THE IMPACT OF INFRASTRUCTURE DEVELOPMENT ON ECONOMIC GROWTH IN SOUTH AFRICA

Fhatuwani Managa

313898

A research article submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

Johannesburg, 2019

Protocol number: (WBS/BA313898/670)

DECLARATION

I, __Fhatuwani Managa_____, 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.

Fhatuwani Managa

(Type your name in full here, and sign in the space above)

Signed at …Midrand, Johannesburg……

On the ……May…….. day of ……31th …… 2019…..

ACKNOWLEDGEMENTS

Firstly I would like to thank God for the wisdom and strength.

My husband, Phumudzo Managa, thank you so much for your unwavering support, words of wisdom, encouragement and your unconditional love.

To my sister Shumani Nembudani, thank you for your words of wisdom and encouragement.

Lastly, I would like to extend my profound gratitude to Khuti Nethengwe and Fulu Muvhori for their contribution and support.

SUPPLEMENTARY INFORMATION

Nominated journal:	Journal of Infrastructure development
Supervisor:	Professor Eric Schaling
Word count †:	11104
Supplementary files:	Research instrument - recordings
	Interview transcripts
	Guide line research questions

ABSTRACT

The research methodology followed used semi-structured interviews to gather data on the impact of infrastructure on economic growth in South Africa. Semi-structured interviews are suitable for conducting small scale research and allows the researcher to exercise some flexibility during the interview process. According to Drever (1995) for small scale research, semi-structured interviews is the most commonly used method. The main objective of semi-structured interviews is to give the interviewee or interviewees a platform to voice their own understanding and knowledge on the subject matter (Longhurst, 2003; Scheibelhofer, 2008). Semi-structured interviews unlike structured interviews do not follow a predetermined and standardised set of questions.

Eight people were interviewed whose experience range from microeconomics and macroeconomics analyst, infrastructure procurement, consumer markets advisory specialising in power and energy, debt financing of infrastructure development, former Ambassador of South Africa to some African countries as well as other parts of the world, and investment banking. The interviewed candidates between them have more than 30 years working experience. On average each interview took 30 to 40 minutes long.

Infrastructure is vital in enabling competition and allows you to compete in the global market. Infrastructure development is seen as a catalyst, and an enabler for potential economic growth. The interviewee's identified that infrastructure gaps prevent countries such as South Africa from realising their full potential. Infrastructure gap introduces inefficiencies into the daily activities of consumers and business which can be costly. Majority of the participants are of the view that growth is linked to connectedness and network of a country. Should a country want to trade with other countries, it requires a certain level connectedness which is achieved through road networks, railway lines and telecommunication among other things. It is this network and connectedness that is currently lacking with South Africa and the rest of Africa.

The analyses of the data gathered shows that infrastructure development is a key enabler for economic growth. South Africa should focus on, one, closing the Infrastructure gaps which hinder and slow economic growth, two, increase railway networks, and three expand harbours and ports which are critical for imports and exports. If these gaps are not closed, the cost burden will fall upon the consumers and businesses, and in turn, the economy. It was evident through the interviews with the participants that infrastructure development contributes to growing economies and will help countries sustain economic growth margins. What South Africa should also focus on increasing business confidence by reducing political instability, and tackling corruption by implementing robust judicial systems, governance and policies. It

is also important to hire people who are competent and who understand of how economy works practically and not just theoretically, so that they can make correct investment decision and lead the country in the right direction. This will help attract Foreign Direct investments as well as help local entities that are sitting on surplus cash invest in projects such as infrastructure development. When the participants were asked why infrastructure development is important, the participants responded by saying, if you look at the bulk of goods that we buy on a daily basis, they are transported by road, and that can be very expensive. Bulk goods need to be transported by railway to reduce time and cost of delivery. The cost of time and delivery impact on the pricing of the goods. So investing in infrastructure development such as rail can increase production and reduce cost of production at the same time. Increase in productive good in turn stimulate the economy. Input costs can either drive prices up or down depending on the quality and efficiency of supporting infrastructure development. A key finding, which is supported by the literature review, the more South Africa builds and invests in infrastructure development, the more efficient South Africa's markets will become which will in turn drive operating costs and the cost goods or services down. This research paper focused on the impact of road, energy and telecommunications infrastructure development has on economic growth, the results show that these areas of infrastructure can lead to economic growth, if the right investment decisions are made. Infrastructure development can lastly be used as a mechanism to curb rising rate of youth unemployment.

Keywords: Infrastructure development; Economic growth

Table of Contents

DECLARATION ..... *ii*

ACKNOWLEDGEMENTS ..... *iii*

SUPPLEMENTARY INFORMATION ..... *iv*

ABSTRACT *5*

LIST OF TABLES *8*

1. INTRODUCTION *9*

1.1. PURPOSE OF THE RESEARCH 9

1.2. BACKGROUND TO THE RESEARCH 9

1.3. PROBLEM STATEMENT 10

1.4. RESEARCH QUESTION 10

1.5. SCOPE AND LIMITATIONS 11

2. LITERATURE REVIEW *12*

2.1. GENERAL 12

2.2. INFRASTRUCTURE DEVELOPMENT 15

2.2.1. ROADS 15

2.2.2. ENERGY 16

2.2.3. TELECOMMUNICATIONS 18

2.3. ECONOMIC GROWTH IN AFRICA 20

3. RESEARCH METHODOLOGY *22*

4. RESULTS *24*

4.1. INTRODUCTION 24

4.2. RESULTS DISCUSSION 24

5. CONCLUSION *30*

Appendix A *32*

REFERENCES *35*

LIST OF FIGURES

Figure 1: Electricity and water access in African countries with that in China and India source:(African Development Bank, 2018) 15

Figure 2: Access to electricity and GDP per capita, 2014 source:(African Development Bank, 2018) 15

Figure 3: Access rate for only households under the grid. source (Ndulu, 2006):..... 17

LIST OF TABLES

Table 1: Impact of unreliable infrastructure service on the productive sector..... 13

Table 2: International perspectives on Africa's infrastructure deficit. 13

1. INTRODUCTION

1.1. PURPOSE OF THE RESEARCH

Government with activate participation of the private sector can make informed decisions on how best to accelerate South Africa's economy and develop policies that will advance South Africa and Africa as a whole.

The purpose of this research paper is to increase the vast knowledge of work that currently exists on the impact of infrastructure on economic growth. The paper will look into the impact of infrastructure development on economic growth in emerging markets In Africa with particular focus on South Africa. The paper will also seek to understand whether or not there are linkages between infrastructure development and economic growth.

1.2. BACKGROUND TO THE RESEARCH

In the context of Africa, the majority of the empirical research conducted on the impact of infrastructure on economic growth has focused on Sub-Saharan Africa (Ajakaiye & Ncube, 2010; Estache, Speciale, & Veredas, 2005; Sandelowski, 1995). Country specific literature and research in Africa on the impact of infrastructure development on economic development is limited. It has been widely noted that lack of infrastructure is an impediment to the economic growth of many African countries. This predicament has been worsened by insufficient investment in new infrastructures and the maintenance of existing ones.

Empirical research conducted in China shows that there is a clear link between the level of infrastructure investment and economic growth (Démurger, 2001). Further evidence to support this link is highlighted by Kodongo and Ojah (2016) in their Sub-Saharan African research on infrastructure effects on economic growth. In the context South Africa, the same results were observed to support this assertion (Perkins, Fedderke, & Luiz, 2005).

