

# **Critical Successful Factors for Infrastructure Financing in South Africa: Enhancing the Role of the New Development Bank**

A Dissertation

presented to

The **Development Finance Centre (DEFIC)**  
Graduate School of Business  
University of Cape Town

In partial fulfilment  
of the requirements for the Degree of  
**Master of Commerce in Development Finance**

by

**Thulani Ncube**

**NCBTHU004**

May, 2020

**Supervisor:** Assoc/Prof. Abdul Latif Alhassan

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

## **Plagiarism Declaration**

### **Declaration**

1. I know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.
2. I have used the APA (American Psychological Association) convention for citation and referencing. Each contribution to, and quotation in, this project from the work(s) of other people has been attributed and has been cited and referenced.
3. This dissertation is my own work.
4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.
5. I acknowledge that copying someone else's assignment or essay, or part of it, is wrong, and declare that this is my own work.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Thulani Ncube**

## **Abstract**

The study investigated the critical success factors of funding infrastructure development in South Africa and how they can be used by the BRICS' New Development Bank (NDB) to develop strategies for funding infrastructure development in the country. The quantitative research methodology was used in the investigation. The study used IDC and DBSA employees as the population and simple random sampling was used to select 20 employees from the two Development Finance Institutions (DFIs). Data was collected through questionnaires sent to 20 employees and descriptive analysis, confirmatory factor analysis and ranking analysis were then utilised to analyse the collected data.

The results indicate that (DFIs) are the preferred source of funds for infrastructure development in South Africa and the appropriate strategy is the Private-Public Partnerships (PPPs). Critical success factors to successful infrastructure development funding were found to include project attributes, financing attributes, government attributes, the borrower or implementing agency attributes, and political and economic attributes. Factors that were found to have the highest impact on infrastructure development funding include economic viability of the project, the risk profile of borrower or implementing agency, availability of funding, strong financial instruments, financial risk, political and economic stability, political support and the social and economic benefits of the project.

The first recommendation for the study is that it is suitable for the NDB to fund infrastructure development in the country and secondly that the NDB should employ PPPs to fund infrastructure development in the country. Furthermore, the DFI should only fund economically viable projects, projects that are accepted by the community and projects for borrowers or implementing agencies with a low-risk profile. Finally, the NDB ought to lobby the government for support and creation of conducive political and legal environments to guarantee successful funding of the infrastructure projects.

## **Acknowledgements**

My sincere gratitude and appreciation to the following special individuals without whose support this project would not have been possible:

- Assoc/Prof. Abdul Latif Alhassan – for your guidance and indefatigable support
- My lovely wife and kids – for the encouragement and unwavering support, and for allowing me to ‘steal’ some family time (and resources) to make this dream a reality
- To my MCom study buddies (Tumi G, Tumi N, Nhlanhla, Zee, Pati, Mercy, Moe, Lisema, Jade and Simba) – for always pushing each other to ‘do this thing’
- And finally, and most importantly to the Almighty – for giving me the ability and wisdom to accomplish this project.

## Table of Contents

Plagiarism Declaration .....	i
Abstract .....	ii
Acknowledgements .....	iii
List of Figures .....	vii
List of Tables .....	viii
List of Acronyms and Abbreviations .....	ix
Chapter 1 .....	10
Introduction .....	10
1.1 Background of the Study .....	10
1.2 Problem Definition .....	14
1.3 Statement of Research Objectives .....	15
1.4 Justification of the Study .....	15
1.5 The organisation of the Study .....	16
1.5.1 Chapter One: Introduction and Background .....	16
1.5.2 Chapter Two: Literature Review .....	16
1.5.3 Chapter Three: Research Methodology .....	16
1.5.4 Chapter Four: Research Findings and Discussions .....	16
1.5.5 Chapter Five: Conclusions and Recommendations .....	16
Chapter 2 .....	17
Literature Review .....	17
2.1 Introduction .....	17
2.2 Purpose of DFIs .....	17
2.3 Overview of DFI Ecosystem and Infrastructure Development in South Africa .....	19
2.3.1 DFI Ecosystem in South Africa .....	19
2.3.2 Infrastructure Development in South Africa .....	21
2.4 Theoretical Foundation .....	22
2.4.1 Interest Rate Structure Theory .....	22
2.4.2 Agency Theory .....	22
2.4.3 Theory of Financial Intermediation .....	23
2.5 Strategies for Financing Infrastructure Projects .....	24
2.6 Determinants of Successful Development Financing .....	25
2.2 Summary .....	29
Chapter 3 .....	30
Methodology .....	30
3.1 Introduction .....	30

