.

According to Johannes Fedderke, Perkins, and Luiz (2006) investment in road infrastructure in South Africa yields positive economic growth. The City of Johannesburg is South Africa’s largest economic contributor, and the government of the City of Johannesburg currently allocates a budget towards improvement of road infrastructure, however, the actual impact on economic growth is unknown.

This study, therefore, seeks to assess whether road infrastructure investment has a positive or negative impact on a business’ contribution to the economic growth of the City of Johannesburg. The impact will be investigated by attempting to answer the primary research question, which read as follows: What is the impact of road infrastructure investment on the economic growth of the City of Johannesburg?

**Research objectives**

The main objective of this research project is to evaluate how road infrastructure investment impacts economic development in a well-developed city such as the City of Johannesburg.

The study explores whether the ongoing development of road infrastructure contributes to the economic growth positively or negatively within the city. The objectives of this study are:
To assess the impact of road infrastructure expenditure on the business sector’s ability to contribute to the economic growth of the City of Johannesburg

To make policy recommendations that will enable the promotion of economic growth in the city

**Significance of the research**

This study is important in that it aims to assist policymakers and road infrastructure strategy developers to understand the economic impact of road infrastructure as experienced by the users. Investigating the relationship between road infrastructure expenditure in a developed city and its perceived impact on economic development by the end users has not been extensively researched.

Literature that discusses the relationship between road infrastructure and economic growth is limited for African cities, especially findings relating to the impact based on the perspective of end users. This study attempts to bridge the gap by investigating whether road infrastructure investment and economic development have a positive impact on businesses and thereby contribute to increased economic activity in a city from the perspective of the end user in the City of Johannesburg.

The study also intends to recommend road infrastructure policies that will assist in driving economic growth in the City of Johannesburg based on findings and recommend policies and appropriate instruments which may contribute to economic development of the City of Johannesburg in the future. The findings of this study could be useful to government institutions, such as the Johannesburg Road Agency, SANRAL and other government agencies responsible for the development of road infrastructure strategies.

In addition, the recommendations of this study could be used by government agencies as guidelines in making investment decisions.
**Limitations of the study**

A key limitation of this study is that it is limited to the experience of businesses in the logistics, property, service and retail sectors operating in the City of Johannesburg. Other businesses, government agencies and the general public impacted by the road infrastructure within the City of Johannesburg are not accounted for in this research. The research did not cover all different types of businesses per sector.

In addition, the commuters reliant on road infrastructure were not interviewed thus the impact of road infrastructure on their ability to be productive and participate in economic activity was not assessed. This means that the study cannot be generalised for all parties that are (or might) be impacted by road infrastructure in the City of Johannesburg. The research is thus not a complete reflection of the impact of road infrastructure on all end-users and their ability to contribute to the economic growth of the City of Johannesburg.

**Assumptions**

It is assumed that respondents are truthful in their responses.

**Conclusion**

The background to the research study was presented and explained in this section. The purpose of the study, as well as the research area, were discussed in brief. In addition, the significance and limitations of the study were outlined.

The research question and objectives of this study were presented. The objectives include assessing the impact from the business perspective and how investment in road infrastructure affect their ability to contribute to the economic growth of the City. The second objective is to provide recommendations that will enable the City of Johannesburg to promote economic growth. The next section will review the available literature on the topic to understand past research findings.
LITERATURE REVIEW

Introduction

Tonia Kandiero (2009), is of the opinion that road infrastructure development has an impact on economic growth in two ways, first is directly through capital accumulation, and secondly indirectly through improved productivity. The perspective by Gravito, Haddon, Alli, and Olsanase (2017), describe capital accumulation as an increase in private investment and business activity after the construction or improvement of road infrastructure. In support to this theory, Moyaki (2015), holds the view that improved productivity is associated with the indirect benefits gained from improved services (i.e. roads), which contribute to human capital improvement and overall social development.

The interpretation by Joynt (2004), suggests that road infrastructure investment triggers economic growth through two-developmental links (i.e. economic and social development links). The author further expresses the view that the economic development link entails viewing a road infrastructure as a key catalyst for a region’s productivity and competitiveness. The road infrastructure provides efficiency by reducing travelling time, road congestion and improved accessibility to markets (Chohan, Imran, & Cheyne, 2011).

Research has been conducted to evaluate the impact of roads in a region. A United Kingdom government study found that road infrastructure yielded a 5% decrease in travel time, which had the potential to yield a £2.5 billion reduction in business transportation costs (Burchills, 2015). This creates favourable conditions for GDP growth since the exchange of goods and services is increased at a low cost based on the assertion by Popova (2013). This implies that well-connected roads are crucial to ensure operational efficiency for businesses in a region and overall regional development.

The Social development link is realised when a road infrastructure provides easy access to multiple road transportation alternatives; this influences a person’s preference in the areas they choose to reside, grounding this decision on
accessibility to markets, work and social facilities (Chohan et al., 2011). Whereas Burchills, (2015), suggests that improving road infrastructure also improves access to schools, social events and healthcare facilities for citizens.

Tsikai (2016), is of the opinion that jobs and new businesses created after the development of a road infrastructure contributes in reducing the high level of poverty and inequality thus improving the economic standing of citizens in a region. Effectively, roads are not merely transportation conduits but are valuable social development infrastructures that add value to human development.

This section presents the theoretical perspectives that influence the relationship between road infrastructure investment and economic growth. The literature review details two factors that impact economic growth after a road infrastructure has been developed. The one factor addresses the relationship (causality) between road infrastructure investment and economic growth. The other factor focuses on the effects of road infrastructure investment on economic growth.

Road infrastructure and economic growth

The relationship between road infrastructure and economic development has been investigated by numerous researchers since the 1980s (Akhmetzhanov & Lustov, 2013) to gain insights on how government investment can drive economic growth. This relationship was first presented by David Aschauer in the United State of America (USA) in 1989 after conducting research on the impact of infrastructure investment cuts on economic growth when the government reduced funding towards road infrastructure in the 1970s (Moyaki, 2015).

Johannes Fedderke and Garlick (2008) suggest that Aschauer’s research revealed that investment in the public infrastructure has an impact on GDP growth and the ability to increase productivity levels of a country, thus vital for sustainable economic growth in a long run. This finding has been challenged in the past with some researchers like Siyan, Eremionkhale, and Makwe (2015) yielding similar findings. Other contrary findings were presented in a study conducted by Van der Loop et al. (2015).
The relationship between road infrastructure and economic growth is still unclear whether the direction of the relationship is from road infrastructure to economic growth, or vice-versa or both (Siyan et al., 2015). Numerous researchers assume that the development of road infrastructure results in increased economic growth. (Barro & Sala-i-Martin, 2004; Canning & Pedroni, 2008; Easterly & Rebelo, 1993; Hlotywa & Ndaguba, 2017)

Other researchers believe that economic growth results in demand for road infrastructure (Naess, 2006; Van der Loop et al., 2015). Irrespective of the direction of the relationship, researchers and policymakers believe that investment into road infrastructure is beneficial to the economic growth of a region (Akpan, 2014; Boopen, 2006). The two relationship directions are presented in subsequent sections.

**Road Infrastructure Investment and economic growth**

Banister and Berechman (2000), state that economic growth is the result of network accessibility improvement. This hypothesis is also noted by Won (2018) explaining that economic growth is triggered by improved access to existing and new markets. The theories by Banister and Berechman (2000), suggest that the gains from improved access are directly realised by households (socially) and corporates (economically). These authors further interpret that the impact is realised through improved activity in the region post road construction, and as the activities increase continuously, economic efficiency is improved.

The construction of a new road or the expansion of an existing road triggers a positive multiplier effect on economic activity (Venables, Laird, & Overman, 2014). The multiplier effect is initiated by an individual who gets employed in the construction project and has surplus income to meet their needs, thus triggering demand for goods and services provided by the businesses (Moyaki, 2015; Venables et al., 2014).

The multiplier continues post construction phase as businesses develop in the improved area and additional jobs are created triggering long-term growth in the
economy (Rephann, 1993; Venables et al., 2014). The authors express that economic activity or regional growth is as a direct result of road infrastructure improvement, implying that roads are a primary requirement of regional development.

**Economic development and road infrastructure investment**

In developed regions, economic growth triggers the demand for road infrastructure investment. The industry structure and transportation requirements in the 1960s influenced investment in road infrastructure (Al-Alwan, 1991). This was as a result of industries developing at a faster rate than infrastructure development, which resulted in economic growth dictating transportation requirements.

Part of the cause of economies to develop faster than the implementation of road infrastructure is triggered by a change in industry requirements or development of new sectors (Perkins, Fedderke, & Luiz, 2005). Research findings by Perkins et al. (2005) found that the GDP growth was positive when the preference of public infrastructure was converted from rail to roads in South Africa. The authors furthermore state that the existing economic growth provided the funding required for road infrastructure resources.

In the opinion of Joynt (2004), investment decision complexity and the high cost associated with road infrastructure, especially in developing economies such as South Africa delays adequate implementation of roads. The author states that this results in the investment requirement for road infrastructure approached from a demand side. This is a safe approach when funding for road infrastructure is not readily available, and the demand for the infrastructure is low enough to delay implementation.

**Impact of road infrastructure on economic growth**

The interpretation by N. Yu, Mi, and Walker (2013) suggest that improvement in road infrastructure is key to providing economic and social opportunities by providing better access to the market, employment opportunities and increase in
investment to a region. The authors hold the view that the common links between economic growth and road infrastructure include networks, performance and market size.

**Network** improvement enables connectivity between different economic regions to facilitate the exchange of goods between business (N. Yu et al., 2013). A well-developed road infrastructure network reduces the distance between regions, locally and nationally (Moeketsi, 2017). Good quality roads and network connectivity are fundamental catalysts for economic development (Seloane, 2016). Quality roads contribute to the creation of employment opportunities in the long-term (Kumo, 2012; Wing, Anderson, & Lakshmanan, 2008). This is essential for expanding the region and connecting to surrounding well developed regions.

**Performance:** The economic benefits from road infrastructure development projects tend to flow directly to the end-users (businesses) who gain value in terms efficient production input and reduced production costs (Melia, 2018; N. Yu et al., 2013). These benefits are as a result of increased productivity levels and profits which contribute to a positive GDP growth of a region (Laird & Venables, 2017; Melia, 2018).

**Market size:** The market size of a region improves when access to more customers and adjacent regions is increased. This improves the economies of scale in production, distribution and consumption, and ultimately promotes competition which is beneficial for consumers (Palei, 2015; N. Yu et al., 2013). Increase in competition results in an increase in the market size and economic activity.

Alternatively, Kandiero (2009) cites that the African Development Bank states that the impact of road infrastructure on economic growth is in two factors; firstly through capital accumulation (increase in investment and business activity) and secondly through improved productivity levels.
Capital accumulation

The public sector in most countries around the world is the primary provider of funding for road infrastructure investment. Roads are primarily developed to service communities and business with no exclusivity conditions and are thus viewed as a service delivery responsibility of a government (Nijkamp & Rienstra, 1995). This results in a low inclination from the private sector to invest in the infrastructure as they are assumed to be less commercially viable (Nijkamp & Rienstra, 1995).

Developing of road infrastructure is a capital-intensive investment (Brown, 2005), with low direct returns in investment. However, post the construction phase, the economic output of a region which is a result of the investment in road infrastructure is linked to direct increase private sector investment and business activity in a region (Johannes Fedderke & Garlick, 2008; Melia, 2018). Factors that stimulate economic growth include investment and business activity.