Over the past two decades, literature has focused on the effects of infrastructure in Africa with particular reference to variables such efficiencies; importance of investments infrastructure stocks; poverty reduction and inequality; impact of infrastructure on the level and growth rate of aggregate output or productivity - the list is not exhaustive. Research studies on these topics have used mostly physical indicators such as railways and paved road length, fixed telephone lines and mobile subscribers, and electricity production to establish whether there are significant links between infrastructure and growth effects (Estache et al., 2005; Jerome, 2011; Roller & Waverman, 2001). The results of these

studies have revealed that physical indicators have been a good measure with which to determine growth prospects of any economy. Other studies have focused on sector analysis, cross-country analysis and monetary analysis (comparing income levels) to establish whether there is a relationship between infrastructure development and economic growth(Easterly & Rebelo, 1993). More research however is still needed to determine the impact that infrastructure development and infrastructure investment has on the economic growth of emerging market countries on the African continent such as Ghana, Cote d' ivoire, Ethiopia, Ghana, Mauritius, Nigeria, Senegal, South Africa and Tanzania.

This research paper seeks to evaluate the impact and role of infrastructure development on economic growth in South Africa. Furthermore, it will evaluate specific roles of infrastructure such as roads, telecommunication and energy and how they contribute to South African economy.

1.3. PROBLEM STATEMENT

Majority of published research papers on infrastructure and economic growth, in the context of Africa has focused on Sub-Saharan region (Ajakaiye & Ncube, 2010; Estache et al., 2005; Kodongo & Ojah, 2016; Perkins et al., 2005). Data on infrastructure development and economic indicators is more readily available for the Sub-Saharan region. This paper will seek to find a South African view as extensice research has been done already on Sub-Saharan Africa.

The purpose of this paper is to ascertain whether or not infrastructure development impacts economic growth. What role does infrastructure play in driving economic growth? Is there a direct link between infrastructure development and economic growth?

This paper will am to identity and assess infrastructure gaps in Africa and South Africa. It will seek to understand the quality of existing infrastructure and how it impacts pricing. The paper will also seek to establish if supply is able to meet consumer demand in the short term, medium term and long-term.

1.4. RESEARCH QUESTION

The focus of this research paper will be on South Africa as an emerging market. This paper will seek to evaluate the impact of infrastructure development on economic growth in South Africa. There are various factors that contribute to economic growth more particularly in the emerging markets like South Africa. In the context of Africa, one of the

challenges that may be hindering economic growth is lack of infrastructure whether in terms of quantity or quality or both. In South Africa, lack of infrastructure investment by both government and private sector more especially in the rural areas may be a contributing factor for slow growth. This is mainly due to additional cost burdens and lack of business opportunities. In respect of foreign direct investment, one of the key drivers is – infrastructure. That said, Infrastructure development eases the means of doing business through increased efficiencies and input cost reduction of goods and services. It is therefore important to determine whether or not infrastructure development stimulates economic growth with specific focus on variables such as investments, production cost, pricing of goods and services to the end users. Infrastructure reduces cost of production, for instance, rail transport is more efficient for bulk transport than road transport. It is therefore important to deal with the extent to which infrastructure impacts economic growth. In order to do that, this research will set out the importance and role of the infrastructure on economic growth. What is the importance and role of infrastructure development in the economic development South Africa.

1.5. SCOPE AND LIMITATIONS

The following scope and limitations have been identified:

Infrastructure is a broad topic and can be categorised into two parts social infrastructure (houses, schools, hospitals etc) and economic infrastructure (roads, telecommunication, water and sanitation, energy, ports etc). To limit the scope, this paper will focus more on roads, energy and telecommunications.

This paper will deal with the theme of the research paper by way of providing an analysis on the impact of infrastructure development on economic growth without measuring the impact thereof.

This research paper does not address seek to establish which model, method or approach is the most appropriate to use when determining whether or not infrastructure development impacts economic growth

Literature review on Sub-Saharan countries will be explored and used as a basis for this research paper.

2. LITERATURE REVIEW

2.1. GENERAL

Infrastructure in Sub-Saharan Africa is below other developing countries standards in terms of quality and quantity (see Table 1). In a year Sub-Saharan African countries experience 79.9 days of electrical outages compared to 27.9 days in other developing countries and 28.1 days in telephone outages compared to 9.1 days in other developing countries. These numbers reveal the state of quality of existing infrastructure and do not reflect a good infrastructure state for African countries compared to other developing countries across the globe. In terms of quantity, Africa lags behind in paved road density, electricity coverage, main line density and internet density compared to other continents (Table 2). Ondiege, Moyo, and Verdier-Chouchane (2013) in their research paper evidenced this by comparing African countries to other similar countries outside Africa using income levels. The research showed that Africa was lagging behind in all measures apart from unpaved road density. One key contributor to the many deficiencies in infrastructure is the geographical positioning of many African countries with particular reference to landlocked countries on the continent (Jerome, 2011). The state of infrastructure in poor and remote areas is mostly unreliable, unsafe and often overpriced relative to developing and developed urban areas. Lack of public and private funding is the main attributer. Intra-trade median transport costs in sub-Saharan countries is $7600, as compared to below $5000 in other regions such as Latin America and Caribbean (LAC), South and East Asia (ASI) and Middle East and North Africa (MEA) (Venables & Limao, 1999). The impacts the competitive edge of any business and country which inturn effects growth. The more expensive a good or service is the more it becomes unaffordable to the end user. Academics are unanimous on the state of Africa's infrastructure in terms of quantity and quality, and noted that under the right conditions infrastructure can act as a catalyst for growth. However, a difference in opinion exits between researchers on the level of infrastructure development required in order to stimulate economic growth in a country (Estache & Garsous, 2012). Palei (2015) goes on further to say that no agreement exists on which variables characterise infrastructure, and the method and approach on how to assess them. This makes it challenging as there is no established frame of reference on which variables to use to determine whether or not infrastructure development is a catalyst for growth.

Table 1: Impact of unreliable infrastructure service on the productive sector

	Sub-Saharan Counties	*Other developing countries*
Electricity		
Electrical outages (days a year)	79.9	27.5
Delay in obtaining electricity connection (days)	90.9	28.7
Value of lost output due to electrical outages (percent of turnover)	6.1	4.4
Firms maintaining own generation equipment (percent of total)	47.5	31.8
Telecommunications		
Delay in obtaining telephone line (days)	96.6	43.0
Telephone outages (days a year)	28.1	9.1

Source: World Bank 2014

Table 2: International perspectives on Africa's infrastructure deficit.

	African low income countries	*Other low income countries*	*African middle income countries*	*Other middle income countries*
Paved road density	34	134	284	461
Total road density	150	29	381	106
Main-line density	9	38	142	252
Mobile density	48	55	277	557
Internet density	2	29	8.2	235
Generation density	39	326	293	648
Electricity coverage	14	41	37	88
Improved water	61	72	82	91
Improved sanitation	34	53	53	82

Source: (Ondiege et al., 2013)

Note: "Road density is measured in kilometres per 100 square kilometres of arable land; telephone density in lines per thousand population; generation capacity in megawatts per million population; electricity, water and sanitation coverage in percentage of population."(Ondiege et al., 2013, p. 486)

Though widely recognised as a key challenge for most African countries in the 90's, little was done to address the improvement in the level of infrastructure development (Jerome, 2011). These African countries gravely underestimated the extent to which infrastructure development was needed. Having had a historical background of colonialism, the thinking of policy makers in countries such as South Africa was that infrastructure development needs

would be funded by the private sector after independence (Estache et al., 2005). This was done so that policy makers can focus on social factors such as improving the basic conditions of those living in poverty, which was the case for majority of the black population. Post-independence, many Sub-Saharan countries according to Estache et al. (2005) did not see infrastructure design and development as a major macroeconomic concern for their economic structures because of fiscal public budget constraints limiting government expenditure on infrastructure projects (Percoco, 2012). Fiscal budget constrains have contributed to slowed growth and development such an example is in Kenya post-independence, policy makers recognised the need for infrastructure development, though implementation at the time was limited to the agricultural sector as this was seen as a critical concern for its people. Governments at the time did not have the capacity to develop all infrastructure needs due to budget constraints. The private sector was identified to play a role where government did not lacked the capacity. To attract private sector capital and participation in other infrastructure development areas, governments used incentive mechanism offering tax reliefs and ad-hoc custom duty refunds to attract the private sector to fund infrastructure development (Fahnbulleh, 2006). Attracting and sourcing Foreign Direct Investment (FDI) was also key to fund infrastructure development. In the 1960's, to manage Angolan densely populated cities caused by massive urban migration, the Angolan government attained low-cost credit from China to finance its urban projects. Other examples of private sector funding in post-colonial countries can be found in: Botswana, Malawi, Mauritania, Nigeria and Tanzania were construction of new urban cites and housing development programmes where funded by Foreign Direct Investments (Cain, 2014). This thinking led to the underestimation of how much was still needed to develop and sustain the infrastructure needs of the individual countries. Infrastructure demand and supply was only adequate to sustain only the minority group of people and not the oppressed and marginalised, the black Africans whom resided in rural and pre-urban areas.