3.2	Research Approach .....	30
3.3	Population and Sampling .....	30
3.4	Data Collection .....	31
3.5	Analytical Framework .....	32
3.8	Limitations of the Study.....	34
3.9	Ethical Consideration.....	34
3.10	Summary .....	35
Chapter 4.....		36
Research Findings and Discussions .....		36
4.1	Introduction.....	36
4.2	Response Rate .....	36
4.3	Demographic Information Findings.....	36
4.3.1	Name of Organisation .....	36
4.3.2	Role in the Organisation .....	37
4.3.3	Years of Work Experience.....	38
4.3.4	Highest Educational Qualification.....	38
4.4	Funding Strategies Findings .....	39
4.4.1	Types of Infrastructure Projects Funded.....	39
4.4.2	Effectiveness of Funding Strategies in South Africa.....	40
4.5	Critical Success Factors Findings .....	42
4.5.1	Project Attributes .....	42
4.5.2	Borrower or Implementing Party Attributes .....	46
4.5.3	Government Attributes.....	49
4.5.4	Financing Attributes.....	52
4.5.5	Political and Economic Attributes .....	55
4.6	Infrastructure Development Funding in South Africa .....	57
4.6.1	Adequacy of Funding.....	57
4.6.2	Adequacy of DFIs .....	58
4.6.3	Importance of NDB.....	59
4.6.4	Impact of the NDB Strategy Policies.....	59
4.7	Confirmatory Factor Analysis.....	63
4.7.1	Sampling Adequacy Test Results .....	63
4.7.2	Reliability Analysis Results .....	64
4.7.3	Convergent Validity Results .....	64
4.8	Ranking Analysis .....	66
4.9	Summary .....	69
Chapter Five.....		71

Research Conclusions and Policy Recommendations .....	71
5.1 Introduction.....	71
5.2 Summary of the study .....	71
5.3 Conclusions.....	72
5.3.1 Appropriate Funding Strategies .....	72
5.3.2 Critical Success Factors .....	73
5.4 Policy Recommendations.....	75
5.4.1 A decision on the NDB’s Involvement in Funding South African Infrastructure Projects .....	75
5.4.2 Appropriate Infrastructure Development Funding Strategies.....	76
5.4.3 Suitable Infrastructure Development Policies .....	76
5.5 Recommendations for Future Research .....	78
References.....	79
Appendix A: Research Questionnaire .....	87

## List of Figures

Figure 1.1: South African Annual Infrastructure Expenditure .....	12
Figure 2.1: Key Failures Affecting Development and the Intermediation Role of DFIs .....	18
Figure 2.2: Financial Intermediation.....	23
Figure 4.1: Types of Infrastructure Projects Funded the Most .....	39
Figure 4.2: Effectiveness of Funding.....	40
Figure 4.3: Funding Adequacy .....	57
Figure 4.4: Adequate DFIs in RSA.....	58
Figure 4.5: Effect of NDB Introduction.....	59

## List of Tables

Table 1.1: Different Funding Sources for RSA Infrastructure Development (2013-2017).....	13
Table 2.1: Developmental Finance Success Factors .....	28
Table 4.1: Employer of Respondents .....	37
Table 4.2: Role in Organisation .....	37
Table 4.3: Employment Duration .....	38
Table 4.4: Highest Educational Qualifications .....	38
Table 4.5: How Project Attributes Impact on Successful Funding for Infrastructure .....	42
Table 4.6: Borrower Attributes Results .....	46
Table 4.7: Government Attributes Results.....	49
Table 4.8: Financing Attributes Results.....	52
Table 4.9: Political and Economic Attributes Results .....	55
Table 4.10: Impact of NDB Strategy Policies .....	61
Table 4.11: KMO and Bartlett's Test .....	63
Table 4.12: Factor Loadings .....	65
Table 4.13: Ranking Analysis.....	68
Table 4.14: Top 5 Ranked Factors .....	69

## List of Acronyms and Abbreviations

AfDB	African Development Bank
BRICS	Brazil, Russia, India, China & South Africa (Association of)
CSFs	Critical Success Factors
DBSA	Development Bank of Southern Africa
DFI	Development Finance Institution
IDC	Industrial Development Corporation
IMF	International Monetary Fund
LADBSA	Land and Agriculture Development Bank of South Africa
NDB	National Development Bank
NDP	National Development Plan
NEF	National Empowerment Fund
NPC	National Planning Commission
ODI	Overseas Development Institute
OECD	Organisation for Economic Co-operation and Development
PPP	Private Public Partnership
SDG	Sustainable Development Goal
SSA	Sub-Saharan Africa
UN	United Nations

## **Chapter 1**

### **Introduction**

#### **1.1 Background of the Study**

South Africa continues to be one of the leading countries in infrastructure development in Africa. The government has developed several development finance institutions (DFIs) to spearhead the financing of infrastructure development in the country (Qunta, 2015:2). These DFIs include Development Bank of Southern Africa, Industrial Development Corporation, National Empowerment Fund and Ithala Development Finance Corporation. The DFIs have not only been involved in financing infrastructure development but also in training relevant stakeholders to have the requisite skills as well as restructuring targeted organisations to capacitate them (Qunta, 2015:2).