Private sector investment: A case study conducted in Portugal by Pereira and Andraz (2010) found that an investment in road infrastructure by the government has the potential to result in positive economic growth. The study also revealed that three of the five regions studied indicated a positive impact on growth where an investment of one million Euros towards road infrastructure resulted in an increase in private investment by 1.6 million Euros post project construction (Pereira & Andraz, 2010).

A research conducted by Ivanova and Masarova (2013), found that a well-maintained road infrastructure influenced investment decision. The author explains that well-connected regions are viewed favourably and attract an influx of Foreign Direct Investment (FDI) and local investment. Investors are concerned with the ease of moving goods and access to different markets as this affects the rate of return on their investment and future growth (Ivanova & Masarova, 2013).

The ease of moving goods within inland regions (or markets) and ability to connect to export routes dictate the preference in business location (Coşar &
Demir, 2016), influencing the concentration of investment and economic growth of a region. Overall, road infrastructure plays a significant role in attracting investment flow to a region, which in turn impacts the sustainable economic growth rate of a region.

**Business activity:** Research conducted by Pieda consulting (2004) found that businesses are likely to be affected in a positive way by road improvements. Direct user benefit to business includes value gained from time saved and other savings related to reduced operation cost (Melia, 2018). The savings realised are presumed will have an effect on GDP growth as the business will increase throughput (and productivity), and increase profits which will spill over to the economic growth of a region (Melia, 2018).

Other studies like the one conducted by Coşar and Demir (2016), state that employment and revenue in time-sensitive sectors increased post road expansion. The increase is associated with improved regional specialisation and comparative advantage gained as a result of improved operational efficiencies (Coşar & Demir, 2016). Companies located close to the improved roads gained the advantage in faster delivery time and could thus produce fresh good better than competitors in less mobile regions.

Improved business productivity presents benefits for consumers. The benefits are recorded as indirect benefits realised by an increase in competition in the market, which drives the price of goods down (Akpan, 2014). Similar results were recorded in a study conducted by Pieda Consulting (2004) which found that construction of the A55 North Wales Expressway reduced transport costs by 10%. The author further suggests that production costs for businesses close to the expressway were reduced through a reduction in delivery cost or by a new supplier entering the local market which in turn forced local suppliers to reduce prices. The cost reduction gained is vital for increased market activity and improved economic growth.
Productivity

A number of researchers agree that road infrastructure investment positively impacts an economy’s productivity levels (Holtz-Eakin & Schwartz, 1995; Teruel & Kuroda, 2005). The quality of road infrastructure affects operational efficiencies either making labour and capital input more or less productive (Stephan, 1997). Poor quality road infrastructure gives rise to production costs (i.e. increase in logistics cost) or makes production impossible to achieve if producers must develop the necessary road infrastructure using their own funds (Popova 2013). Good quality roads positively impact the total factor of productivity of a region by causing agglomeration in a city (Xie, Fang, & Liu, 2016). This improves access to suppliers and customers for business as all parties are easily accessible to a business (Xie et al., 2016).

According to Fedderke & Bogetic (2006), road infrastructure facilitates an increase in private investments, production output, and new trade markets. The study further confirmed that road infrastructure positively impacted labour productivity, in that a 2.8% increase in productivity was associated with a 1% increase in the road network. Stephan (1997), suggests that good quality roads improve an employee’s access to work and timekeeping factors critical to the productivity levels of an employee. These factors are important as employers spend capital to pay for services rendered by employees and disruptions in the functioning of the employees affects a firm’s overall productivity level expectations (Stephan, 1997).

In addition, an increase in employee productivity level positively impact salaries of workers, who then use a significant portion of their salaries on transportation expenses which account an average between 10% and 15% of household spending (Boopen, 2006; Tsikai, 2016).

For logistics businesses, time-saving is related to the reduction in time spent on a congested road, which erodes cost benefits such as reduced operational cost (Melia, 2018). Time spent delivering goods is especially important for time-sensitive industries that produce goods just-in-time as they rely on sufficient and
well-maintained road infrastructure to meet customer requirements (Conrad & Heng, 2002).

Additionally, highly congested roads negatively affect delivery targets triggering a need for a company to spend more money to transport goods if a delivery is missed due to time spent on the road to meet customer satisfaction (Conrad & Heng, 2002). Road expansion thus reduces the travelling time and positively affects customer satisfaction (Bhatta & Drennan, 2003).

Overall, improvement of road infrastructure positively impacted the productivity levels of businesses and employees to reduce operation cost and improve operation efficiencies (Bhatta & Drennan, 2003). The improved productivity levels cause favourable conditions for GDP growth since the exchange of goods and services is improved by better production inputs post road development (Popova 2013). Though researchers generally associate improvement of road infrastructure with a positive impact on the economic growth, a negative impact can be realised.

**Impact of improved road infrastructure**

The development of a road infrastructure can trigger potential negative impacts such as increased traffic volume and environmental issues. A study conducted by Van der Loop et al. (2015) found that new roads or the addition of a new lane resulted in induced demand. Induced demand is described as an increase in road usage (or traffic) after a road is expanded which would not have occurred if no improvement to the road infrastructure was applied (Goodwin & Noland, 2003). Cervero and Hansen (2002), further describe induced demand as the addition of vehicle miles travelled on the new road, which could be through new vehicles using the road or the improved road becoming the prefeed route by existing users.

Induced demand can also be related to a change in human behaviour. An example of a change in behaviour is when passengers becoming drivers which is noticed in low vehicle occupancy or change is travelling route (Van der Loop et
al., 2015). The change in behaviour limits the benefit of reduced congestion on the road to only a short period then traffic increases, eliminating the gains of improved road infrastructure (Naess, 2006). Though negative impacts are a reality, the benefits of road infrastructure to economic development still outweigh the negatives, hence researchers believe that road infrastructure is crucial for economic growth.

**Road Infrastructure quality in the City of Johannesburg**

A number of government departments play a significant role in facilitating transportation in the City of Johannesburg. The Treasury report (2017), states that the national government is responsible for the freeways (N routes), the Gauteng Department of Roads and Transportation is responsible for provincial roads, and the Johannesburg Roads Agency (JRA) which was established in 200 as a private company is responsible for the construction and maintenance of municipal and some of the provincial roads.

The strategic framework report (2017) states that the mandate of the JRA included construction and maintenance of road infrastructure and related infrastructures such as traffic regulatory infrastructure. The extent of road infrastructure in the City of Johannesburg as highlighted in the Strategic Integrated Transport Plan (2013), is shown in Table 1.

**Table 1: Road infrastructure in the City of Johannesburg**

<table>
<thead>
<tr>
<th>Infrastructure Component</th>
<th>Region</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>Midrand, Diepsloot, Kya Sand, Ivory Park</td>
<td>Randburg, Rosebank, Emmarentia, Greenside, Melville, Northcliff, Rosebank, Parktown</td>
</tr>
<tr>
<td>Paved roads (km)</td>
<td>678</td>
<td>1408</td>
</tr>
<tr>
<td>- CoJ-owned</td>
<td>1378</td>
<td>1408</td>
</tr>
<tr>
<td>Gravel roads (km)</td>
<td>376</td>
<td>1</td>
</tr>
</tbody>
</table>

**Source:** (City of Johannesburg, 2013)
The report highlights that the average quality of roads in the city is of fairly good quality. However, a total of 996km of roads still need to be developed as they are classified as gravel roads. The report furthermore indicates that only eight percent of roads were of very good quality and 16% poor quality in 2013.

The majority of the roads were found to be of good quality. The report states that the city aims to reduce the number of poor roads to only five percent by 2023. The city’s road infrastructure quality is captured in Table 2.

Table 2: Road infrastructure quality in the City of Johannesburg

<table>
<thead>
<tr>
<th>Road Function</th>
<th>2013</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Good</td>
<td>8%</td>
<td>30%</td>
</tr>
<tr>
<td>Good</td>
<td>38%</td>
<td>40%</td>
</tr>
<tr>
<td>Fair</td>
<td>24%</td>
<td>20%</td>
</tr>
<tr>
<td>Poor</td>
<td>14%</td>
<td>5%</td>
</tr>
<tr>
<td>Very Poor</td>
<td>16%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Source: (City of Johannesburg, 2013)

Conclusion

The literature detailing the relationship between road infrastructure and economic growth was discussed. Researchers describe that the relationship between roads and economic growth can be presented in two opposing directions, depending on the development stage of the region.

The positive impact suggests that the development of roads lead to economic growth. On the other hand, economic growth triggers the demand for road infrastructure.

In addition, the two factors that lead to economic growth post road improvement are highlighted. Firstly; capital accumulation is noted as a result of increased
economic activity post road development. Productivity, which is a second factor presented how roads affect business inputs, including labour to improve business activity.

In concluding the section, an overview of the road infrastructure in the City of Johannesburg is briefly detailed. The next section will detail the research methodology adopted to investigate the impact road infrastructure has on the economic growth of the City of Johannesburg.
RESEARCH METHODOLOGY

Introduction

This section discusses the selected research methodology to evaluate the impact road infrastructure has on businesses’ contribution to economic growth. The section outline will include the research design, where the population and sample, and data collection and research instruments are discussed. In addition, how data will be analysed and interpreted, the reliability and validity of the data, and ethical considerations are outlined.

The study adopted a qualitative methodology. Qualitative data is based on meanings expressed through words, the collection of results that require classification into categories as it is non-standard, and the analysis is conducted using conceptualisation of main themes from interviews, (Saunders, Lewis, and Thornhill (2007)).

Primary data was collected by means of interviews with businesses affected by road infrastructure and government agencies responsible for road infrastructure investment. The advantage of a qualitative approach is that it is exploratory in nature and focuses on gaining insights and understanding of underlying reasons and motivations (Thorne, 2000). This approach is appropriate for this study as it aims to assess the impact of road infrastructure development from the perspective of the beneficiaries.

Research design

The methodological approach for this research followed the interview process using questionnaires. A standardised open-ended interview approach was utilised to provide structure, and participants were asked identical questions (Turner III, 2010). The interview process as a data collection method is appropriate for this study as it reveals the actual impact (lived experience) road infrastructure has on a business’ (participant) to contribute to the economic growth of the City of Johannesburg. In addition, the planning and challenged experienced by government agencies were analysed.
The procedure followed in this study follows the sequence described by J. Creswell, Goodchild, and Turner (1996), and comprises of constructing effective research questions, preparing for the interview, and conducting the interviews. The procedure for this study is expanded upon the paragraphs that follow.

Formulating research questions is one of the vital components of the research design (Turner III, 2010) because they act as a guide to answer the research question. In this study, questions are constructed to be open-ended so that the participant can answer based on their experience.

Turner III (2010), further suggests that the wording in the questions must be structured to be neutral, to avoid influencing answers. Two sets of questionnaires were developed for the study; Part A consisted of five questions directed to businesses operating in the City of Johannesburg. Part B had five questions directed at government agencies responsible for the construction and maintenance of roads. The questionnaires are attached as Appendix A.

**Preparing for interviews:** participants were forwarded an email and followed-up with telephonic calls to inquire willingness to participate in the study and to confirm availability. The interview appointment was set for the time convenient to the participant. The questionnaire was forwarded to participants to prepare for the meeting.