Oppressive systems implemented in Africa did not envision that the marginalised would flock to urban areas and strain existing infrastructures once independence was achieved. This led to infrastructure demand outweighing supply capabilities and poignantly worsened by inadequate investments from private sector leading to increased fiscal space problems. Jerome (2011) describes this as a chronic imbalance where investments in new facilities are inadequate, leaving current infrastructure in a dire degraded state. Other problems holding sub-Saharan back relate to inefficiencies, lack of modern infrastructure and quality service to create sustained growth that is required to eliminate the poverty-stricken African continent.

Eliminating poverty has proven to be a challenge given that the access rate to quality and efficient infrastructure is poor in most African countries. The cost of developing infrastructure has risen disproportionality to quality and efficiency of infrastructure, reducing chances of increasing cross border access rate and across Africa. These hurdles are eroding Africa's global competitiveness and a limiting factor to growth (Jerome, 2011). At a microeconomic level, Jerome (2011) puts forth that at household level, firm level and global level of infrastructure has major implications. He references other literature to support his notion that there are positive effects of public investments and road development on household-level income and poverty.

2.2. INFRASTRUCTURE DEVELOPMENT

2.2.1. ROADS

According to the World Bank (2008) landlocked countries such Central African Republic, Burundi have been associated with high transport and service costs, and as a result have attracted poor road infrastructure investments. Poor road infrastructure investments have yielded low road access rate and have contributed to the declining rate of poverty reduction (Gachassin, Najman, & Raballand, 2010). The spatial demographics in these countries have contributed to the lack of road infrastructure investment and subsequent maintenance needed to sustain them. It is worth noting that forty percentage of Sub-Saharan Africa population dwell in landlock countries (Ndulu, 2006), meaning that the effects of poor road infrastructure investment are likely widely spread across the Sub-Saharan region. Esfahani and Ramírez (2003) suggest that higher population density and urbanisation can curbs low access rate to roads and infrastructure needs. The logic presented by these two authors can hold true if there is foreign direct investments or other forms of infrastructure investments that facilitate and contribute to urbanisation.

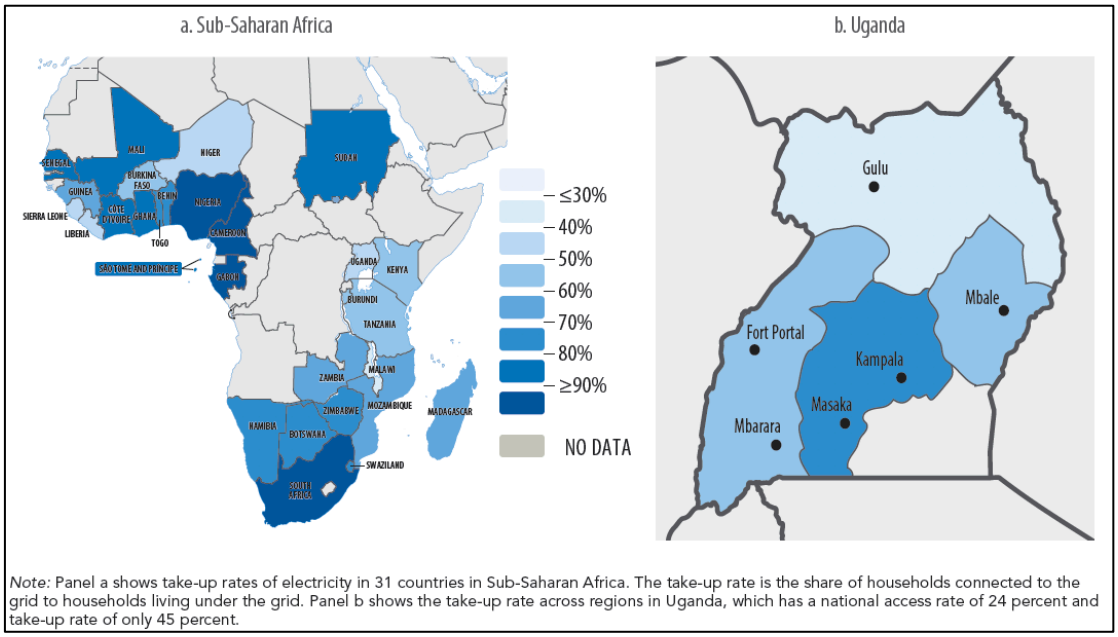
On average, it takes landlocked countries four extra days to distribute exports and imports compared to coastal countries and it is for this reason that they tend to have a slower growth average (Jerome, 2011). This is aggravated by high transport costs which hamper intra and inter-regional trade. The competitive edge is eroded by high transport costs caused by the distance and terrain of landlocked countries to coastal/port countries. Mbekeani (2010) addresses infrastructure bottlenecks by expressing that removing barriers, reducing costs and increasing quality of road infrastructure will help improve and encourage free movement of goods and services including people; which in turn can lead to more efficient flow of transit traffic along corridors and regional networks. However there are cases where being landlocked is not a disadvantage, Botswana is an example of a landlocked country which has to a certain degree benefited from being a landlocked country due to its location and position

(Ndulu, 2006). Botswana leverages of Southern Africa's infrastructure systems and is well positioned at the centre of the Southern African Development Community (SADC) region making it the ideal investment and trade hub. Botswana acts as the gateway to the entire SADC market providing access to Namibia, South Africa, Zambia and Zimbabwe. It has helped Botswana become one of the fastest growing economies in Africa, negating the effects of being landlocked.

According to (Estache & Garsous, 2012), investments into road infrastructure in developed countries have not always yielded the positive effects and envisioned growth, though in developing countries the contrary is the case. To put this into context, where a market is saturated there is little room to grow compared to an unsaturated market. Specific country needs bring a challenge to find the *one-fits-all* answer, to the question whether well designed and proper road networks has an impact on growth. In a Cameroonian case study by Gachassin et al. (2010) the effect of road infrastructure on poverty reduction, they found that investing uniformly in Africa and not country specific is "likely to have a lower impact on poverty than expected". They evidenced that the development of roads had no direct impact on consumption expenditure of the surrounding population. However, they did establish that labour activities increased indirectly (job opportunities) was the main driver for poverty reduction (trade opportunities and access to markets). Gachassin et al. (2010) established that road investments were used as a means to an end in African countries, for political allegiances, and not for economic reasons and poverty reduction. In Ethiopia prior to 2010 election, the government withheld foreign aid distribution to poor areas that failed to vote for the ruling party and in Kenya politicians use public expenditure to improve electoral chances for re-election (Jablonski, 2014). Growth would be hindered should this be widespread thinking of African leaders.

2.2.2. ENERGY

Africa's largest infrastructure deficiency exists in the energy sector, whether measured in terms of consumption, generation capacity or security of supply. The energy infrastructure on the continent is characterised by lack of efficiency and low purchasing power. Africa, however ,has numerous renewable energy potential (Jerome, 2011). currently continent depends heavily on biomass to meet basic energy needs, which accounts for two-third of Africa's final energy consumption (Jerome, 2011). Only one-third of the population has access to electricity In Sub-Saharan Africa, leaving the rest to consume biomass (Demographic and Health Survey data; (Ndulu, 2006) see Figure 1.