It is therefore not surprising that the country is one of the leaders in infrastructure development in the African continent (AfDB, AIDI 2018). According to PwC (2014), South Africa and Nigeria have the most ambitious infrastructure programmes in Sub-Saharan Africa (SSA) and their combined expenditure on infrastructure development makes up approximately 60% of SSA expenditure on infrastructure.

The roles of DFIs are explained in terms of addressing market failures and the United Nations (2005) defines the roles as; appraising the economic and social development impact of projects seeking finance, accompanying investors in the long run through long-term loans, offering technical assistance to sectors essential to growth, attracting investors by facilitating financing operations and alleviating a negative impact of financial crises through countercyclical financing by means of loans during downturns and pooling of efforts with regional financing institutions (UN, 2005).

South Africa has also received funding from bilateral and multilateral financial institutions to finance its infrastructure development projects (Calitz & Fourie, 2007:13). These finance institutions include the World Bank, the International Monetary Fund (IMF) and the African Development Bank (AfDB). However, Calitz and Fourie (2007:13) argue that development finance from the three development finance institutions has not been considered due to

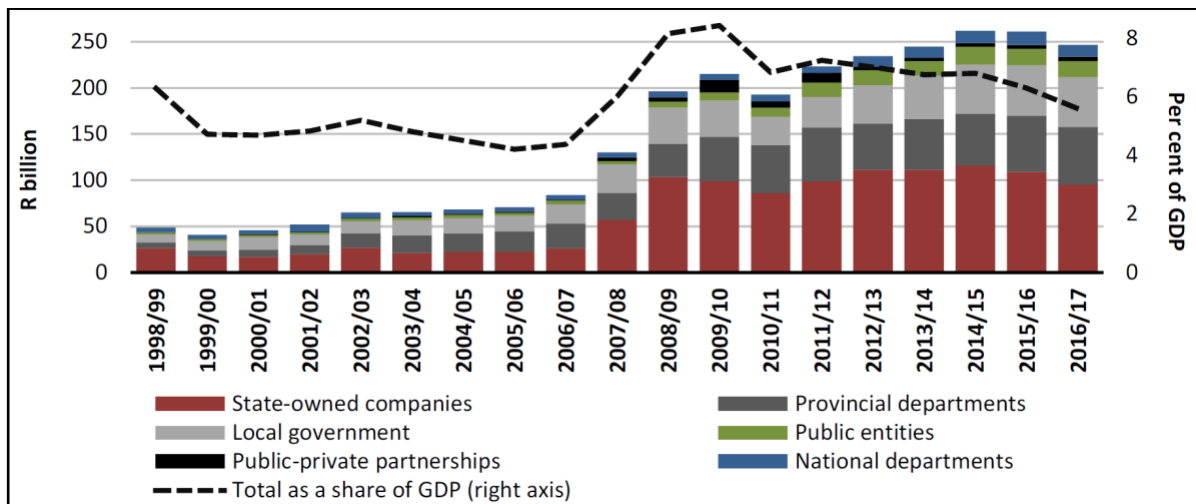
unfavourable conditions that come with the loans as well as the perception that South Africa is supposed to be a source of capital finance when compared with other fellow African and emerging economies. Thus, the funding for infrastructure projects has largely been from the local DFIs, government and to a small extent the private sector.

The South African government continues to develop policies of growing the economy through infrastructure development (Maseko, 2015:129). The government's economic development blueprint, referred to as the National Development Plan (NDP), has a 2030 vision focused on creating 11 million jobs by 2030 through infrastructure development (Mabungu, 2016:2). The NDP proposes a new approach to infrastructure development, which is transforming urban and rural spaces and expanding infrastructure (NPC, 2011).

According to Mabungu (2016:2), the country has three objectives on infrastructure development, which are to provide the infrastructure that stimulates economic growth and job creation, to maintain existing infrastructure and to provide infrastructure to the poor and eradicate poverty. Thus, infrastructure development through government funding, private sector, local DFIs, bilateral and multilateral financial institutions being at the centre of the South African government's plan of growing the economy and eradicating poverty. Therefore, high levels of investment in infrastructure by the government will continue for some time.

The government set up the Presidential Infrastructure Coordinating Commission (PICC) in 2012 which developed the country's first National Infrastructure Plan which then identified 18 strategic integrated projects (SIPs) covering seven key infrastructure categories; water and sanitation, energy, knowledge, social infrastructure, spatial, geographic and regional integration (Finance and Fiscal Commission, 2016). According to OECD (2015), the National Infrastructure Plan endeavours to grow the economy by more than 5% annually through infrastructure development.