**Conducting interviews:** the interviews were conducted at the participant's office. The interview was restricted to the prepared questions; however, participants were allowed the opportunity to express additional information relevant to the study.

Additional information that forms part of the research design includes the population and sample size, the research instrument and data collection method. These concepts are discussed in the topics that follow.
Population and sample

Qualitative analyses characteristically require a smaller sample size. However, the sample sizes should be large enough to obtain feedback for most or all perceptions. Morse and Field (1995) suggest approximately 30 – 50 participants, while J. Creswell et al. (1996) suggests only 20 – 30. In this study 20 interviews were conducted; 17 of the participants are businesses operating in the City of Johannesburg and are directly affected by the development of road infrastructure. The remaining three participants are government agencies directly involved in the planning and funding of road infrastructure projects in the City of Johannesburg. Table 3 below illustrates the profile of the participants.

Table 3: Profile of respondents

<table>
<thead>
<tr>
<th>Description of respondent type</th>
<th>Number sampled</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Retail industry</td>
<td>3</td>
</tr>
<tr>
<td>b) Service industry</td>
<td>3</td>
</tr>
<tr>
<td>c) Logistic business</td>
<td>7</td>
</tr>
<tr>
<td>d) Property developers</td>
<td>4</td>
</tr>
<tr>
<td>e) Government Agencies</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>• Johannesburg Road Agency</td>
<td></td>
</tr>
<tr>
<td>• Gauteng Department of Roads and Transportation</td>
<td></td>
</tr>
<tr>
<td>• Johannesburg Development Agency</td>
<td></td>
</tr>
</tbody>
</table>

The names of the businesses interviewed are not reflected, some of the respondents requested that this information is omitted in the report as they were not granted the official permission from head office to participate in the study. To ensure uniformity, the names of all businesses that participated in this study is not reflected. However, participants from the government sector did not oppose having the name of the agency revealed, hence the names of the organisations
are reflected. The participant's profiles are discussed in brief in the paragraphs that follow.

**Retail and Service Businesses:** six businesses were interviewed that fall within this category. Three business operate in retail, the other three operate in the service industry. The retail businesses were chosen because a significant operation portion of the business relies on the road for logistic and movement of customers. The service business comprised of a filling station (which naturally is reliant of roads for survival), and businesses that offer lifestyle services (which are reliant on road quality and accessibility).

**Logistic Businesses:** seven business were interviewed in this industry. Two of the business mainly focus on deliveries for online businesses or parcel movement. Three business move large cargo and the remaining two business operate in fast-moving consumer goods with logistics being a significant part of the operation of the business.

**Property Developers:** four companies were interviewed. The first company is a large property developer that focuses on developing residential properties and industrial areas. The remaining three consists of property developers that are responsible for developing and managing shopping malls.

**Government Agencies** are responsible for road infrastructure planning and implementation in the City of Johannesburg. Three departments were interviewed, the Johannesburg Roads Agency, the Gauteng Department of Roads and Transportation and the Johannesburg Development Agency.

**Data collection and research instruments**

Data was collected as primary data. Primary data is defined as original data collected for specific research using techniques that best fit the research problem (Hox & Boeije, 2005). The source of this primary data is face to face interviews and or questionnaires distributed to participants in the study sample (Hox & Boeije, 2005). In this project face to face, interviews were conducted as the main source of data collection.
The aim of the interviews was to gain a thorough and descriptive insight into the actual impact road infrastructure has on the economy based on the experience of the beneficiaries and users of road infrastructure in the City of Johannesburg. The researcher personally conducted the interviews to assure participants of the security and intent of the collected data.

The structure and direction of the interviews were guided by the questions to ensure participants are asked the same questions. On average, the interview lasted for 30 minutes. Prior permission to record the interview was requested. Some of the interviewed respondents declined to be recorded. In this regard, their responses were recorded in a notebook. All interviews were conducted at the participant’s premises.

**Data analysis and interpretation**

Data analysis involves analysing and making sense of the data (Turner III, 2010). In this report, data is grouped into themes which contain consistent phrases, expressions and ideas common with responses of participants (J. W. Creswell, Hanson, Clark Plano, & Morales, 2007; Turner III, 2010).

The content analysis follows the inductive analysis (or analytical coding) approach where data is grouped into categories and themes (Seidman, 2013). The themes and issues addressed in the responses are grouped using Atlas.ti software where different colours are used to indicate different themes and responses are grouped manually. Immediately after each interview, the responses were analysed, and prominent themes identified. The constant comparative method was employed where sections from the interviews and observations that are similar and responsive to the study were identified (Seidman, 2013).

Key findings are reported under each main theme or category stating appropriate verbatim quotes to illustrate the findings. Themes are presented in a narrative form as well as a matrix form. The matrix form summarises themes and findings in a tabular format. Presentation of data is in numbers (e.g. participant agreeing
with negative growth is 6) instead of a percentage. Percentages are not always useful with small data samples (Seidman, 2013). Schematic drawings and conceptual frameworks are also used to facilitate reporting of the findings.

Presentation and interpretation of data evaluate two factors (economic impact and productivity) that influence economic growth pre and post road infrastructure development. The economic impact section will present the impact the road infrastructure has on a business’ ability to financially participate in economic activities. The productivity section will analyse how roads assist businesses to improve operational efficiencies

**Data reliability and validity**

Burnard (1991, p. 464), states that the “aim of ethnomethodological and phenomenological research is to offer a glimpse of another person’s perceptual world. The researcher should then attempt to offset his/her own bias and subjectivity that must creep through any attempt at making sense of interview data”.

To ensure the validity of the data two methods for checking should be applied; the first method is to ask an independent individual to review the responses and create themes (Burnard, 1991). The aim is to assess for similarity between the themes identified by the researcher and independent reviewer. The second method entails sending three of the responses back to the participants to confirm if the responses have been captured correctly (Burnard, 1991).

In this study the proposed check method was followed, three transcripts were reviewed by an independent individual and three of the participants (one from FMC industry, second from service business and third from Johannesburg Development Agency) reviewed the transcript to confirm accurate data capturing.

**Ethical considerations**

The important ethical concerns that were communicated during the interview process consist of anonymity, confidentiality and informed consent.
Confidentiality and anonymity

Intrusion into the autonomy of the study participants was identified as a potential issue. As a precautionary measure, no identifying information about participants is revealed. The researcher clarified prior to the meeting, in writing who will have access to the initial data and how the data will be used.

No personal information will be revealed. The researcher elaborated the expected outcome of the study and all revealing information such as the organisation’s name will not be published unless authorisation is granted.

Informed consent is another ethical consideration. The terms of the agreement of the study were negotiated prior to commencing the interview, clarifying the objective and significance of the research.

Conclusion

This section outlined the research process in detail. The research methodology, research design including the population sample, data collection and research instrument were outlined. The section further outlined the process followed for data analysis and interpretation. The section was concluded by discussing the reliability of data and ethical considerations observed during data collection.

The methodology described in this section provided a baseline for the collection of data. The next section will focus on data analysis and interpretation.
DATA ANALYSIS AND INTERPRETATION

Introduction

This section covers the interpretation and analysis of data collected with the purpose of answering the research question and assessing if the objectives of the research study were achieved.

Data analysis and presentation of findings will focus on factors that affect the economic growth by evaluating the economic impact and productivity as experienced by businesses and government agencies operating in the City of Johannesburg. Data is presented graphically and in tables to reflect themes which are consistent phrases, expressions and ideas common with responses of participants (J. W. Creswell et al., 2007; Turner III, 2010). Responses are grouped into retail and service, logistics, and property development businesses.

Perspective from business operating in the City of Johannesburg

The views of businesses on how road infrastructure affects their operation and contribution to the economic growth is discussed in this section. Data is presented to reflect two perspectives. The first section will detail the economic impact, which assesses how roads affect a business’ ability to financially participate in economic activities. The second section will present the impact of roads on the operational efficiencies of a business.

Economic impact

The impact of road infrastructure on a business ability was investigated by first asking if the businesses understand how roads affect their ability to contribute to economic growth. Secondly, how the ongoing road improvements are affecting the businesses. Finally, how these improvements and their affect future business opportunities.
Road infrastructure and the ability to contribute to economic growth

Business understanding of how roads affect them to financially contribute to the economy of the City of Johannesburg is presented below.

Retail and service businesses

Figure 1 below reflect the views of respondents in the retail and service sector with regards to their understanding of how roads affect their businesses.

![Retail and Service businesses linkage to road infrastructure and economic growth](image)

**Figure 1: Retail and Service business linkage**

Respondents link connectivity to customers as the impact roads have on their business. It was mentioned four times from the six respondents. Other effects cited include convenient transport infrastructure and impact on customer volumes. Business’ reliant of road emerged two times in the responses.

The responses from the respondents indicated that road infrastructure plays a key role in connecting business to consumers. This suggests that the retail and service businesses participation in the economy of the City of Johannesburg is affected by ease of access to the business.

Logistics business

Figure 2 captures the views by businesses operating in the logistics sector.
The highest-ranking response expressed by the interviewees is that road infrastructure is key to the business operation. The second highest view expressed is that the logistics sector is essential for the GDP growth of the city. The other important factors cited by respondents as contributors to business improvement of movement of good, connectivity to customers, and job creation.

This means that the road infrastructure is critical for the logistics sector in enabling contribution to the GDP of the City of Johannesburg. Overall, the responses received from the logistics businesses suggest that the road infrastructure has a positive impact on the economic growth of the City of Johannesburg.

Property development businesses

Figure 3 below illustrates the opinions of businesses operating in the property sector.
Three responses received from participants shows that roads affect customer preference. Other responses cited as factors that have a link to road infrastructure and economic growth are the connectivity function of the road, movement of good and that roads are key to business operation.

Road infrastructure largely affects customer preference such as where they choose to reside or shop in relation to access to the economic hubs in the city. The responses demonstrate that the attractiveness of new development is linked accessibility around the areas. This affects sale volumes of properties, new property development, and the attractiveness for future investment which has an impact on the economic growth of the city.

**Impact of ongoing road infrastructure improvements**

The impact of road infrastructure development on the business’ ability to contribute to economic growth varies during construction and post-construction. Responses from participants during the different phases are discussed below.

Retail and service businesses
During construction: Figure 4 below reflects the experience businesses in the retail and service sector during the construction period.

**Figure 4:** Impact of road infrastructure during construction phase on the Retail and Service businesses

The three businesses interviewed indicate they experienced a negative impact during the construction of the road infrastructure. The responses from other business reveals that two businesses experienced a positive impact, and one business cited no impact (or change) in revenues collected during this period.

This data indicates that the effect of road construction varies between businesses, implying that economic participation by business in the retail and service sector will vary during the construction phase.

The businesses that experienced a negative impact indicated that they lost between 15% and 20% in revenue during the construction period. One of the two businesses that experienced a positive impact realised an increase of about 33% in revenues.

Post-construction: The impact post construction is important as it provides an indication of the effectiveness of road infrastructure in triggering economic growth. The impact experienced by businesses post-construction phase is reflected in Figure 5 below.
Figure 5: Impact of road infrastructure post construction on the retail and service businesses

The impact is reversed post-construction phase. The three businesses that reported a negative impact now experienced a positive impact, while the other two business that gained during the construction phase reported a negative impact. Business who reported no impact was not affected by the improved road infrastructure.

Overall, businesses activities improved post road construction as connectivity to the business is enhanced. The negative impact cited is a decrease in revenues to pre-construction revenues. The increase noted is a temporary effect. This implies that the improvement of road infrastructure enhances business activity which is a positive contributing factor to the economic growth of the City of Johannesburg.