Note: Panel a shows take-up rates of electricity in 31 countries in Sub-Saharan Africa. The take-up rate is the share of households connected to the grid to households living under the grid. Panel b shows the take-up rate across regions in Uganda, which has a national access rate of 24 percent and take-up rate of only 45 percent.

Figure 1: Access rate for only households under the grid. source (Ndulu, 2006):

Solomon Islands epitomises a country that has invested in infrastructure to promote economic growth, job creation and access to markets. Solomon Islands invested in infrastructure to yield low cost energy. The country ranks 97th out of 168 countries in terms of the World Bank Ease of Doing Business Index. The main attributer of this low ranking is the lack thereof of infrastructure which has resulted in high cost of doing business. The country is, however trying to change this, they are implementing projects to address the country's infrastructure development. One such project is the *Tina River Hydro Projects*. *Tina River Hydro Projects* has had positive effects on the country's economy. Economic activity has been stimulated through cost reduction in electricity pricing and is helping unlock more business activity in the country (Badre, 2014). The purchasing power of the country has increased as a result of cheap supply of electricity benefiting the private and public sectors, households and the economy. Hydro projects are expensive to implement, the initial capital costs to construct hydro-powerplant are high but the long term benefits can be seen in reduced operational and maintenance costs (Kuang et al., 2016).

In South Africa, the cost to generate, transmit and distribute electricity is high. This is mainly due to operating inefficiencies, lack of good leadership and long term planning. In the short-term, the cost are being passed onto the end consumer through yearly increases in tariffs. The poor in this case get knocked the hardest as their purchasing power is significantly affected. There is a growing gap between affordable energy and clean energy demand in South Africa. For this reason, it is important for South Africa to be energy efficient if it considers alleviation poverty and empowerment of the low-income residential sector a priority (Spalding-

Fecher, Clark, Davis, & Simmonds, 2002). According to the World Bank (2017a) South Africa is heavily dependent on coal powered stations to generate electricity which accounts for 93% of electricity production and contributes 15% to the country's gross domestic product (GDP) (Menyah & Wolde-Rufael, 2010). Reliance on non-renewable energy poses a concentration risk whereby should South Africa's power utility fail to acquire adequate supply of coal, the power utility will be forced to implement load shedding. Load shedding by the Eskom could compromise the amount the energy sector helps contributes to the country's GDP.

Winkler (2007) used the Markal model, a least-cost optimising tool to analyse the impact of different energy policies for supply and demand. He determined there would be substantial contributions, especially in industries, if a combination of solar thermal and biomass cogeneration technologies are used to generate energy. The combination would reduce total energy costs by R16 billion ($2.2 billion) and would increase electricity generation from 2 000 GWH in 2001 to 18000 GWH in 2025.

Research by Odhiambo (2009) established that there is a bidirectional causality between electricity consumption and economic growth. In 2008, it become know that South Africa facing an energy crisis. The energy crisis was triggered by the demand for electricity far exceeding the countries supply capability, and as a result Eskom implemented scheduled load shedding throughout the country. The effects of load shedding has had a negative impacted businesses as well as households with estimated losses between R20 billion and R80 billion a month (Writer, 2015). Due to these losses, the countries GPD is also negatively impacted and. Mass producing manufacturing industries who heavy depend of electricity to conduct daily activities have to bear the cost of idle time and reduced revenue generating capacity.

2.2.3. TELECOMMUNICATIONS

Throughout history telecommunications technology has been used to connect people, businesses and communities since the first invention in the 1870s. Leff (1984) argues that investments in telecommunication should not only be viewed solely from a business perspective i.e. reducing costs, increasing transmission of information and attaining a wider consumer base but also view welfare effects the consumers will derive. Each new person that subscribes to a system, it increases the connectivity reach of that person with multiple other people. An eco-system is then formed/built were other sectors will derive economic benefits from. The welfare effects derived by consumer-to-consumer can spill over to consumer-to-business and business-to-business creating a chain reaction which results in increased economic activity. The writer further goes on to say that business users, private and public, can have an equalised distributional impact if allocation of telephone investments is done

correctly i.e. creating a levelled playing field. It is worth noting that in Africa, many traditional telecommunication infrastructures are still state-owned, an example of such infrastructures are landlines. On the other hand, modern telecoms such as broadband, wireless infrastructure and mobile telecoms are mainly owned and operated by the private sector (Mbekeani, 2010).

Over and above equalising the playing field between the private and public sector, private or public sector can gain competitive edges by expanding their reach. Through telecommunication infrastructure it is possible to perform business activities from multiple location and expand geographical reach (Datta* & Agarwal, 2004). The effects of can be felt through productivity gains, increased consumer base, lowered transactions costs and cost savings which both the consumer and business benefit from. These effects can be used as stimulants for economic growth. A significant positive relationship between telephone infrastructure and economic growth was established using cross-sectional data analysis performed on 47 developed and developing countries (Leff, 1984). Roller and Waverman (2001) come to the same conclusion using 21 OECD countries over a period of 20 years. They found a significant causal link between telecommunication infrastructure and economic growth. Batuo (2015) also evidenced of significant and positive correlation between telecommunication variable and regional economic growth in real GDP per capita growth in Africa. The paper explored the effects of telecommunications infrastructure on economic growth by using dynamic panel method on a panel dataset of 44 African countries and further evidences that countries with higher tele-density yield higher growth, whereas a slower rate is observed where countries have higher levels of GDP per capita.

A number of papers have pointed out bias in methods and variables used to determine whether there is a relationship between growth and telecommunication infrastructure development. Roller and Waverman (2001) cautions researchers that reverse causality and spurious correlation may potentially exist, which may be caused by variables used to support an argument in determining whether or not there is a relationship between growth and telecommunication . In reverse causality, two things need to be distinguished “(i) the increase in economic growth, which is attributable to increases in telecommunications infrastructure and service development; and (ii) the increase in the demand for telecommunication services, which is attributable to increases in economic growth (i.e. the income elasticity of telecommunication demand)” (Roller & Waverman, 2001). To avoid incorrect conclusions and unintended biases, thought should be given to the likelihood of spurious correlation and reverse causality.

The law of demand and supply says if supply increases, the price will fall vice versa. This can hold true if investment in telecommunication infrastructure increases. The cost of the service

will decline and the gains will be enjoyed by both the consumers and businesses. Businesses can attain additional intelligence at reduced costs and use it to make informed decision to grow their business (Datta* & Agarwal, 2004). Lack of information flow freely can lead to poor decisions making.

2.3. ECONOMIC GROWTH IN AFRICA

The per capita income growth rates in Africa over the past two decades have outpaced rich countries. Cote'dLvoire, Ethiopia, Kenya, Mali, Senegal and Tanzania economies between 2015-2017 registered growth rates above 5.4% and account for 13% of sub-Saharan total GDP (World Bank, 2017b). Other countries in Africa have experienced a deceleration in economic activity (World Bank, 2017a). The region's investment growth dropped from 8% in 2014 to 0.6% in 2015. Africa's largest economies South Africa, Nigeria and Angola are showing signs of slow recovery due to policy uncertainty and low commodity prices (World Bank, 2017b). Large growth potential benefits can be achieved by reducing the deceleration rate of economic activity. Closing the electric power generating capacity gap and narrowing the road networks gap can contribute to slowing down the deceleration.