According to the National Treasury (2017), South Africa spent about R3 trillion on infrastructure between 1998 and 2017 with annual expenditure increasing from R48.8 billion to R236.2 billion in the same period. The table below summarises the infrastructure expenditure in South Africa for the period 1998-2017.



**Figure 1.1: South African Annual Infrastructure Expenditure**

*Source: National Treasury (2018)*

Despite all the policies on infrastructure development, South Africa is still experiencing infrastructure challenges. According to Maseko (2014:129), the country’s ageing infrastructure is continuously impeding economic growth and development. This has resulted in South Africa experiencing extremely low economic growth over the years. Maseko (2014:130) further argues that social development in South Africa has been ahead of infrastructure development leading to increased pressure on the existing infrastructure assets. For instance, stagnant infrastructure for electricity development led to the crippling electricity load-shedding in 2008, while inadequate water infrastructure led to the much publicised ‘day zero’ in Cape Town in 2017/2018 where the city was predicted to run out of water.

In the face of above-mentioned infrastructure challenges, South African state-owned enterprises and government departments have resorted to massive infrastructure expansion programmes (Mabuza, Ismail, Pillay & Xolo, 2014:1). Some of this infrastructure expansion is funded by blended finance, which has resulted in increased tariffs for critical services like electricity and which in turn led to general unhappiness of the populace. This was as a result of high transaction costs and finance charges from some of the funding sources.

It is therefore essential for the country to consider other alternatives to infrastructure funding. The funding ought to be readily available, without constraining conditions and should not lead to basic services from the infrastructure assets becoming unaffordable to the general population

and therefore leading to the high cost of living and resultant citizen unrest over the affordability of the services. The table below illustrates the ratio of the different funding sources that contributed to infrastructure development in South African infrastructure between 2013 and 2017.

**Table 1.1: Different Funding Sources for RSA Infrastructure Development (2013-2017)**

		Funding per year (\$million)				
		2013	2014	2015	2016	2017
Source of Funding	Government	3495	3384	3855	6307	6699
	Private Sector	3132	15	3813	658	0
	Bilateral/Multilateral	1175	1529	1763	118	495
	Other Governments eg China	0	0	2238	500	1500
	<b>Total</b>	<b>7802</b>	<b>4928</b>	<b>11669</b>	<b>7583</b>	<b>8694</b>
<i>Source: ICA (2017)</i>						

South Africa is a member of BRICS which is an association of five major emerging world economies with a special agenda of assisting the global south in achieving its agenda of poverty eradication, reducing inequality, and achieving sustainable development (Mazenda & Ncwadi, 2016). Other members include China, Russia, Brazil, and India. This group formally established a bilateral development finance institution in 2014, namely the New Development Bank (NDB) (Cooper & Farooq, 2015:1). The NDB's operational strategy emphasises sustainable infrastructure development that incorporates environmental and social considerations. The bank's participation will be in the form of equity participation, bonds, guarantees and low-fee loans distributed in an approved, equitable and transparent system (Mazenda & Ncwadi, 2016).

The establishment of the NDB offers the opportunity for reforms to the global development landscape while ensuring that the development financing is tailored for the needs of the BRICS countries, especially poor and marginalised communities (OXFAM, 2014). For South Africa in particular, the NDB can fill the gap for infrastructure funding by providing the required capital resources to enhance the country's infrastructure needs in line with the NDP. South Africa's infrastructure funding gap is not as severe as most countries in SSA but the country still faces challenges in mobilising funding for infrastructure development through traditional DFIs (Baker McKenzie, 2019).

South Africa's infrastructure funding gap as of the year 2017 was US\$4 billion (R56 billion) compared to US\$3.8 billion for 2016 and, according to infrastructure investment forecasts, the country is expected to invest US\$441 billion (R6.2 trillion) to plug the infrastructure gap by 2040 (Global Infrastructure Hub, 2017). However, it is not only the provision of funding that might make the NDB become successful in financing infrastructure projects in South Africa but also attention to issues, such as the use of country systems, and sustainable development will be core to its operations. The NDB has to find solutions to some of the challenges highlighted by other multilateral development banks when funding developing countries such as South Africa; weak country systems, country and political risks, and skills shortages (Prinsloo, 2017).

This study is taking a holistic approach by investigating factors that may lead to the NDB becoming successful in financing infrastructure development in South Africa. The current failures in infrastructure development in South Africa call for innovative ways of funding and implementing infrastructure projects. The study focuses on the effect of some of the failures of delivering infrastructure such as the delays in projects completion, inadequate funding, and poor planning. The country has to fast-track its efforts to create a conducive environment to attract investment to meet the United Nations Sustainable Development Goals (SDGs).