Logistics business

The experience of business in the logistic sector pre and post construction phase is detailed in figure 6 and figure 7 respectively.

Figure 6 presents the impact of the road construction phase to businesses in the logistics sector.
All businesses cited they experienced a negative impact during the construction phase of a road.

Road construction increases delays in traffic, which affects delivery time and increases fuel usage. The results indicate that contribution to the economy of Johannesburg by the logistics sector is reduced as business efficiencies are impacted by the improvement of roads.

Figure 7 below indicates the impact the businesses experienced post the construction period.
The seven respondents describe the impact as positive post road construction. The results suggest that road infrastructure has an impact on the operational cost of a business. Improved roads reduce cost, therefore improving economic activity in the City of Johannesburg.

Property businesses

Residential and industrial developer: The business has different experience compared to the other property developers interviewed as it requires road infrastructure to be developed prior to developing the area.

- A positive impact is realised when the business can sell the newly developed properties. When the road infrastructure around the development is well connected and access to the market is convenient property sales increase. This has an impact on developing the area to an economic region or expanding the nearest economic hub.
- A negative impact mentioned by the developer is that the City of Johannesburg has a backlog in providing new roads for new development areas over the past 10 to 20 years. The developer is expected to construct the road infrastructure required from its private funding. The funds are however recovered through non-payment of bulk services required pre-construction of the project. In contrast, small developers who also invest in the same area are not expected to contribute towards the construction of the road infrastructure. Competitors reap from the investment made by the larger developer, which reduces the return on investment gained.

The data indicate that the private sector must generate the necessary funds to construct the road infrastructure required, implying that economic activity needs to occur first to generate the funding required.

Mall property developer: The impact experienced by developers in already operating malls is indicated in figure 8 and 9 below.
Two business were not affected by the development of the road infrastructure, and one business experienced a negative impact.

Businesses that experienced a positive impact are positioned at the edge of the road construction area. The businesses that experienced no impact are strategically positioned in areas where no alternatives are available to the consumers. This data implies that economic activity in malls is not affected by roads but by the availability of alternatives during the construction phase.

Figure 8: Impact of roads infrastructure during construction period on property developers

Figure 9 below indicates the impact experienced by businesses operating in a mall post the construction phase.

Two business cite a positive impact post road construction. Only one business did not record changes in revenues post the construction phase.
The road upgrades extended connectivity to different areas. The economic hub is expanded by the improved connectivity, suggesting that contribution to the economy of the City of Johannesburg is improved.

**Business expansion plans**

Retail and service businesses

Figure 10 below shows responses of future business expansion plans post road infrastructure development for businesses in the retail sector.

![Figure 10: Investment Expansion Plans for Retail and Service Businesses](image)

None of the businesses interviewed indicated the likelihood of expanding the business current size and offerings. One retailer noted that they are planning on reducing the business floor size due increase in competition in the area. The common reason cited for withholding investment is the poor performance of the economy of South Africa. This implies that businesses are not separating the performance of the GDP of the City of Johannesburg from that of the county during decision making.

Logistics business

Figure 11 below reflects responses of future investment in the City of Johannesburg for businesses operating in the logistics sector.
All seven respondents are not planning on increasing investment in the City of Johannesburg. The businesses cited the stagnant economic growth of South Africa as a prohibitor to increasing investment. In addition, the high petrol costs in South Africa are eroding any gains made in terms of improved productivity post the construction period. This will yield a negative impact on the economy of the City of Johannesburg since the logistics sector is one of the major contributors to the economy.

Property businesses

Residential and industrial developer: The Company is reviewing three or four viable projects currently where a new development can be established. This is a positive indication for the economy of Johannesburg; these developers largely focus on expanding economic hubs.

Mall property developers: future investment by mall property developers is indicated in figure 12 below.

**Figure 11: Investment expansion plans for logistics businesses**

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Property businesses

Residential and industrial developer: The Company is reviewing three or four viable projects currently where a new development can be established. This is a positive indication for the economy of Johannesburg; these developers largely focus on expanding economic hubs.

Mall property developers: future investment by mall property developers is indicated in figure 12 below.
Figure 12: Investment Expansion Plans for Property Investment Businesses

The majority of the business interviewed are not planning to increase investment to the business. Three out of four business are withholding future investment due to the downturn in the South African economy. Only one business is open to pursuing a new development if the area yields positive returns.

Overall, data from the property developers highlight that the sector is not inclined to increase investment in the City of Johannesburg. The potential future growth of the economy of the city will be negatively impacted.

Productivity

Productivity affects economic growth by lowering total productivity factors such as lowering production input cost and improving the human capital living standard to improve their productivity levels (Johannes Fedderke & Bogetic, 2006). The impact on operational productivity and employee productivity will be analysed in this section.

Impact on operation productivity

Retail and service businesses

No change in productivity levels was noticed or recorded pre and post construction of the road infrastructure by all businesses. This implies that road infrastructure does not have a direct or indirect impact on the productivity of the retail and service business.
Logistics business

The themes that emerged during the data collection process are discussed in Table 4 below. All respondents cited that road infrastructure impact on wear and tear cost, fuel cost, operations productivity and customer satisfaction.

Table 4: Impact on Productivity – Logistics Business

<table>
<thead>
<tr>
<th>Impact</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear and tear cost</td>
<td>• Bad road increases the rate of wear and tears of a truck and results in increased maintenance cost. Improvement of road condition reduced the wear and tearing of truck, ultimately reducing the maintenance cost.</td>
</tr>
<tr>
<td>Fuel cost</td>
<td>• Traffic delays or usage of longer routes increase the amount of fuel wasted. Improvement of roads reduced the travelling distance and the addition of lanes improves traffic flow, resulting in a reduced fuel cost.</td>
</tr>
</tbody>
</table>
| Productivity          | • Poor roads or roads under construction influence delivery duration by making it long. Longer delivery duration results in the less productive hours worked and reduce the productivity capacity of trucks.  
                        | • Late deliveries result in overtime cost paid to drivers if they are required to meet the daily target. This increases production cost for the business. |
| Customer satisfaction | • Customer satisfaction is dependent on timeous delivery. Late deliveries reduce customer satisfaction levels impacting future business interaction. |

Roads play a pivotal role in reducing the operation cost for a business and longevity in terms of maintaining a good customer relation and reaching set targets. In addition, good quality roads improve the planning and strategy development for a business in the logistics sector. The results detail that business activity is affected by road infrastructure, meaning that performance of the economy of the City of Johannesburg is linked to the quality of road infrastructure.
Property businesses

Residential and industrial developer: Part of the business strategy and government requirement is to conduct traffic impact assessment post construction of a project. The business views most of the development constructed by the business as productive areas. This is assessed based on traffic movement in the area post construction.

Mall property developer: the business operating within the malls experience the impact of road quality or construction. -Table 5 below indicates the impact noted by mall management.

Table 5: Level of complaints experienced due to delays

<table>
<thead>
<tr>
<th>Phase</th>
<th>High number of complaints</th>
<th>No complaints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Phase</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Post construction Phase</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Two of the three malls noted a rise in the number of complaints during the construction phase of a road. Only one mall recorded no complaints. Post the construction period businesses within the mall cited an increase in sales.

These results revealed that the operational efficiencies of a business are improved post road construction. In addition, consumer satisfaction and decision-making influences economic activity around the economic hubs of the City of Johannesburg.

Impact on Employee Productivity

Retail and service businesses

The themes that emerged from respondents in the retail sector are illustrated in table 6 below.
Table 6: Labour productivity themes from the retail and service industry

<table>
<thead>
<tr>
<th>Theme</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timekeeping</td>
<td>• Timekeeping during construction was noted as an issue, however, the situation improved post construction.</td>
</tr>
<tr>
<td>Transportation cost</td>
<td>• Transportation cost of employees was not affected by road infrastructure development.</td>
</tr>
</tbody>
</table>

The results indicate that the investment of road infrastructure has no significant impact on employee productivity. An employee’s ability to contribute to the economy of Johannesburg is not linked to road infrastructure quality or connectivity.

Logistics business Table 7 details the themes from responses of business operating in the logistics sector.

Table 7: Labour Productivity Themes from Logistic Companies

<table>
<thead>
<tr>
<th>Type of Impact</th>
<th>Number of Companies</th>
<th>Common Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>4</td>
<td>Post construction phase the mood of employees improved as they did not have to worry about reaching daily delivery targets on time or working late hours.</td>
</tr>
<tr>
<td>No Impact</td>
<td>3</td>
<td>No change in the worker's productivity levels.</td>
</tr>
</tbody>
</table>

The impact on employee productivity affects the mood and ability to meet targets. When targets are reached, economic activity in the City of Johannesburg is improved.
Property businesses Table 8 illustrates themes from business operating in the property sector.

Table 8: Labour productivity common responses for property companies

<table>
<thead>
<tr>
<th>Business type</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential and industrial</td>
<td>• Traffic impact assessment is a requirement for approval of a new project, therefore, the travelling time for residence is factored into the outcomes of the project. All projects that have acceptable traffic impact are approved by authorities, thus residence that will reside in the newly developed area will have higher productivity levels.</td>
</tr>
<tr>
<td>developer</td>
<td></td>
</tr>
<tr>
<td>Mall property developer</td>
<td>• None of the companies measures or assess productivity impact at this level</td>
</tr>
</tbody>
</table>

It is difficult to measure the productivity level of employees in this sector, hence mall management indicated no impact. For residential areas, the travelling time is an indication of the potential impact on the productivity of residence in terms of travelling time and cost.

The perspective from businesses on how roads affect their ability to do business and participate in the economy of the City of Johannesburg had been presented. The next section will present the perspective of government agencies.

**Perspective from government agencies**

This section details data gathered from government agencies responsible for road infrastructure planning and construction in the City of Johannesburg. This section will present the planning and monitoring, the relationship between road infrastructure and economic growth and requirements, as well as policies and competitiveness of the city as influenced by road infrastructure, are discussed.

**Infrastructure planning and monitoring of economic growth**

Road infrastructure planning is key for the economic growth of a region. Responses as to how these factors are applied in reflected in table 9 below.
Table 9: Economic Benefits of Road Infrastructure

<table>
<thead>
<tr>
<th>Sector</th>
<th>Organisation</th>
<th>Infrastructure planning</th>
<th>Monitoring</th>
</tr>
</thead>
</table>
| Government Agency       | Gauteng Department of Roads and Transportation | • Road infrastructure planning leads to economic growth  
                          |                                       | • In the City of Johannesburg road infrastructure development follows economic growth | Poor       |
|                         | Johannesburg Road Agency             | • Planning includes supporting existing economic hubs  
                          |                                       | • Road infrastructure is the backbone of economic development, however, in the City of Johannesburg economic development occurs first and road infrastructure follows | Poor       |
|                         | Johannesburg Development Agency      | • Road infrastructure planning results in the development of a region to an economic hub | Poor       |

All three respondents indicated that road infrastructure planning leads to the development of a region. However, two of the respondents acknowledged that in the City of Johannesburg, economic development occurs first, and road infrastructure follows.

This implies that government agencies responsible for construction and maintenance of roads understand that planning for road infrastructure is important for economic growth, however, the economic growth rate in the City of Johannesburg is faster than they can keep up.