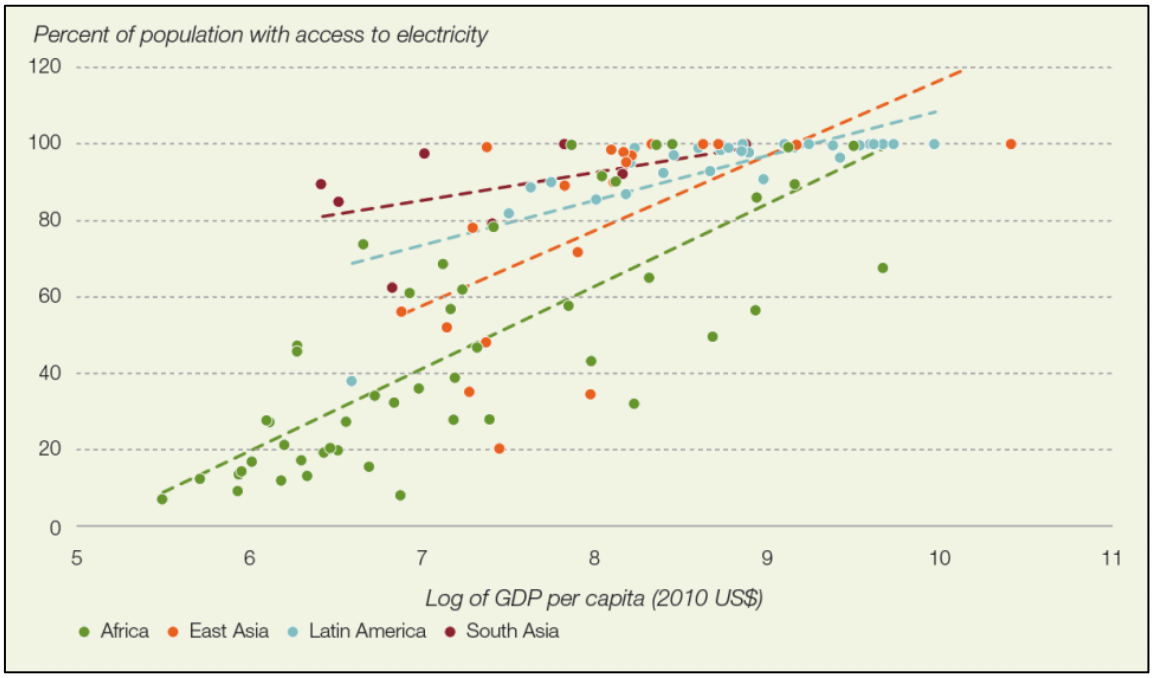
Every year 12 million young people join the labour force on the African continent. This is according to *Africa Economic Outlook 2018* report by the African Development Bank (2018). In order to keep up with this influx of young people, Africa must industrialise first to incorporate them into the labour force. The challenge to African nations is insufficient stocks in productive infrastructure deterring industrialisation. To finance this deterrent, $130-$170 billion a year is required to meet sub-Saharan Africa's infrastructure needs and due to lack of investments, a financing gap of $68-$108 billion is needed to produce productive and profitable infrastructures.

In the 1980's and 1990's, African countries underwent structural changes after their adoption of the Washington Consensus (African Development Bank, 2018). The Washington Consensus is set of 10 economic ideas outlined by John Williamson, an economist at the Peterson Institute of International Economics. These ideas stemmed from observing Latin American debt crisis over a period of 10 years (Babb, 2013), and were used to encourage developing countries to implement market liberalisation reforms to grow the economy (Kennedy, 2010). The reforms recommended privatisation of state owned enterprises, prioritising government public expenditure towards public goods (e.g. health and education), tax reforms and creating an environment that promotes trade and encourages foreign direct investment. Prioritising resources towards public good led to African governments downsizing public expenditure allocated to infrastructure development. At the time it was not known that

the adoption of the Washington Consensus would contribute to the stagnation of many African economies. This explains Africa's lag in infrastructure relative to other regions such as Latin America and Asia. Examples of Africa lagging behind are exhibited in the *Africa Economic outlook 2018* report: (i) at the same level of GDP per capita African countries have lower access to electricity and water compared to China and India illustrated in and (ii) lower access to electricity and GDP per capita in 2014 compared to East Asia , Latin America and South Asia see .

Figure 2: Electricity and water access in African countries with that in China and India source:(African Development Bank, 2018)

Figure 3: Access to electricity and GDP per capita, 2014 source:(African Development Bank, 2018)



3. RESEARCH METHODOLOGY

Qualitative Research methodology

The research methodology to be followed will make use semi-structured interviews (see Appendix A for proposed interview questions). Semi-structured interviews are suitable for conducting small scale research and allows the researcher to exercise some flexibility during the interview process. According to Drever (1995) for small scale research, semi-structured interviews is the most commonly used method. The main objective of semi-structured interviews is to give the interviewee or interviewees a platform to voice their own understanding and knowledge on the subject matter (Longhurst, 2003; Scheibelhofer, 2008). Semi-structured interviews unlike structured interviews do not follow a predetermined and standardised set of question. The interview is directed by how the interviewer expresses his/her understanding of the subject matter (Longhurst, 2003).

In determining the number of interviewees, the scope of the research topic and the data quality should be considered to reach appropriate level of saturation. Morse (2000, p. 4) states that "the quality of the data and the number of interviews per participant determine the amount of useable data obtained". The target minimum number of interviewee's to achieve richness in data using the semi-structured interview method is between 10 to 60 (Morse, 2000). This is supported by Sandelowski (1995), however the author goes further on to say that ultimately the number chosen as the sample size is dependent on judgement. A sample size with fewer number of interviewees can be achieve by obtaining greater amount of usable data. Usable data is determined by the interviewers ability to structure and clearly articulate questions, listen

attentively and probe to get insight and understanding. It is for this reason a sample size of 10 will be used to conduct small scale research for this paper. Industry professionals and experts will be interviewed on an individual bases. The interviewees will be interviewed were possible in a controlled environment such as in an office or isolated place with minimal interruption and distractions.

The method to be used to recruit interviewee's will be a combination referrals from interviewed participants and actively looking for the right candidates on social platforms such as LinkedIn an isolating potential candidates who have experience in either economics and or infrastructure development. At the end of each interview, each interviewee will be asked to recommendation at least one professional or expert that can contribute to the body of research knowledge on the subject matter. Risk of bias referrals should by other means such as business and social media platforms.

Style of interviewing will be through inquiry with open ended questions. The style of questions will be a combination of structural and contrast explain (Willig & Stainton-Rogers, 2008). A recording device will be utilised to collect data from the controlled semi-structured interviews. Recording interactions enables the interviewer to be fully focused and engaged with the interviewee during the interviews whereas writing down notes interviewers are likely to miss important points mentioned by the interviewee.

Ethical considerations:

Longhurst (2003) provides the following ethical considerations for semi-structured interviews:

In conducting semi-structured interview, the interviewer should consider confidentiality and anonymity of the interviewees. Interviewee's may be reluctant to share information in such a setting or may be over cautious of what they share affect the integrity of the data collected. In instances where interviewees do not feel comfortable being named publicly, assuring the interviewees that data collected will remain confidential and afford them anonymity.

The interviewer should remain partial and not judge the interviewee should the interviewee express himself/herself in a sexist, racist, or other offensive manner.

Power dynamics between the interviewer and interview can influence the outcome of the interview negatively if not managed appropriately for example (in a student teacher relationship, the teacher tends to believe they have more power due to age and experience).

4. RESULTS

4.1. INTRODUCTION

The outcome of the interviews will be structured in a discussion form. That said, this research paper will not discuss individual inputs, but collective contribution by interviewees in an integrated form.

A qualitative approach was set out to collect data and evidence in the form of semi-structured interviews. The approach employed for collating information from the interviewees presented some difficulties. Firstly, the interviews were conducted only with people living in Johannesburg, South Africa. Secondly, the sample size was not sufficient to gather rich insights and findings. And lastly, the data gathered from the interviews was difficult to measure as it is difficult to measure people's opinions, statements and views.

The sample presented some other challenges, namely, the size of the sample is not representative of the whole of South Africa. The sample size was too small to gather in depth insight of the research topic. Unintended biases can result from selecting a sample that is small and not representative of the whole Country. This may distort the findings, and lead to an incorrect conclusion. Other difficulty experienced is that a topic of this nature and scope requires an approach that uses quantitative analysis to measure the impact of infrastructure development on economic growth. With that being said, it is difficult to quantify the views of people and to measure qualitative data than it is with quantitative data.