## **1.2 Problem Definition**

In 1994, the democratic South African government inherited infrastructure that was inadequate and in a poor state (Mabugu, 2016:1). Over the years, the government has heavily invested in infrastructure development, but the country's state of infrastructure has not improved significantly (Van Heerden, Burger, Coetsee, Mahlangu & Naude, 2015:172). According to Mabuzza *et al.* (2014:569), the country's current infrastructure is not in a position to meet its future needs. Over the years the South African economic policies like the New Growth Plan, the Industrial Action Plan and the NDP have been modelled to address the infrastructure problems in the country (Mabunga, 2016:2).

The country has experienced crippling electricity problems due to inadequate infrastructure for the generation of electricity as well as a high road accident rate due to the poor condition of the road infrastructure (van Heerden *et al.*, 2015:173). The country's infrastructure problems are largely due to lack of funding (Mabuzza *et al.*, 2014:574). The emergence of BRICS' New

Development Bank has provided South Africa with an opportunity to access funding and expertise for infrastructure development from the development finance institution.

The study is focusing on providing a model for the New Development Bank to successfully finance infrastructure development in South Africa. The study seeks to answer the following research questions:

- What funding strategies can be employed by the New Development Bank to finance infrastructure projects in South Africa?
- What are the critical success factors that the New Development Bank should consider to successfully finance infrastructure development in South Africa?

### **1.3 Statement of Research Objectives**

The study seeks to meet the following research objectives:

- To investigate the funding strategies that can be employed by the New Development Bank in South Africa to improve the state of infrastructure in the country.
- To identify the critical success factors in financing infrastructure development in South Africa.

### **1.4 Justification of the Study**

The topic for the study has been chosen by the pressing need to address the infrastructure challenges facing South Africa. South Africa is experiencing infrastructure challenges relating to water supply and reticulation, roads, housing, electricity, and communication (van Heerden *et al.*, 2015:173). It is envisaged that the findings and recommendations of the study will be of value to the government's policy of enhancing the country's infrastructure. The management of New Development Bank can also benefit from the results of the study as the results of the study can assist them produce the appropriate strategies for enhancing the success of their infrastructure funding solutions. The findings of the study would be readily available as they will be published for public use.

## **1.5 The organisation of the Study**

This study consists of five chapters whose contents are briefly explained in five sub-sections below.

### **1.5.1 Chapter One: Introduction and Background**

The first chapter of the study justifies the investigation by explaining the background and problem statement. This is followed by research objectives, research hypotheses and the significance of the study.

### **1.5.2 Chapter Two: Literature Review**

Chapter two reviews all existing literature on development financing and infrastructure challenges in South Africa relevant to the study. The literature review comprises existing theories on financing and relevant empirical evidence on development financing and infrastructure challenges.

### **1.5.3 Chapter Three: Research Methodology**

The third chapter explains the quantitative research methodology to be employed in the study. All research methods related to the quantitative research methodology used in the study are justified in the third chapter. The justification explains in full the benefits of using such research methods.

### **1.5.4 Chapter Four: Research Findings and Discussions**

Chapter four presents and discusses the research findings obtained from quantitative analysis. The research findings are discussed in the context of existing theories and empirical evidence.

### **1.5.5 Chapter Five: Conclusions and Recommendations**

The final chapter outlines the conclusions and recommendations of the study. The conclusions are based on the key research findings while the recommendations are there to address infrastructure problems through the New Development Bank's infrastructure funding solutions.

## Chapter 2

### Literature Review

#### 2.1 Introduction

This chapter reviews existing literature on development finance institutions (DFIs) and infrastructure development. Sections covered in this chapter include the purpose of DFIs, an overview of DFI ecosystems and infrastructure development in South Africa, a theoretical foundation on infrastructure development, strategies of financing infrastructure development and determinants of success.

#### 2.2 Purpose of DFIs

This segment reviews in detail the existing literature that is in support of this study. The existing literature is in the development finance and infrastructure development fields as well as in the foundation and operations of the BRICS' NDB with a particular interest in its funding of development infrastructure projects in South Africa. According to GIIN (2017), the UK Department of International Development (DFID) defines development finance institutions (DFIs) as investment corporations that receive government funding and blend the development objectives of traditional multilateral aid agencies with the commercial objectives and approach of commercial banks and private sector.