The respondents also highlighted that monitoring of the economic spinoff gained from road infrastructure development is poor. This is expected as road infrastructure requirement is triggered by economic growth demand in the city.
Relationship between road infrastructure and economic growth

The relationship between road infrastructure and economic growth is important in demonstrating if investment in road infrastructure triggers economic growth or economic growth regarding demand for roads. Table 10 below indicates responses received.

Table 10: Relationship between road infrastructure and economic growth

<table>
<thead>
<tr>
<th>The relationship between economic growth and roads</th>
<th>Respondents response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road infrastructure trigger economic growth</td>
<td>0</td>
</tr>
<tr>
<td>Economic growth triggers road infrastructure</td>
<td>3</td>
</tr>
</tbody>
</table>

All the respondents reveal that the economic growth triggers the requirement for road infrastructure in the City of Johannesburg. The data suggest that economic growth occurs first in the city, which then triggers a demand for road infrastructure.

Planning requirements for road infrastructure and the need for economic growth

Table 11 below indicates road infrastructure planning in the City of Johannesburg to contribute to the economic growth.

Table 11: Road infrastructure planning in the City of Johannesburg

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Planning Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauteng Department of Roads and Transportation</td>
<td>• ITP*- five-year development provides economic growth requirement from road infrastructure</td>
</tr>
<tr>
<td>Johannesburg Road Agency</td>
<td>• Future mixed-use areas have been identified and road infrastructure is planned to be implemented.</td>
</tr>
</tbody>
</table>
Department of economic growth gives directive on regions that need road infrastructure to increase economic growth

Johannesburg Development Agency

- Plans provided by the City of Johannesburg. City of Johannesburg gives directive on road requirement to aid economic growth.

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Policies that aid Economic growth</th>
</tr>
</thead>
</table>
| Gauteng Department of Roads and Transportation | - ITP - 5-year plan;  
- ITMP25* - 25 years master plan with a 5-year transport implementation plan for the Gauteng province;  
- Gauteng infrastructure act - also addresses economic development to some degree;  
- PLTF** for Gauteng - a 5-year plant which details road construction requirements. |

* ITP - Intergrade Transport Plan

Plans for the development of road infrastructure to aid economic growth provide direction for all three government agencies. The Gauteng Department of Roads and Transportation indicated that a five-year plan is available, while the JRA and JDA are provided direction from the Economic Growth Department and City of Johannesburg government. This implies that planning for road infrastructure to improve economic growth is part of the government’s objectives and that different government agencies are responsible for implantation of road infrastructure to aid economic growth of the City of Johannesburg.

**Road Infrastructure policy’s contribution to economic growth**

Policies that impact on economic growth in the City of Johannesburg are critical in the planning to provide guidance on future development of the city as one of the major economic hubs in the country. Table 12 details the plans developed from policies to grow the City of Johannesburg.

Table 12: Road infrastructure planning in the City of Johannesburg
Johannesburg Road Agency

- JRA Strategic Framework for Roads;
- ITP - 5-year plan;
- Private contribution policy - allows private property developers to develop roads on behalf of the JRA in a new area in exchange for non-payment of bulk services fee required prior to developing a new area.

Johannesburg Development Agency

- ITP - 5-year plan

*ITMP 25 - Integrated Transport Master Plan for a period of 25 years

**IPLTF - Provincial Land Transport Framework

All three agencies extensively quoted the ITP policy which is a five-year plan for the period between 2013 and 2018 as the active plant that does address economic requirement from road infrastructure for the City of Johannesburg. In addition, the Gauteng Department of Roads and Transportation mostly applies policies developed for the Gauteng province and national roads to ensure development alignment for provincial and national roads located in the City of Johannesburg with SA government objectives.

The JRA has a strategic framework policy for roads which is largely applied to new roads and existing roads. To accommodate the backlog caused by fast economic growth, the government has drafted the Private Contribution policy to allow private property developers to develop a new area without waiting for the City of Johannesburg to construct the necessary road required prior to developing an area.

The availability of policies and implementation shows the importance of planning for economic growth and understanding the impact road infrastructure has on driving growth of the economy of the City of Johannesburg.

**Road infrastructure's contribution to economic competitiveness**

Improvement of road infrastructure results in improved competitiveness of the region in terms of it being the most preferred area by investors. The impact on competitiveness on the City of Johannesburg is noted in table 13 below.
Table 13: Road infrastructure planning in the City of Johannesburg

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Improved Competitvity</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauteng Department of Roads and Transportation</td>
<td>Yes</td>
<td>Competitvity has improved to some degree. Traffic congestion still needs improvement.</td>
</tr>
<tr>
<td>Johannesburg Road Agency</td>
<td>Yes</td>
<td>The City of Johannesburg is located centrally in the Gauteng province; the improved connectivity and reduced congestion have improved the city's overall competitvity.</td>
</tr>
<tr>
<td>Johannesburg Development Agency</td>
<td>Yes</td>
<td>Majority of businesses consider the City of Johannesburg as a good location to set up business due to its well-established connectivity.</td>
</tr>
</tbody>
</table>

The competitvity of the City of Johannesburg has improved as indicated by all three government agencies. The improvement is attributed to the reduced congestion, improved connectivity and central location of the City of Johannesburg with the Gauteng province making it accessible to other neighbouring cities. This entails that the economic growth of the City of Johannesburg is most likely to grow as expected in future as the improved competitvity will attract more business to develop in the city and positively contribute to the GDP of the city.
RESEARCH FINDINGS

This section presents the findings of the analysis of the data results in relation to the literature discussed in this report. The research study aimed at analysing the impact of road infrastructure investment on the economic growth of the City of Johannesburg. The discussions that follow will contribute to government agencies responsible for road infrastructure development gaining insight that will assist them in formulating strategies which enable them to reach the targeted economic growth for the City of Johannesburg.

The relationship between road infrastructure and economic growth

Results of the data indicate that economic growth triggers the demand for road infrastructure in the City of Johannesburg. This is reflected in the responses noted for the JRA and the Gauteng Department of Roads and Transportation where the agencies acknowledge that road infrastructure development in the City of Johannesburg is triggered by economic growth.

The residential and industrial property developer furthermore stated that developers have been constructing roads on behalf of the government. This implies that economic activity and the development of economic hubs in the city is directed by the private sector hence road requirement follows industry development. This is similar to findings from the study conducted by Perkins et al. (2005), where the authors noted that in South Africa, the private sector business activity requirements triggered the need for road infrastructure development.

Joynt (2004), states that complexities in investment decisions result in roads following economic growth. The City of Johannesburg is faced with complex decisions when it comes to the implementation of road infrastructure. All government agencies indicated that roads are crucial for economic growth. However, the social development requirement of roads is overriding focus towards economic growth objective. This has resulted in a larger portion of government funds being directed towards social development, while the private
sector is expected to perform well so that business that seeks to expand are capable of funding for road infrastructure required. This implies that the economy of the City of Johannesburg is expected to grow first so that funding for road infrastructure development is generated.

The impact of road Infrastructure on the economic growth of the City of Johannesburg

The impact road infrastructure has on a business’ ability to contribute to the economic growth of the City of Johannesburg is influenced by the development phase of the road infrastructure. The results of the research indicate that disruptions caused by road construction result in a negative impact on businesses located in the vicinity of the construction zone. However, businesses located outside the construction zone experience a positive impact. This suggests that the impact to a business is relevant based on its location around the construction zone.

The results of the research furthermore indicate that during the construction period, customers avoid travelling on a route under construction and seek alternatives. This results in a reduction in sales volumes for businesses, especially those located within the construction zone. Two of the retailers interviewed indicated that the businesses lost between 15% and 20% in revenue during the construction period. This reflects a change in the behaviour of customers and highlights that convenience is a key factor that drives decision making by consumers.

A contrary response was noted by another retailer, who experienced a positive impact during the same period. Other businesses indicated that revenue increased during the construction period. The increase is attributed to customers avoiding businesses located in the construction zone resulting in increased customer volumes to the business. However, the positive returns were temporary as consumers reverted back to their preferred retailer post the construction phase.
Results from the other sectors indicate that in the logistics sector, traffic delays caused by construction reduces daily delivery targets, resulting in reduced sales per day, and also negatively affecting customer satisfaction. During this period, businesses lost revenue and production cost increased. In the property sector, the availability of alternatives for consumers resulted in a negative impact. Managers of malls interviewed noted that the businesses are strategically positioned where no alternative exists for consumers, thus did not experience a negative impact during the construction phase.

The positive impact realised post construction period is attributed to induced demand. Van der Loop et al. (2015), states that induced demand is a negative factor for developed regions. In the City of Johannesburg, induced demand is creating a positive impact on business. The upgraded road infrastructure attracts new roads users. The increase in motor vehicle volumes on the upgraded route results in an increase in customer volumes for a business located along the improved route.

Based on the research results, it can be concluded that during the construction period the overall impact on the economic growth in the City of Johannesburg is negative. A number of businesses experience a loss in revenues during this period, thus their contribution towards the economy is reduced.

A reduction in business activity negatively affects GDP performance and regional growth as noted by Melia (2018). Post the construction phase the impact is noted as positive. Business activity and productivity for most business interviewed improved. This implies that contribution to the economic growth of the City of Johannesburg is affected positively by the development of road infrastructure. Factors that contribute to the positive economic impact are discussed in the next section.

**Factors affecting economic growth**

Figure 13 below illustrates the most mentioned theme by the participants. Six factors were mentioned by the respondents include contribution to GDP,
movement of goods, Job creation, connectivity, customer volumes and convenient transportation. However, only the top three are discussed in detail in this section because the other factors contribute to the high-ranking factors.

**Figure 13: Factors affecting economic growth in the City of Johannesburg**

**Connectivity:** Improvement of the road infrastructure results in improved network connectivity between the business and consumers and ultimately access to the market. H. Yu (2017) states that for market growth, connectivity is key for facilitating the process of exchanging goods and services. Connectivity to the market is key in the City of Johannesburg as roads are the primary transportation infrastructure which is conveniently accessible to citizens of the city. A total of eight business from the twenty interviewed agree that connectivity is key for a business to contribute to the economy of the City of Johannesburg. Improved roads connect business and consumer to the various economic hubs around the city, ultimately improving access for business to new customers. This is noted by an increase in customer volumes post road infrastructure development.

**Contribution to GDP:** Post road construction business activity is improved. Twelve of the respondents interviewed noted a positive impact on business revenues, and this is attributed to improvements of road infrastructure. The logistics sector which particularly is reliant on roads infrastructure expressed that improvement of road infrastructure directly reduced production cost, and delivery times especially for sensitive industries where customer satisfaction is linked to
timeous deliveries. The improvement of roads improved business efficiency, resulting in an increase in business revenues collected. This impact crucial for GDP growth, one of the logistics business noted that the industry is a significant contributor to the GDP of the country, about 48% of the GDP. This signifies that the improvement of road infrastructure is not only crucial for the GDP of the City of Johannesburg but is also important for the GDP growth of South Africa.

In addition, improved roads also increase business competition ultimately increasing the market size of the region as noted by the retailers and residential and industrial property developers. The increase in competition is a positive aspect for economic growth in two way: firstly, development of new business is good for the economy as jobs and investment will be created. Secondly, the increase in competition creates benefits for consumers as suggested by Akpan (2014) when he states that the increase in competition has the potential to drive prices down. Low prices increase consumption of goods, which increases economic activity in the city.