4.2. RESULTS DISCUSSION

Eight people were interviewed whose experience range from micro and macroeconomics analyst, infrastructure procurement, consumer markets advisory specialising in power and energy, debt financing of infrastructure development, former Ambassador of South Africa in some African countries as well as the rest of the world, and investment banking. The interviewed candidates had more than 30 years working experience between them. On average each recording with the interviewees was 30 to 40 minutes long. According to Drever (1995) for small scale research, semi-structured interviews is the most commonly used method. The main objective of semi-structured interviews is to give the interviewee or interviewees a platform to voice their own understanding and knowledge on the subject matter (Longhurst, 2003; Scheibelhofer, 2008).

The interviewed candidates (hereinafter referred to as "participants") were all in agreement that infrastructure development is a critical concern for South Africa and Africa. They identified that infrastructure gaps prevent countries such as South Africa from realising its full potential.

Infrastructure gaps introduce inefficiencies into the daily activities of consumers and businesses which can be costly. Economies, households, and businesses bear the burden of recurring infrastructure gaps. Majority of the participants are of the view that growth is linked to connectedness and infrastructure network of a country. To link this to literature review done earlier Jerome (2011) goes on to say that these infrastructure gaps are eroding the competitiveness of a country and is a limiting factor to growth. Should a country want to trade with other countries, it requires a certain level of connectedness which is achieved through road networks, railway lines and telecommunication among other things. It is these networks and connectedness that are currently lacking in South Africa and the rest of Africa.

They opined that the role of government is to provide an operating environment, conducive to attract the private sector as well as foreign direct investment into the country. Fahnbulleh (2006) goes on to say to attract private sector capital and participation in other infrastructure development areas, governments must use incentive mechanisms offering tax reliefs and ad-hoc custom duty refunds to attract the private sector to fund infrastructure development. The participant argue that political instability, political influence, policy uncertainty in South Africa is definitely contributing to the slow economic growth. These impediments are forcing the private sector to sit on surplus cash and withhold it from investing further into country. The private sector is reluctant to invest in infrastructure development due to great uncertainty in the market. Over the past two years the private sector has been sitting on huge savings and has been refraining from ploughing back into the economy. These findings support what the World Bank (2017b) wrote in their paper stating the Africa's largest economies such as South, Nigeria and Angola due to policy uncertainty are showing signs of slow recovery. The participants are of the view that should government stabilize the environment, have policy certainty and less interference of government in the business environment. The participants argue that this can enable growth and attract foreign direct investment into the country. The main enablers would be to put in place robust reforms, robust judiciary systems and to find ways to increase business and investor confidence. By doing so, you enable a chain reaction that will have a positive multiplying effect for the economy.

The country has failed to invest in infrastructure partly because, firstly, the country lacks the necessary funding, secondly, those that have access to the funds misuse , misappropriate or misallocate it. Another reason given by a participant for lack of investment in the infrastructure is that funds were allocated to the wrong kinds of projects and some of those projects were mismanaged. In some instances, the cost of infrastructure ends up being more than the initial cost and value of the project. One participant made an interesting point, that when a country fails to prioritise infrastructure development and the corresponding investments in

infrastructure, the country limits its own growth potential. The correct Investment choice in infrastructure can unlock a lot of growth, failing to do so can result in wasteful expenditure. When the participants were asked about how does government allocate resources to infrastructure development, when majority of the people living in South Africa are earning below Gross Domestic Product (GDP) per capita and while others are dependent on grants and social welfare. How does government justify spending millions on infrastructure projects? The participants argued that in every development path, you have to make sacrifices or trade-offs. If one looks at the country's social welfare budget (child grant, old age grant and disability grants), it has been on the rise over time. Ideally, a country should invest in infrastructure over a period of time in order to reduce government's welfare budget. Through infrastructure development projects the youth and those currently unemployed can get absorbed into the job market and can in turn help reduce dependency on grants, social welfare and help curtail the unemployment rate. Over and above this creating an economic environment that enables people and or the private sector to create jobs will so help reduce dependency on the government grants. If the country is unable to attract businesses, its ability to create employment is curtailed. The participant stated further that lack of long-term planning contributed to how the government has continually misallocated funds and focused on the wrong projects. Lack of long term planning can be seen in Gachassin et al. (2010) paper where they established that road investments were used as a means to an end in African countries, for political allegiances, and not for economic reasons and poverty reduction. In Ethiopia prior to 2010 election, the government withheld foreign aid distribution to poor areas that failed to vote for the ruling party and in Kenya politicians use public expenditure to improve electoral chances for re-election (Jablonski, 2014). Growth would be hindered should this be widespread thinking of African leaders.

One of the challenges facing the South African economy is being a consumer country - South Africa imports for consumption which has over the years stifled industrialisation. The participants emphasised that the country needs to move away from being mainly a consumer economy by developing infrastructure that connects South Africa to the rest of the world. Infrastructure that creates efficiencies and reduces the time to procure, produce and deliver goods and services. Infrastructure is vital in enabling competition and allows a country to enter and compete in the global market. Infrastructure development is seen as a catalyst, and an enabler for potential economic growth. The participants all use Eskom, a company that produces, transmits and generates electricity for South Africa and other neighbouring countries as an example of a company whose infrastructure quality and quantity or lack thereof is costing the economy dearly. The power utility has failed to grow its infrastructure to meet existing demand. The demand in South Africa for electricity currently exceeds supply. The

utility company has resorted to load shedding to prevent overloading the power system, and reduce the risk of complete black out. Load Shedding is defined as “action to reduce the load on something, especially the interruption of an electricity supply to avoid excessive load on the generating plant”. The growth forecast of the South African economy is likely to be revised down in the 1st quarter of 2019 if load shedding stage four implemented persists. Load shedding effects the ability of doing business. It effects production negatively due to extended period of idle time forcing the labour market to work roughly 4 hours less everyday instead of working 45 hour a week. This downtime will impact businesses ability to generate revenue and the impact will be felt on the headline earnings. Linking this to the literature review, the effects of load shedding negatively impact businesses as well as households with estimated losses between R20 billion and R80 billion a month (Writer, 2015). The opportunity cost of load shedding is great. Jobs are being lost in the process, companies cannot afford to pay the same wages which is resulting diminishing consumer buying power. Given that South Africa is a consumer economy, this will drive down growth. The South African economy has being stagnant over the past few years – it has grown by less than 1% and if load shedding persists, the economy will head into negative growth.

When the participants where asked whether public or private sector should develop infrastructure, all participant were in agreement that both parties should be involved. They however differed in deciding what infrastructure development the public sector should be solely responsibility for. Half of the participant said the bulk of the infrastructure should be developed by government. They commented by saying “you can’t expect the private sector to develop railway line between Johannesburg and Musina”. They further go to say that “road networks should not be the responsibility of the private sector”. The private sector sole purpose is to make money and the choice of infrastructure development they choose to invest in should yield positive net present value for their shareholders. On the one hand, the participants used Eskom again as an example of how infrastructure owned and controlled by government has failed to keep up with maintaining its own infrastructure and keeping up with demand. Not all governments have the capacity to build infrastructure and maintain it thereafter, partly due to lack of planning, governance and operating efficiency. These findings support what Estache et al. (2005) wrote in their paper. That post-colonialism, the thinking of policy makers in countries such as South Africa was that infrastructure development needs would be funded by the private sector after independence.. This was done so that policy makers can focus on social factors such as improving the basic conditions of those living in poverty.

On the other hand, one participant used an example of how a country in Europe privatised the electricity supply chain and mentioned how the end consumers are benefiting from the decision to privatise the sector. Some participants were of the view that it should be a combination of both public and private sector working together in the form of public private partnership. They believe that it is important in driving and improving efficiencies as well as bring costs down. In the end both the partnership and the community benefits while still making a profit. Views differ on public sector involvement in infrastructure development. The utilities are running efficiently and competition is driving costs down, which in turn will stimulate economic activity and raise GDP.