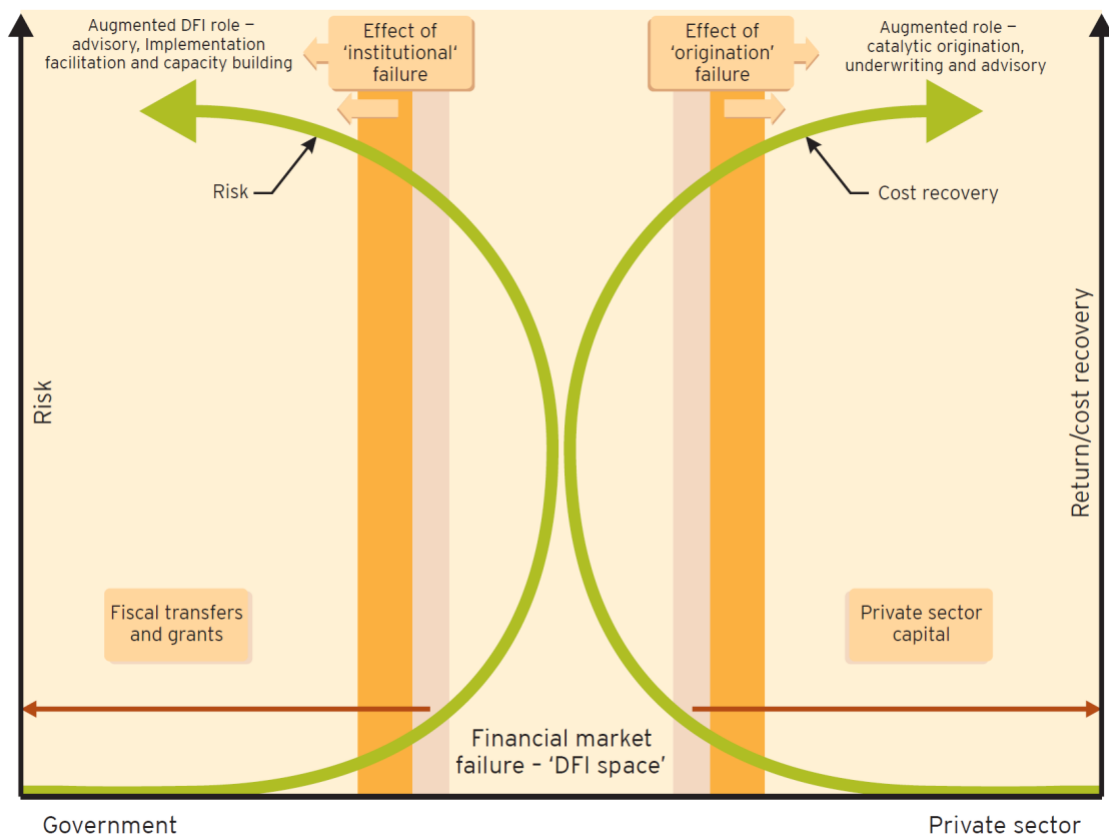
Most DFIs receive state funding with some raising their capital from the private sector and they are expected to be self-sustaining from their investment returns. In South Africa, as in most emerging markets, much of the infrastructure funding from DFIs is required for the capital-intensive sectors such as energy, manufacturing, transport, water and sanitation, and technology development. Massa (2013), in an ODI report, argues that DFIs can also promote development through forward and backward linkages supporting economic activities with indirect backward linkage effects like inputs. This effectively generates employment opportunities in the sector whilst the DFIs also assist other firms upstream, like infrastructural development investors, to upscale productivity as well as creating new employment opportunities (Harneit-Sievers *et al.*, 2015).

According to Nkosi (2017), DFIs provide access to capital to enterprises and for infrastructure projects that are unable to secure funding based on their risk profiles. Gumede *et al.* (2011) in

a DBSA report, allude that successful DFIs finance development projects are part of industrialisation and economic development and also provide facilitation, organisation and idea generation.

However, Gumede (2008) highlights that the role of DFIs has gone beyond addressing market failures but to confronting development failure, the components of which include institutional failure when organisations fail to implement the services they are responsible for, a capacity failure which talks to the skills shortage, origination failure through lack of origination of innovative ways of development, information failure through failure to overcome information asymmetry, and failure to facilitate strategic partnerships. The figure below shows the impact of development failures on a country’s economic landscape.

**Figure 2.1: Key Failures Affecting Development and the Intermediation Role of DFIs**



Source: Gumede *et al.* (2011)

## **2.3 Overview of DFI Ecosystem and Infrastructure Development in South Africa**

This section discusses existing literature in two areas, namely development finance institutions (DFIs) ecosystem in South Africa and infrastructure development in South Africa.

### **2.3.1 DFI Ecosystem in South Africa**

The development banking and finance arena is evolving. For decades it has been dominated by a few multilateral organisations, foremost the World Bank Group as well as regional development banks (Harneit-Sievers *et al.*, 2015). Challenges around securing infrastructure funding have aroused interest in assessing the role DFIs play in infrastructure development. Several regional and national DFIs have emerged to close the gap in funding for developmental projects and some like the DBSA are even operating outside their regions and home countries. DFIs are critical for the economic development of any country.

According to Barnard (2016:10), the South African government uses DFIs to advance economic development as well as empowering previously disadvantaged citizens who are largely the Black African community. The DFIs play a developmental role by mobilising financial resources to finance projects that are normally deemed too risky by the private sector (Barnard, 2016:10). Nemataheni (2016:97) highlights that in South Africa, DFIs finance infrastructure expansion, industrial development, commercial and emerging agriculture, enhancing access to housing, and small and medium enterprises (SMEs) loans. Nemataheni (2016:97) further argues that DFIs become more important in South Africa to meet the developmental objectives of the National Development Plan (NDP). Besides using revenue and private funding, the government relies on the DFIs to finance developmental projects as outlined in the NDP.