**Customer volumes**: improvement in customer volumes is linked to improvement in connectivity and induced demand. Improved connectivity creates between links between the business and consumer and induced demand introduces new road users to the area, which increases customer volumes as noted in the City of Johannesburg post road improvement. An increase in customer volumes increases sales and revenue collected, as experienced by the retailers, mall property development and service industry respondents. The residential and industrial property developer indicated that customer volume increase is as a result of customer preference. Potential buyers and investor prefer a well-connected development, which impacts property sale in the new development. These findings indicate that at the heart of decision making by customers, a convenience which is created by connectivity to the market is crucial to driving an increase in customer volumes. As stated by Gravito et al. (2017), an increase in customer volume increases business activity, thus increasing capital accumulated in the economy.
Additional factors that affect economic growth

The economic growth impact post road infrastructure development could be greater than the current level. Data indicated that even though businesses are experiencing a positive impact, 16 of the 17 businesses interviewed are reluctant in expanding investment in the City of Johannesburg. The GDP of the City of Johannesburg is performing better than that of the country, however, businesses are taking direction from the performance of the country’s GDP which is deterring future investments in the city.

The data is also indicating the improvement in labour productivity post road development is difficult to assess. Most businesses indicated that no changes were noticed in employee productivity, though time keeping improves post road construction. This is a human factor and it is hard for a business to measure as there is no measuring guided available to businesses. The difficulty in measuring productivity is the reason why it is regarded as an indirect benefit as described by Moyaki (2015).

The impact of road infrastructure investment on the economy of the City of Johannesburg

Data analysis indicated that road infrastructure development has a positive impact on the economy of the City of Johannesburg. Tonia Kandiero (2009) suggested that two factors affect economic growth as a result of improved road infrastructure. The first factor is capital accumulation which is as a result of an increase in investment and an increase in business activity. Post-road expansion, business activity improves, the volume of customers that seek the services of business increase and revenues collected by the business increase.

In addition, an increase in competition around the regions is noted, which indicates market size expansion. This demonstrates that the development of roads in the City of Johannesburg positively contributes to capital accumulation. Even though most of the businesses interviewed indicated that they are withholding future investment, the increase in competition noted in the responses
demonstrates that private sector investment around the improved area is achieved. This indicates that capital accumulation is achieved post road construction.

The second factor which is improved productivity is as a result of improved business efficiencies as described by Stephan (1997). Data findings highlight that the logistic sector experiences that most gain in improved productivity. Production inputs such as petrol cost and maintenance cost are reduced post road construction. In addition, customer satisfaction is enhanced as deliveries are made timeously which positively contributes to maintaining the relationship between the business and customer.

Minimum changes were noted on employee productivity. Post road construction time keeping improved and some of the business noted an improvement in the mood of employees. Employee productivity proved to be difficult to measure as there is no guide that assesses the impact; this factor did not contribute to the results of the study. Overall, productivity improves post road construction, however, the improvement is mainly realised by businesses that are largely reliant on the quality of roads such as the logistics sector.

In summary, post road development capital accumulation is positive through that an increase in investment and business activity. Productivity is also improved as business reliant of roads gains in increased operational efficiencies. Based on these two factors the impact of road infrastructure investment in the City of Johannesburg is positive.

**Conclusion**

Data collected from the interviews conducted with 20 organisations, 17 operating in the private sector and three government agencies are presented and findings presented in this section.

The research question has been answered, the impact of road infrastructure on the economic growth of the City of Johannesburg is positive. The improvement of road infrastructure enhances the business ability to contribute to the economic
growth of the City of Johannesburg, through improved connectivity, operational cost, and attraction of new consumers to the region. The next section presents the conclusion and recommendations relating to this study.
CONCLUSION AND RECOMMENDATIONS

Introduction

This section summarises the research findings, presents the conclusion and provides recommendations relating to the impact of road infrastructure development on the economic growth of the City of Johannesburg. The section will conclude by suggesting future research recommendations that could add value to the body of knowledge for business and institutions affected by road infrastructure.

Conclusion

Impact of road Infrastructure to the economic growth of the City Johannesburg

The purpose of this research was to analyse the impact of road infrastructure investment on the economic growth of the City of Johannesburg. Research results indicate that the development of road infrastructure has a positive impact on the economic growth of the City of Johannesburg. Business activity and investment improves post road infrastructure construction, which is crucial or capital accumulation.

Factors that emerged from the research as contributors to the economic growth post road infrastructure development include improved connectivity; contribution to GDP; increased customer volumes; movement of goods, job creation and convenient transport infrastructure. The top three themes are summarised below.

Connectivity: improved road infrastructure enhances connectivity to the market. The exchange of goods and services improves as more consumers access businesses located along the improved road infrastructure. The market size also increases as more businesses established around the improved road infrastructure, creating a positive impact on the GDP of the City of Johannesburg.
Contribution to GDP: as business activity improves, contribution to the economic growth of the City of Johannesburg increases. The improved roads reduce business production inputs which increase revenues and tax collection by the government. This increases funding available to the government to improve more road infrastructures around economic hubs to contribute to positive growth of the economy of the City of Johannesburg.

In addition, an increase in competition is noted by the respondents and is a positive aspect for economic growth in two way; firstly, the development of new business is good for the economy as jobs and investment are increased. Secondly, the increase in competition creates benefits for consumers by reducing the price of goods. Low prices increase consumption of goods; an increase in consumption increases the overall economic activity of the city.

Customer volumes: improved connectivity enhances access for customers to businesses. The number of road users increased after the construction of a new road, resulting in increased exposure for the businesses located around the improved road infrastructure. The increase in customers increases sales and revenues collected, thus contributing to the economic growth of the City of Johannesburg.

**Additional factors that affect economic growth**

The performance of the South African economy deters future investments into the city. A large number of the business interviewed, 16 out of 17 businesses indicated that they are not planning on investing in the near future because of the performance of the economy of SA. Businesses are not separating the performance of the GDP of the City of Johannesburg from that of the country even though the GDP of the City of Johannesburg is performing better than that of the country.

Labour productivity cannot be assessed as there is no measure available to the businesses to assess the impact. Factors such as mood which affects the
productivity of employees are human factors that cannot be measured, hence most businesses indicated no impact.

**Relationship between road infrastructure and economic growth**

The relationship direction is regarded as economic growth and triggers demand for road infrastructure. The City of Johannesburg is developing at a rate faster than what the government can keep up, resulting in traffic congestion as road available were not designed to carry the current capacity. The private sector is directing the development of economic hub, hence the construction of well-capacitated roads follow as this is a function of the government. To be proactive, the government is allowing developers to construct roads on its behalf to ensure that economic growth in the City of Johannesburg is not hindered.

**The impact of road infrastructure investment of the economy of the City of Johannesburg**

The analysis of data collected indicates that road infrastructure development has a positive impact on the economic growth of the City of Johannesburg. Results show that the two factors, capital accumulation and productivity, which contribute to economic growth are enhanced through positive business activity. Post road development capital accumulation is positive which is as a result of increased business activity. In addition, productivity is also improved as business reliant on roads gain an increased operational efficiency. Based on these two factors the impact of road infrastructure investment in the City of Johannesburg is positive.

**Recommendations**

The government should improve the relationship with the private sector, especially property developers as they are key in identifying and developing economic regions. In addition, they have the advantage of convincing other business in the private sector to invest in a newly developed economic region. Improvement of this relationship will reduce the current backlog as the private sector will be responsible for developing most of the required roads. The government should, however, conduct traffic assessment studies prior to allowing
the developers to construct roads. This will ensure that the capacity of roads is adequate estimated, and congestion is prevented.

In addition, the government should aim at developing a policy that will equally address prioritising development of road infrastructure and past imbalances. This will ensure that new economic hubs are developed with adequately capacitated roads. The creation of new economic hubs will result in the establishment of new industries which will provide employment opportunities.

**Suggestion for future research**

This study was conducted to evaluate the impact of road infrastructure on the economy of the City of Johannesburg. The list below details a few suggestions for future research:

- The study could investigate the actual regional development by analysing the percentage of growth in business investment post the construction phase of road infrastructure development. This could be assessed by investigating the number of businesses established and the percentage of employment created when a road in developed. This is currently a requirement for property developers to present an estimate of the economic impact before permission to develop is granted. The study could focus on the actual economic growth created versus what was estimated.

- The study could be extended to assess the impact of other beneficiaries of road infrastructure such as commuters to assess if some of the economic benefits such as reduced transportation cost and travelling time are realised. In addition, the study could also focus on assessing in detail the impact on employee productivity from the perspective of road users.

- The study could also investigate which sectors are benefiting from the skills gained by people employed during the construction period. An assessment is required to understand which other sectors benefit from the skills gained by people who worked during the construction period.
REFERENCES


Akpan, U. (2014). Impact of Regional Road Infrastructure Improvement on Intra-Regional Trade in ECOWAS. African Development Review, 26(S1), 64-76.


APPENDIX A

INTERVIEW QUESTIONS
Interview Questionnaire

Research Topic: Road Infrastructure Investment and Economic Growth in the City of Johannesburg

Population: Government Agencies

Objective: The objective of the survey is to understand the impact of road infrastructure on economic development in the City of Johannesburg as experienced by the end users of the road infrastructure.

Time frame: the interview will approximately take 60 minutes to complete.

Questions

1. Describe your understanding of infrastructure planning and monitoring of economic development activities?

2. How does road infrastructure investment relate to economic development?

3. What are the planning linkages between the need for road construction and the need for economic development?

4. How does the road infrastructure policy contribute to economic development?

5. Has improvement of road infrastructure increased the city’s economic competitiveness?
Interview Questionnaire

Research Topic: Road Infrastructure Investment and Economic Growth in the City of Johannesburg

Population: Businesses in Johannesburg

Objective: The objective of the survey is to understand the impact of road infrastructure on economic development in the City of Johannesburg as experienced by the end users of the road infrastructure.

Time frame: the interview will approximately take 60 minutes to complete.

Questions

1. What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

2. The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business? (have you noticed an increase/decrease in customers, opportunities for expansion, increased competition, job creation).

3. To what extent does road infrastructure influence your company’s business location decision?

4. Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

5. What is your understanding of the impact of road infrastructure improvement on your low-wage employees (travelling time/personal income)?
APPENDIX B

INTERVIEW TRANSCRIPTS
RETAIL AND SERVICE BUSINESS
Organisation 1

Question 1: What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- Roads bring people to our business. They facilitate connectivity of customers to our businesses.

Question 2: The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- Depends in the phase of the development.
- The business has just been through a difficult phase where they lost 20% of revenue during the expansion of Cedar road for a period of 2 years.
- The actual construction period has a negative impact
- Road construction happened in different phases 1 lost 15% of business. second phase lost 20% of the business.
- Customers were avoiding the area during the construction phase of the road; however, business is rebuilding itself post construction.
- Hopefully in future the numbers will increase because the developed road has become a main artery. And more home properties (townhouses) are developed in the area, which will bring in more customers.
- Business like to develop in the main artery. After the developing of the main artery business are attracted to the area. Definitely an increase in competition.
- There is a possibility that the shopping centre down the road which might increase competition.

Question 3: If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- No plans at the moment. The business had to reduce size and close other outlets to shield the loss in revenue, so right now the business id trying to stabilise.
- There are no plans to increase current business but are open to new ventures if good site is developed.
**Question 4:** Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease in vehicle maintenance cost, labour productivity)?