Renewable energy according to the participants stated that it is essential for the future of the South African economy. One participants used the MoZiSa transmission line infrastructure project between Mozambique, Zimbabwe and South Africa to illustrate how in country political instability and lack thereof of connectedness amongst each other has hindered them to effectively put together a strategy to fully optimise resources and accelerate growth. The goal of the project is to build a hydro plant in Mozambique and share electricity transmission through a line between Mozambique, Zimbabwe and South Africa. The *Tina River Hydro Project* in Solomon Islands exemplifies a project that has done well to benefit the private and public sector by reducing the cost of electricity considerably and has helped stimulate economic activity (Badre, 2014). Another challenge faced by the MoZiSa project was the lack clearly defined national development plans in each country with the exception of South Africa, the more developed country of the three. This creates a power dynamics where you find the more developed country dedicating the terms of project. The participant further goes on to say that this directly impacts GDP. How GDP is impact is through lost investor confidence followed by withdrawal of investments from the South Africa. And also the inability of a country to generate energy to support any business initiatives by both public and government sector can prevent investors from investing further into the countries especially in industries that manufacture goods. Renewable energy is relatively new energy market and the initial costs of such infrastructure are high and expensive, however, long-term the costs incurred will be offset by the benefit to be gained in future in the formed of reduced service charges and production costs. The benefits of such investments will flow to the end consumers and businesses who will enjoy reduced pricing of good and services. The views of the participants are in line with Winkler (2007) whose empirical research using the Markal Model established that the use of combined approach of renewable and non-renewable energy can reduce energy costs significantly by 2025. It is interesting to note that this might not be the case for South Africa by 2025 or the medium-term according to the participants. The reason for this Eskom, South Africa's power utility entered into contracts with renewable independent power

producers (IPP), whereby Eskom purchases power at a price that is more expensive per kWh than non-renewable energy and on sells it to end consumers at a loss. The thinking behind this by the power utility was that the more they onboard these IPPs, the cheaper the technology will become and the more affordable it will also become.

When asked why infrastructure development is important, the participants responded by saying if you look at the bulk of goods that we buy on a daily basis, they are transported by road, and that can be very expensive. Bulk good need to be transported by railway and reduce time and cost of delivery. The cost of time and delivery impact on the pricing of the goods, so investing in infrastructure development such as rail can increase production and reduce cost of production at the same time. Increase in productive good in turn stimulate the economy. Input costs can either drive prices up or down depending on the quality and efficiency of supporting infrastructure development. When the participants were asked about how infrastructure impacts production costs and final cost of a finished good, the participants responded by saying infrastructure development plays a role in reducing the time to create the goods/services and delivering it to the end user. A point was made that if you have better infrastructure, the time you spend delivering the goods is shorted, which means that businesses can use the time saved to develop other things. This was further augmented by another participant who made a practical example - transporting coal between mines and where it is needed by trucks is causing huge problems (congestion, heavy load damaging the roads), which is impacting timeous delivery of coal. Another example referred to by a participant, was the time taken by a container ship to release goods from the port. If infrastructure by the ports is improved, the time taken to offload can be improved and reduced. Should this been done right it will improve efficiencies, help maximise economies of scale and in turn reduces costs.

In the short to medium term, all the participant assert that South Africa's infrastructure in its current state will not meet future demand. This is based on historic events such as droughts across the country, electricity shortages, ageing railways lines and power stations, lack of maintaining existing infrastructure, lack of road/rail networks that link deep rural areas to urban areas, and lack of fibre lines that connect the entire currently. Some participates do contend that the country is moving in the right direction in terms of infrastructure development, though the pace is not fast enough to keep up with demand

5. CONCLUSION

One of the grey areas that currently exists is that there is no established model or agreed upon model to measure infrastructure. According to Palei (2015) no agreement exists on which variables one must use to characterise infrastructure, and the method and approach on how to assess infrastructure. However, the literature review conducted did shed some light on the different methods, models and approaches other researchers have used to establish whether there are any linkages between infrastructure development and growth(Démurger, 2001; Estache et al., 2005; Jerome, 2011; Kodongo & Ojah, 2016; Perkins et al., 2005). This research did not seek to establish which model, method or approach is the most appropriate to use when determining whether or not infrastructure development impacts economic growth. This is something which requires further research. This research paper also requires further investigation augmented by quantitative analysis using time series data to see how investments in infrastructure has impacted South Africa's GDP and whether the results are in line with the views of the interviewees.

The analyses of the data gathered shows that infrastructure development is a key enabler for economic growth if all things remain equal. South Africa should focus on, one, closing the Infrastructure gaps which hinder and slow economic growth, two, increase railway networks, and three expand harbours and ports which are critical for imports and exports. If these gaps are not closed, the cost burden will fall upon the consumers and businesses, and in turn, the economy. It was evident through the interviews with the participants that infrastructure development contributes to growing economies and will help countries sustain their economic growth margins. What South Africa should focus on is, one, increase business confidence by reducing political instability, two, tackle corruption by implementing robust judicial systems, governance and policies. It is also important to hire people who are competent and who understand of how economy works practically and not just theoretically, so that they can make correct investment decision and lead the country in the right direction. This will help attract Foreign Direct investments as well as help local entities that are sitting on surplus cash invest in projects such as infrastructure development. That said, it will also assist the government determine which assets must be owned solely by government and which ones must be owned by the private sector. It will alleviate burdensome infrastructure on the government and increase efficiency of the infrastructure. A key finding, which is supported by the literature review, the more South Africa builds and invests in infrastructure development, the more efficient South Africa’s markets will become, which in turn will drive operating costs and the cost goods or services down. This research paper focused on road, energy and telecommunications infrastructure development, the results show that these areas of

infrastructure can lead to economic growth if the right investment decisions are made. Infrastructure development can lastly be used as a mechanism to curb rising rate of youth unemployment.

Appendix A

Proposed semi-structured interview research questions

Part one: Infrastructure

1) Personal questions
    a. Education background
    b. Age
    c. Job title
    d. Experience
    e. Economics or infrastructure background
2) Is infrastructure development a critical concern for Africa? Substantiate answer
3) Looking at the connectedness of African countries or lack thereof, how does this impact infrastructure development and also economic growth – linking the two.
4) Why is it easier to trade with Europe than it is with other African countries.
5) Who should be responsible for infrastructure development in South Africa? Provide reasons:
    a. Public sector
    b. Private sector
    c. both
6) Does Africa have sufficient infrastructure stock (quantity)? Substantiate answer
    a. Road
    b. Electricity
    c. Telecommunication
7) What is the current state of Africa's infrastructure (quality)? Substantiate answer
    a. Road
    b. Electricity
    c. Telecommunication
8) Can you provide reasons why SA's What is the state Africa infrastructure development compared to south Africa
9) Can you provide reasons why SA's infrastructure is more advanced compared to other African countries.
10) infrastructure is more advanced compared to other African countries.
11) Is South Africa's infrastructure supply able to meet business and households demand (refer to answers in **4 and 5**)
    a. Short-term
    b. Short to medium term

c. Medium to long term

12) What is your take on renewable energy vs coal generated energy
13) Is reliance on coal generated electricity sustainable and how does this impact economic growth?
14) Only 1/3 of sub-Saharan population has access to electricity – how does this impact economic growth
15) Will investment in renewable energy drive costs down?
16) Did colonisation and apartheid regimes contribute to the current state of infrastructure (quality and quantity)? Substantiate answer
17) Is there relation between the period just before election and increase service delivery in South Africa? Substantiate answer distinguishing between rural and urban areas
18) Is there relation between the period just before election and increased infrastructure development? Substantiate answer distinguishing between rural and urban areas

Part 2: Economic growth

19) What are the drivers of economic growth?
20) What does South Africa need stimulate the economy?
21) Where is the most economic activity, rural or urban area. Why?
22) Does infrastructure quality and quantity effect pricing of production or service? Substantiate each of the below
    a. Road
    b. Electricity
    c. Telecommunication
23) Is there a difference in production or service cost in rural and urban areas?
24) Is there a causal link between infrastructure and economic growth? Substantiate answer
25) Is there a relationship between access to infrastructure and economic activity? Contextualise answer giving reference to both rural and urban areas.
26) What factors contribute economic activity and growth?
    a. Does infrastructure or infrastructure development play a role? Substantiate answer
27) Which infrastructure stocks contribute to South Africa gross domestic product (GDP)?
28) Describe how electricity, road and telecommunication infrastructure contribute to South Africa's GDP?
    a. How would you measure it?