Although there are many local DFIs in the country, the prominent local DFIs are the Development Bank of Southern Africa (DBSA), the Industrial Development Corporation (IDC), the National Empowerment Fund (NEF) and the Land and Agriculture Development Bank of South Africa (LADBSA) (Qobo, 2015:99). These DFIs fund different projects based on the mandates stipulated in their institutions' mission statements. In 2008, the National Treasury reported that South African DFIs are yet to realise their full developmental potential

and therefore were not able to act as catalysts for industrialisation, growth, and human development (Gumede *et al.*, 2011:1).

The IDC finances high-impact and labour-intensive projects in areas that cover mining, manufacturing, and infrastructure (Qobo, 2015:99). Impact measurement is based on a projects' contribution towards female ownership, youth ownership, black ownership, environmental impact, and rural impact. On the other hand, the DBSA concentrates on financing social and economic infrastructure (Qobo, 2015:99). While the IDC finances projects across the continent Africa, the DBSA focuses mainly on financing projects across Southern Africa but has recently ventured into funding projects across the entire continent with projects as far away as Ghana.

The LADBSA or Land Bank finances projects relating to agri-businesses and farmers (Mudaliah, *et al.*, 2016:12). Mudaliah *et al.* (2016:12) further explain that the Land Bank's main focus is on large commercial farming projects and projects facilitating new entrants from poor backgrounds to the agriculture sector. The LADBSA is therefore focused on enhancing economic development through financing agricultural projects. The projects are largely in the rural areas which means the Land Bank is critical in improving rural development.

Lastly, the NEF is there to facilitate black economic empowerment by supporting and funding black-owned business and black entrepreneurs (Mudaliah *et al.*, 2016:12). Thus, only black-owned business or businesses that are owned by a black majority are financed by the NEF. A business owned by a majority of black females has an added advantage as the NEF is also concerned with women empowerment.

However, not only local DFIs operate in South Africa. There are also international DFIs like World Bank, International Monetary Fund (IMF), International Finance Corporation (IFC) and African Development Bank (AfDB). These international institutions augment government efforts in financing development projects to facilitate economic growth. According to Nkosi (2017), despite the existence of several DFIs in South Africa, financial support was ranked as the greatest need by entrepreneurs in a Seed Academy Start-up survey in 2015 and 2016.

### **2.3.2 Infrastructure Development in South Africa**

The enactment of the Infrastructure Development Act Number 23 of 2014 points to the importance of infrastructure development to the South African government. The Act seeks to create a Presidential Infrastructure Coordinating Commission (Government of South Africa, 2014:2). The Presidential Infrastructure Coordinating Commission is mandated by the Act to coordinate the development, maintenance, implementation and monitoring of the national infrastructure plan as well to identify infrastructure projects to prioritise for high impact economic development. The Commission is also responsible for coordinating the selection of international partners to promote infrastructure development in the country (Government of South Africa, 2014:2). The Infrastructure Development Act Number 23 of 2014 provides the regulatory framework for infrastructure development in South Africa.

Infrastructure investment in South Africa is regarded by the political leadership as the vehicle to meet citizens' needs. According to Fourie (2007:3), infrastructure investment in South Africa has moved primarily from economic distribution to encouraging higher economic growth. Infrastructure development became a hot topic before the hosting of the 2010 Soccer World Cup (Fourie, 2007:3). The country was expected to have minimum infrastructure in place – like stadiums, road networks and transport – to be able to host the 2010 Soccer World Cup. This necessitated the government to invest billions of Rands in infrastructure development.

Despite the government's efforts in infrastructure development, the country is still experiencing infrastructure challenges. The reality of infrastructure challenges in the country is clearly explained by power failures and outages and other service delivery deficiencies experienced by the population in the transport, water, and sanitation sectors. These challenges underscore the deficiencies of infrastructure networks (Jafta, 2017:3). Urban areas are also showing signs of failing to handle a high population density as a result of inadequate infrastructure development (Palmer *et al.*, 2015:1). Owing to limited financial resources, municipalities are struggling to maintain existing infrastructure and to expand infrastructure development to cater for a growing population.

DBSA (2012), emphasises the importance of investing in both new and existing infrastructure as this leads to the country's economic growth through the increase in productivity as well as

reduction of production costs, as the available infrastructure acts as a factor of production. This means that the level and rate of economic growth in South Africa is correlated to the quality and state of the infrastructure.

## **2.4 Theoretical Foundation**

This study is premised on three theories, namely interest rate structure theory, agency costs theory and theory of financial intermediation. The three theories are explained in detail in the sub-sections below.