- No. Deliveries were not impacted. During the construction phase deliveries were scheduled for early hours to shield against the impact.
- The staff still perform well. There isn't notable change in their productivity

**Question 5:** Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?

- Productivity improved because during the construction phase when business was low, that was the time they increased training. And consolidated to their business model to one shop. This then improved the situation to now.
- Mood before work: No changes.
- Time keeping: Time keeping has been good. Not much interrupts the taxis.
- Transportation cost: No improvement. Transportation cost increased to fuel increases - economic downturn.

**Additional**

- During the construction phase business were not supported. Poor communication from the government about the construction period; good communication would have assisted the business to adjust the business model to make the impact less significant.
- Contractor could have been more understanding to business instead of closing a road which they are not working on.
- It will create a better understanding in timing, planning is communicated to business. Contactors should be more mindful in how they do the work.
- It took 17 years for the area to develop, so business was there before road development
Organisation 2

**Question 1:** What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- The impact is on customer volumes to the business. How many customers who use this road come to our shop. (after explaining the concept)

**Question 2:** The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- The impact has been positive during the construction period.
- Revenues increased from 1mil per week to 3mil per week. Average is 2.5mil
- Changed their model
- There was an increase in customer because they could not go to Fourways Mall and Broadacres
- Increase in competition: Not necessarily. The shop made money because customers refused to go to Fourways or Broadacres which are within the same area. When construction is complete customers are more likely going to revert to the preferred shop.

**Question 3:** If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- No plans of increasing the shop size. Actually, there size of the shop will reduce due to increased options for customers around the area. By October 2018 the shop size will be smaller.

**Question 4:** Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- Delivery times were not affected by the construction.
- Minor glitches with early deliveries were experienced. Bread deliveries were sometimes late and affected online deliveries had to be out of the shop by 9am.
- Like mentioned, during the construction phase revenues increases, but will likely reduce after the construction phase.
Question 5: Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?

- The shop was not too difficult to employees being late during the construction period.
- Mood before work: The road works negatively affected the mood of workers, because it took them longer to get to work.
- Mood has now improved when they get to work.
- Time Keeping: Major reason for late coming was delays due to construction work.
- Transportation cost: the financial benefits to employees has not changed. The improved roads have not reduced or increased cost of transportation.
- The shop does provide financial allowance for transportation and there has been no request for an increase.
Organisation 3

- **Question 1:** What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?
  - Roads don’t really have an impact on our business. Its other factors such as the economy and reducing buying power. (after explaining the concept)

**Question 2:** The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?
  - The impact was slightly positive during the construction period. But not too significant.
  - There was an increase in customer volumes, but marginally. There are three PnP shops within a kilometre radius. Only customers who did not want to go to mall came through.
  - Increase in competition: Possibly. A new PnP is opening in Fourways so the shop might lose customers to the new business. The area in booming in new properties, so we are hoping that the loss in business to competitors will be less significant.

**Question 3:** If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?
  - No. A new PnP shop is opening down the road in Fourways mall. We are likely to lose sum customers.

**Question 4:** Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?
  - Deliveries were not affected.
  - Employees still perform as they have been in the past, no notable change.
  - The time keeping has improved, which then translates to less hour’s lot in traffic, which is less productivity time lost.

**Question 5:** Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their
productivity. Have you noticed a difference before and post road improvement from your employees?

- Productivity was not affected even when construction was in front of the centre. The store opened on time and no customer complaints were received.
- Mood before work: The mood has improved after construction. Employees note they can leave home later and be early for work.
- Time keeping: During the construction period employees were late over a large percentage. Construction increased delays from Cosmo and Diepsloot into Fourways.
- Transportation cost: No complaints have been received (request for increase). Traveling cost remained.
**Organisation 1**

**Question 1:** What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- It impacts on our ability to do business. Road quality affects our business as we sell cycling bikes.

**Question 2:** The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- During the construction phase the business took a dip. Cyclist did not feel safe to use Cedar road because road closure reduced the road size.
- Now that the road is finished more people are coming through.
- There was a dip for the duration of the construction, most of 2017 and Q1 of 2018 but the number has improved.
- Most of our customers come through on Saturday.
- Increase in competition: No. No new guy, other than individual who can fix bikes have established in the Fourways area. We are still competing with the same suppliers.

**Question 3:** If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- The shop size was increased when we first moved in in 2016, and there is no plan.

**Question 4:** Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- The shop is very busy now, but that is seasonal. During summer period more, people take up outdoor activity.
• Our production has remained constant. During the construction phase our shop was busy with repairs caused by aggregates on the roads, now we are just servicing more customers.
• We scheduled product delivery times around when congestion was less mid-day.

**Question 5:** Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?

• Mood before work: We have a small team and the guys are still the same. Minimum frustration during construction period, but that has improved
• Time keeping: Time keeping has improved. There was late coming during the construction period, but that has improved.
• Transportation: That has not changed. The team has not given indication, however, the increase in petrol price did affect their pockets when taxis increase fare prices
**Organisation 2**

**Question 1**: What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- Customers use roads to come to the business

**Question 2**: The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- Post construction the business is busier.
- The impact is positive- more customers as compared to construction period
- Increase in competition: not necessarily, because market segmentation is different. Clients are not the same, different preferences.
- No business offers more convenience and flexibility.

**Question 3**: If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- No plan. The business has 3 floors.

**Question 4**: Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- More client means increase revenue. And people who had moved during the construction phase are back, so there is an improvement.

**Question 5**: Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?

- Mood before work: no changes were noticed.
- Time keeping: no impact because of shift work. Working hours are structured during period of low traffic.
- Transportation: employees have not requested for an increase.
Organisation 3

Question 1: What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- Road bring our customers. Our business is reliant on roads.

Question 2: The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- During road upgrade the impact was negative, drivers used alternative routes. We lost about 20% of our business.
- After construction, some drivers are back using the road, but others now prefer the alternative route the used during construction.
- The numbers are stagnant, but we hope they will pick up.
- Increase in competition: No. however, one garage closed, down the road so someone might revive it, but it will not negatively impact our business.

Question 3: If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- No. We are perfectly positioned and right size.

Question 4: Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- We downsized during construction period. After construction we employed a few people to be more efficient.

Question 5: Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?
- Mood before work: During the construction period the staff had to work more shifts occasionally, but they did not complain.
- Time keeping: We did not experience an increase. The staff has been keeping working hours.
- Transportation: They haven't mentioned anything.
LOGISTICS BUSINESS
**Organisation 1**

**Question 1:** What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- Business need roads to transport good. A good functioning road infrastructure, helps a business contribute to economic development
- South African roads are responsible for 86% of freight carried.

**Question 2:** The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- There is a positive impact because we can reach most of our customers during the planned times.

**Question 3:** If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- No. our business is deliveries and is based on customer demand. Demand has been stagnant.
- During the construction phase, business suffers, because of the delays. Post construction we make deliveries on time, which improves our productivity.

**Question 4:** Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- The number pf potholes have reduced, which has reduced the traveling distance of avoiding certain routes.
- Road maintenance reduces wear and tear, so there is a bit of savings from that perspective.

**Question 5:** Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?
• The mood actually improves during post production because they don’t have to worry about meeting their target deliveries. Well maintained roads ensure timeous deliveries.
**Organisation 2**

**Question 1:** What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- Road / transportation infrastructure has a direct impact on GDP of the country.
- The city is inland, so it is reliant on road infrastructure to facilitate movement of goods.

**Question 2:** The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- Not currently, but we do expect demand to grow in the coming years.

**Question 3:** If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- Not in the City of Johannesburg. Connectivity is required in other regions. Good roads are required there, the country will need our services as we expect demand to increase.

**Question 4:** Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- Wear and tear cost of the trucks decrease after the improvement of the road surface.
- Congestion is less, so deliveries are made timeously.
- Increase in fuel price has eroded the benefits.
- The logistic business relies on GPS technology to estimate delivery times. Road construction negatively impact the estimate, and time is lost idling on the road.

**Question 5:** Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their
productivity. Have you noticed a difference before and post road improvement from your employees?

- No impact on employees because the business working hours start and end outside the peak hours, so they always get to work on time.
- Delivery time keeping improves after road construction. The business can then well structure delivery times.
Organisation 3

**Question 1:** What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- Transportation industry is necessary to the economic development of the country.
- The transportation industry contributes to 48% to GDP.

**Question 2:** The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- They are good for our business because we reach more customers, but due to the economic climate of the country, we have not seen increase in our business

**Question 3:** If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- We have actually reduced our business because of the economic climate.

**Question 4:** Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- Road improvements positively contribute to decreasing wear and tear cost.
- We use technology to determine delivery times, during construction we battle to get the timing right due to traffic delays, however, the situation improves after road construction.

**Question 5:** Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?

- We start work early before peak hours, so they get to work fine.
• Delivery times improves after increase in maintenance of most roads.
**Organisation 4**

**Question 1:** What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- A business needs to move goods, set up business and a reliable road system is essential.

**Question 2:** The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- Yes positive - we get to do our business effectively. We plan on reaching new customer, but currently most of our customers are concentrated in currently developed areas.

**Question 3:** If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- No. we are open if new opportunities come up.

**Question 4:** Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- During construction, the impact is negative. The time delays cost us as we have to make the same trip twice which reduce our revenues.
- Post construction our wear and tear cost reduce, because the potholes have been fixed.
- Our productivity improves because we deliver on time when roads are improved. There is a difference pre and post construction.

**Question 5:** Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?
• Time keeping: We have not noticed a change. Delivery times are a specified, so a road does improve time keeping.
Organisation 5

Question 1: What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- Roads impact our ability to do business. They affect the logistics side and customer satisfaction, which relate to the sustainability of the business.

Question 2: The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- Yes, we meet or targets more. We use a GPS system, so our targets are reached which related to meeting set strategic targets for our business unit.
- During the construction phase things were bad. Alternative routes were also congested.

Question 3: If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- No, the economy is not great. What we are doing is trying to reach customers that we could not reach in the past. Roads around townships have improved, so we are using our existing transportation go get to those areas, but not investing to create new dep’s.
- The petrol cost is killing us though.

Question 4: Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- Yes, obviously the operation cost will be reduced because the drivers are spending less time on the roads. They meet more targets in daily deliveries. This improves customer satisfaction which is also a measure of productivity.
- When deliveries are made on time, we pay less overtime, so our operation cost improves. If we miss our delivery the client’s business sufferers. Some clients hire additional people to help with offloading and if we are late the
client has to pay the extra employees more because most of the extra stuff are paid per hour.

**Question 5:** Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?

- The drivers get to go home on time and not arrive late. When the drivers meet their target, they complain less about traffic and annoyance of being stuck for a long time.
Organisation 6

**Question 1**: What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- Road are key to the operation of the company. We rely on roads to make sales and this is how we contribute to economic development of the city.

**Question 2**: The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- During construction the impact was negative but now things are better. We are reaching our target.

**Question 3**: If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- No, there are no new areas we see potential at the moment. The economy of the country is not doing well, we are just waiting to see what will happen in future. The petrol cost has a huge influence as well.

**Question 4**: Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- Daily delivery rate improves, which means we can increase output. Productivity within the hours we work improves. At some stage we had to pay our drivers overtime because we needed to ensure that our products are delivered. We couldn’t increase the price of the goods, so our cost suffered. This was the time when the M1 was being upgraded.
- Customer satisfaction is linked to productivity, the better we meet our promised delivery times the happier the customer.

**Question 5**: Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their
productivity. Have you noticed a difference before and post road improvement from your employees?