29) Which one contributes the most to South Africa's GDP? Provide reasons
30) Does infrastructure development help reduce poverty? Explain.
31) Post-apartheid what economic reforms/policies has South Africa implemented? substantiate
    a. Has it stimulated growth?
    b. What were the upsides and downsides?

REFERENCES

African Development Bank. (2018). African Economic Outlook 2018. Retrieved from https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/African_Economic_Outlook_2018_-_EN.pdf

Ajakaiye, O., & Ncube, M. (2010). Infrastructure and economic development in Africa: An overview. *Journal of African economies, 19*(suppl_1), i3-i12.

Babb, S. (2013). The Washington Consensus as transnational policy paradigm: Its origins, trajectory and likely successor. *Review of International Political Economy, 20*(2), 268-297.

Badre, B. (2014). The Importance of Infrastructure for Economic Growth, Jobs, and Access to Markets and Services in Solomon Islands. Retrieved from http://www.worldbank.org/en/news/opinion/2014/02/28/the-importance-of-infrastructure-for-economic-growth-jobs-and-access-to-markets-and-services-in-solomon-islands

Batuo, M. E. (2015). The role of telecommunications infrastructure in the regional economic growth of Africa. *The Journal of Developing Areas, 49*(1), 313-330.

Cain, A. (2014). African urban fantasies: past lessons and emerging realities. *Environment and Urbanization, 26*(2), 561-567.

Datta*, A., & Agarwal, S. (2004). Telecommunications and economic growth: a panel data approach. *Applied Economics, 36*(15), 1649-1654.

Démurger, S. (2001). Infrastructure development and economic growth: an explanation for regional disparities in China? *Journal of Comparative economics, 29*(1), 95-117.

Drever, E. (1995). *Using Semi-Structured Interviews in Small-Scale Research. A Teacher's Guide*: ERIC.

Easterly, W., & Rebelo, S. (1993). Fiscal policy and economic growth. *Journal of monetary economics, 32*(3), 417-458.

Esfahani, H. S., & Ramírez, M. a. T. (2003). Institutions, infrastructure, and economic growth. *Journal of development Economics, 70*(2), 443-477.

Estache, A., & Garsous, G. (2012). The impact of infrastructure on growth in developing countries. *IFC Economics Notes, 1*.

Estache, A., Speciale, B., & Veredas, D. (2005). How much does infrastructure matter to growth in Sub-Saharan Africa? *unpublished, World Bank (June 2005)*.

Fahnbulleh, M. (2006). In search of economic development in Kenya: Colonial legacies & post-independence realities. *Review of African Political Economy, 33*(107), 33-47.

Gachassin, M., Najman, B., & Raballand, G. (2010). Roads impact on poverty reduction-a cameroon case study. *World Bank Policy Research Working Paper, 5209*.

Jablonski, R. S. (2014). How aid targets votes: the impact of electoral incentives on foreign aid distribution. *World Politics, 66*(2), 293-330.

Jerome, A. (2011). Infrastructure, economic growth and poverty reduction in Africa. *Journal of infrastructure development, 3*(2), 127-151.

Kennedy, S. (2010). The myth of the Beijing Consensus. *Journal of Contemporary China, 19*(65), 461-477.

Kodongo, O., & Ojah, K. (2016). Does infrastructure really explain economic growth in Sub-Saharan Africa? *Review of Development Finance, 6*(2), 105-125.

Kuang, Y., Zhang, Y., Zhou, B., Li, C., Cao, Y., Li, L., & Zeng, L. (2016). A review of renewable energy utilization in islands. *Renewable and Sustainable Energy Reviews, 59*, 504-513.

Leff, N. H. (1984). Externalities, information costs, and social benefit-cost analysis for economic development: An example from telecommunications. *Economic Development and Cultural Change, 32*(2), 255-276.

Longhurst, R. (2003). Semi-structured interviews and focus groups. *Key methods in geography*, 117-132.

Mbekeani, K. K. (2010). Infrastructure, trade expansion and regional integration: Global experience and lessons for Africa. *Journal of African economies, 19*(suppl_1), i88-i113.

Menyah, K., & Wolde-Rufael, Y. (2010). Energy consumption, pollutant emissions and economic growth in South Africa. *Energy Economics, 32*(6), 1374-1382.

Morse, J. M. (2000). Determining sample size: Sage Publications Sage CA: Thousand Oaks, CA.

Ndulu, B. J. (2006). Infrastructure, regional integration and growth in sub-Saharan Africa: dealing with the disadvantages of geography and sovereign fragmentation. *Journal of African economies, 15*(suppl_2), 212-244.

Odhiambo, N. M. (2009). Electricity consumption and economic growth in South Africa: A trivariate causality test. *Energy Economics, 31*(5), 635-640.

Ondiege, P., Moyo, J. M., & Verdier-Chouchane, A. (2013). *Developing Africa's infrastructure for enhanced competitiveness.* Paper presented at the World Economic Forum, the African Competitiveness Report.

Palei, T. (2015). Assessing the impact of infrastructure on economic growth and global competitiveness. *Procedia Economics and Finance, 23*, 168-175.

Percoco, M. (2012). Infrastructure Investment and Growth in Developing Countries: Does the Type of Contract Matter? *Journal of infrastructure development, 4*(2), 139-152.

Perkins, P., Fedderke, J., & Luiz, J. (2005). An analysis of economic infrastructure investment in South Africa. *South African Journal of Economics, 73*(2), 211-228.

Roller, L.-H., & Waverman, L. (2001). Telecommunications infrastructure and economic development: A simultaneous approach. *American economic review, 91*(4), 909-923.

Sandelowski, M. (1995). Sample size in qualitative research. *Research in nursing & health, 18*(2), 179-183.

Scheibelhofer, E. (2008). Combining Narration-Based interviews with topical interviews: Methodological reflections on research practices. *International Journal of Social Research Methodology, 11*(5), 403-416.

Spalding-Fecher, R., Clark, A., Davis, M., & Simmonds, G. (2002). The economics of energy efficiency for the poor—a South African case study. *Energy, 27*(12), 1099-1117.

Venables, A., & Limao, N. (1999). *Infrastructure, geographical disadvantage, and transport costs*: The World Bank.

Willig, C., & Stainton-Rogers, W. (2008). Qualitative research in psychology. *Maidenhead: Open University Press. Google Scholar*.

Winkler, H. (2007). Energy policies for sustainable development in South Africa. *Energy for sustainable Development, 11*(1), 26-34.

World Bank. (2008). Landlocked Countries: Higher Transport Costs, Delays, Less Trade. Retrieved from http://www.worldbank.org/en/news/feature/2008/06/16/landlocked-countries-higher-transport-costs-delays-less-trade

World Bank. (2017a). An analysis of issues shaping Africa's economic future. Retrieved from http://documents.worldbank.org/curated/en/348741492463112162/Africas-pulse

World Bank. (2017b). Economic Growth in Africa is on the Upswing Following a Sharp Slowdown. Retrieved from http://www.worldbank.org/en/news/press-release/2017/04/19/economic-growth-in-africa-is-on-the-upswing-following-a-sharp-slowdown

Writer, S. (2015). *Eskom blackouts cost South Africa R80 billion per month*. Retrieved from https://businesstech.co.za/news/general/83429/eskom-blackouts-cost-south-africa-r80-billion-per-month/