- Mood of drivers has improved because they meet their targets and don’t have to come to work very early or get home late.
Organisation 7

Question 1: What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- Roads are core to our business as a logistics company. Not sure what is the percentage the industry contributes to GDP but is significant.

Question 2: The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- Positive impact. We reach our daily delivery targets.

Question 3: If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- No. we contracted other logistic companies to try meet our delivery requirement, now we reduced the number and our business is able to meet all delivery targets. The economy is not great at the moment, coupled with high petrol cost.
- City of Johannesburg is highly competitive. Maybe other provinces we have better chances of making it.

Question 4: Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- The wear and tear cost have improved, however, the rise in fuel price has eroded the gain. We now make better delivery estimates with our GPS. We had reduced the size of the business since we don’t need so many drivers, we are adding deliveries to the smaller pool of drivers we now have.

Question 5: Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?
• Mood has improved, but our drivers were scared they will lose their work when we cancelled some of our contacts.
Organisation 1

Question 1: What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- We believe it has a huge impact, hence we build roads to some of our developments. Example includes expanding Maxwell drive for waterfall area in Midrand.
- River sands - invested 400 million in roads, Stain invested a billion rand on roads.
- If you don’t build / have roads (and necessary infrastructure) you will battle to sell property in the development.
- We are in partnership with government (50/50 or 1:3). Major roads 50/50
- Need an economic impact assessment before you start development on how it will (especially if its provincial road)- how many jobs you will create which is the economic impact. Municipal bulk service contribution upfront, exception to payment of certain payment on services. Bulk service in the past 10 years - 20 years was directed to address townships which limited money to maintain other exiting roads creating a backlog in the City of Johannesburg and they have not been able to keep up. now bulk is collected for other project.
- Lately the government has left road development to property developers while they focus on transportation measures such as BRT

Question 2: The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

It is a cumulation of other issues. The land issue has a negative impact because there is no clarity.

- Can’t get loans because the bank has no clarity. No bank wants to finance new infrastructure because the risk is too great because of the land issue. Can’t buy a piece of land.
- The economy is bad. contractors are giving discounts because there is no work out there.
**Question 3:** If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- Only when there is development then you can sell.
- More roads or easy access influences preference to the newly developed areas.
- Easy access to work or favourite shopping area

**Question 4:** Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease in vehicle maintenance cost, labour productivity)?

- The areas we develop are productive. Government requires that we produce a traffic assessment report that estimates the envisaged traffic flow around the area.

**Question 5:** Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?

- Congestion add time to traveling time which impact productivity.
- When people can’t get are to deliver
- Improved on traveling time.
- Shorter route and after root impact saving in tires and maintenance cost. This then impacted the amount of tolls price. -
- Update make it easy to get to work

**Additional**

- Available land. Limited land available so if we get new land then we develop. We get 20 projects in a table and choose 2-3 to be implemented. Location is important. Johannesburg is profitable in terms of growth.
- Increase in competition: yes, there is new developers. The company has an issue with the council because they spend a lot of money improving the roads
(i.e. Cedar road) and the small developers come in and don’t contribute but reap the benefits.

- The spend on an impact traffic study, other developed just jump in without proper understanding on how they will impact congestion 9travelling time, because the study is based on one company.
- Political issues impact on the development DA (municipal) vs ANC (provincial)
- River sands - based on creating work opportunities for local communities. Create commercial areas close to Diepsloot. Connect Diepsloot to Sandton.
- New business are offers subject to completion of road.
- Road jobs are temporary which last for two years. But creation of the commercial area is long term and will influence informal trading such as hairdressers where they will see an increase in business because people now have money.
- Increase in rate and taxes collection--
Organisation 2

**Question 1**: What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- Roads facilitate connectivity with our customers.

**Question 2**: The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- With the road construction over the past two years, we were fortunate to be less affected and we were strategically positioned that customers preferred coming to our mall.
- We cater to a different market segment compared to the shopping centre around. we don’t anticipate a decrease in foot numbers to the mall.

**Question 3**: If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- We don’t plan on expanding the size of the mall. The current size is sufficient.

**Question 4**: Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- Most of our customers were not impacted. We still made expected revenues, our operation was not affected.

**Question 5**: Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?

- No comment. But I doubt there is or was a negative impact on productivity.
Organisation 3

Question 1: What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- Roads facility transposition of goods and customers to the mall.

Question 2: The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- The road construction is causing a congestion around the round the access to the mall.
- The roads don't play a significant role in increasing customers because the mall is strategically positioned to service a larger community.

Question 3: If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- In future we do plan on increasing our property space, but economically we cannot do it now.

Question 4: Has your business experienced an improvement in operation and Operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- The mall is strategically located, it's easy to get a taxi for our customer and employees. I don't think there has been an issue with time keeping relating to roads.
- Our shops are all occupied with tenants. The easy accessibility makes it easy for business.

Question 5: Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?
• The road construction does not impact employees of the shops as they can get to the mall easily.
• The construction is just an inconvenience as it builds up traffic around the area.
Organisation 4

Question 1: What is your understanding of the impact of road infrastructure and its impact to your business in contributing to economic development?

- The road is supposed to bring consumers to goods.

Question 2: The ongoing road improvements (maintenance/upgrade) in the city, have these positively/negatively impacted your business?

- Yes, a positive impact. The main road had a lot of potholes, so some customers avoided coming this side. We are noticing an increase after the surfacing was improved.
- We developed the mall and it took a couple of years for the road to be improved.

Question 3: If the impact has been positive - are you considering expanding the business (current floor size or increase offerings)?

- No. we don’t have future expansion plans.

Question 4: Has your business experienced an improvement in operation and operational cost (i.e. faster delivery time, decrease is vehicle maintenance cost, labour productivity)?

- We had a new entrance constructed which improved access to the mall for both delivered and customers.

Question 5: Road infrastructure influence travelling time, which then influences the mood of employees (before they come to work), which then impact on their productivity. Have you noticed a difference before and post road improvement from your employees?

- The mall is on the main artery, so it should not be difficult to get here. Productivity should not me impacted
GOVERNMENT AGENCIES
Gauteng Department of roads and transportation

**Question 1:** Describe your understanding of infrastructure planning and monitoring of economic development activities?

- Infrastructure planning should come first. First assess the need requirement then plan to build the required infrastructure. Currently developing is coming first then roads come afterwards. This is the incorrect way of development. Parties need to cone together. Parties are not communicating – developers, human settlement and road agencies for investment and funding purposes plus planning. When they build rouse the think of the future to ensure that sufficient roads are built.
- Monitoring of economic development is poor. The economic spinoff has not been measured.
- example is the Lanseria area, department of human settlement has plans of developing the area however, they have not communicated with the department of roads and transport. Treasuries is quite strict, so fund availability might not be available, and impact proper planning.

**Question 2:** How does road infrastructure investment relate to economic development?

- Roads are supposed to be built then development occurs. However, development is coming up first and not adequate road are available. Example is the mall of Africa where the area was developed but Allendale road could not cater for the new traffic.
- Conversely - The mall was triggered by the upgrade of the N1.

**Question 3:** What are the planning linkages between the need for road construction and the need for economic development?

- ITPs – intergrade transport plans have special development plans which talk economic development plan. ITP are for a five-year period and this is how
they are linked to economic planning because they are structured to impact movement activities in the city.

**Question 4**: How does the road infrastructure policy contribute to economic development?

- ITP emanate from NLTA which is gazetted shows a five-year plan.
- IMP25- strategic framework which talks to economic development
- Gauteng transport infrastructure act to some degree talks to economic development.
  Mostly its national plant that influence planning. Then there is PLTF provincial land transport frame for which is a five-year plan that details how roads will be built over the five years.

**Question 5**: Has improvement of road infrastructure increased the city’s economic competitiveness?

- Yes, to some degree, but if traffic is moving competitive will improve, and less delays. Delays impact on productivity of the road. And can’t build more roads to focus on productivity and connection only also have to focus also on transportation, travel demand management
- It is measured and a priority. Quality of life survey which measured productivity in terms of how long people get stuck on roads.
**Johannesburg Road Agency**

**Question 1:** Describe your understanding of infrastructure planning and monitoring of economic development activities?

- Look after the city’s road infrastructure. The one of the goals is supporting economic hubs. Service delivery is also important especially in ensuring addressing past imbalances.
- From an economic perspective focus mainly on economic node (4) make sure they align with where the city foresees economic growth, then support with roads. Road closure or poor quality have a significant impact on the economic performance of the city.
- Road infrastructure is the backbone of economic development; however, economic development occurs first, which results in traffic congestion. Example, Sandton was developed first, and roads followed which is the result of current congestion. In an opposite scenario road infrastructure was first developed in Waterfall area hence the better traffic management.
- At the speed the city has been expanding had resulted in government following economic growth instead of triggering it. The private sector currently defines economic growth as government cannot keep up with the development, and does not have control to define economic development and can’t control private investor.

**Question 2:** How does road infrastructure investment relate to economic development?

- A discussed, roads are supposed to trigger economic growth, however, in the CoJ we have a backlog where we are not investing much into road infrastructure but are servicing social requirement in the townships to address past imbalances. The private sector is driving this aspect and we can’t prevent the.

**Question 3:** What are the planning linkages between the need for road construction and the need for economic development?
Transportation around Corridors that have been earmarked for future mixed-use development are getting road infrastructure and related transportation modes improved to ensure efficiency of these areas in contributing to economic development.

Deliberate investment in public transportation to ease congestion in areas where development occurred before roads were built, e.g. Sandton.

Measure the acceptable level is how fast goods are moved as this supports economic growth. Department of economic development gives direction on which roads are required to contribute to economic development.

Roads infrastructure is the backbone of any economy.

**Question 4:** How does the road infrastructure policy contribute to economic development?

- Where private developers develop an economic hub there is policy called private contribution.
- For private development there is something called private contribution where the developer contributes an agreed amount for the city to implement road infrastructure. However, because of lack of effective by the City, don’t pay the bulk contribution but develop the road infrastructure on behalf of the city which is resulting in the private sector constructing road infrastructure and directing economic development.
- Cannot identify which policy has been the most effective due to the city being reactive to private development.
- Highly congested roads in economic hubs have been identified are requiring expansion and five-year plan per road is developed to ensure continuous support to economic growth.

**Question 5:** Has improvement of road infrastructure increased the city’s economic competitiveness?

- The city of Johannesburg is at the centre of Gauteng, making it attractive to business thus connectivity is retail to maintain the city’s compactivity in the province.
JDA

Question 1: Describe your understanding of infrastructure planning and monitoring of economic development activities?

- Roads lead to economic growth. An area is developed after roads have been constructed, so they trigger development of the area.

Question 2: How does road infrastructure investment relate to economic development?

- Improving transport access allows people to find work, improve their skills (during the construction phase) and contribute to economic development.

Question 3: What are the planning linkages between the need for road construction and the need for economic development?

- The city’s government provides directive on which roads areas should be improved. Plans on how the city should be developed into a world class economic hub are provided by the city. The current focus in on improving transportation facilities to make it easier for people in townships to get to economics areas at a cheaper cost.

Question 4: How does the road infrastructure policy contribute to economic development?

- Well-developed roads ensure people can get around. The economy requires people to be able to move and also to move goods.

Question 5: Has improvement of road infrastructure increased the city’s economic competitiveness?

- Yes, it does, most business consider Johannesburg as a good location to set up business, its connected to all industries.