### **2.4.1 Interest Rate Structure Theory**

The interest rate structure theory posits that the interest rates on bonds vary with the bond term or maturity period (Balling & Gnan, 2013:161). Balling and Gnan (2013:161) further explain that bond investors are exposed to many risks, including credit risk, currency risk, political risk, and inflation risk. There are also conflicting preferences between bond investors and issuers. Bond investors prefer short-term bonds due to their high liquidity while issuers prefer long-term debt (Balling & Gnan, 2013:162). However, Nymand-Andersen (2018:3) believes that the preferences of bond investors and issuers vary in maturity terms of short term, intermediate- and long-term. Some bond investors and issues might prefer short-term while other bond investors and issuers might prefer long-term maturity securities.

Under the interest rate structure theory, some factors will affect the interest rate for development finance from the New Development Bank in South Africa. The factors may include political risk, inflation risk, default risk and the preferences of the borrowers in South Africa. The interest rate structure theory is therefore applicable to this study. These factors influence the transaction costs of any developmental funding advanced to South Africa.

### **2.4.2 Agency Theory**

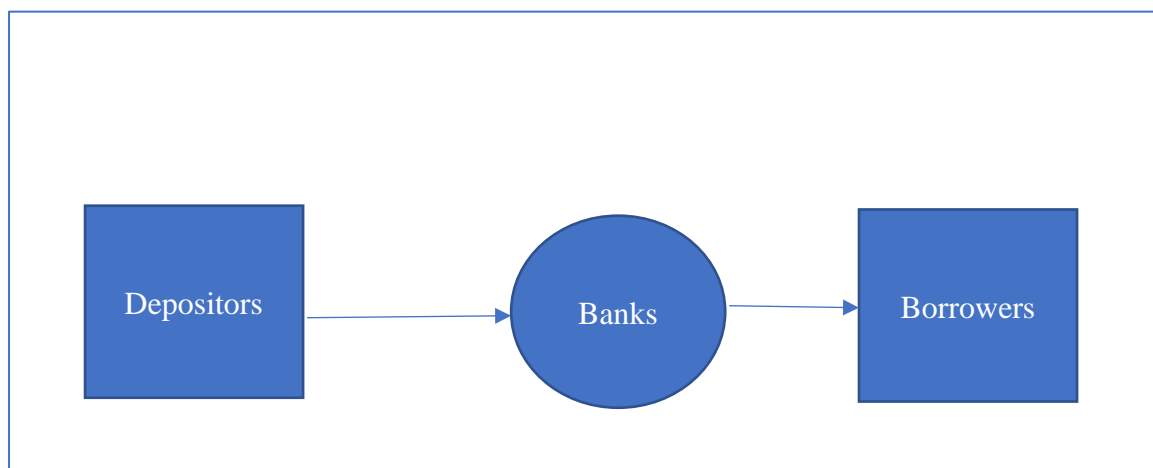
The agency theory was developed by Jensen and Meckling in 1976 (Balling & Gnan, 2013:164). The theory suggests that there is a conflict of interests between principals and agents in an agency relationship (Balling & Gnan, 2013, 2013:164). It is therefore critical for

principals to develop rules to protect their interests as agents may decide to advance their interests. The relationship between the New Development Bank and borrowers may be seen as an agency relationship where the bank is the principal while borrowers are agents. The borrowers are entrusted with the funds of the bank for profit-making. The bank needs to protect its interests by way of contracts as well as through monitoring and evaluating the implementation of the infrastructure being funded.

### 2.4.3 Theory of Financial Intermediation

The theory of financial intermediation posits that banks are financial intermediaries that collect funds from depositors and then lend the funds borrowers (Bertocco, 2006:3) as depicted by the following Figure 2.2.

**Figure 2.2: Financial Intermediation**



Source: Bertocco (2006:3)

Figure 2.2 indicates that banks collect money from individuals and institutions with surplus funds (depositors) and then lend funds to people or institutions with a deficit of funds (borrowers). According to Andries (2009:254), financial intermediaries play an important role as they reduce transaction costs and reduce risks related to information asymmetry. Thus, borrowers find it attractive to go via banks to borrow money to reduce borrowing costs and risks related to borrowing from unknown individuals and institutions with surplus funds. The successful funding of infrastructure in South Africa is therefore affected by the level of risks and the level of interest rates.

## 2.5 Strategies for Financing Infrastructure Projects

There are several strategies that can be employed in financing infrastructure projects. Public-private partnership (PPP) has become a popular arrangement in financing large infrastructure projects. PPP is a partnership between the public and private sector which funds large projects of interest to both parties (Maseko, 2014:130). It is an arrangement that addresses lack of funding if the project is financed by one sector while at the same time promoting sharing of risks between the two sectors. PPPs can either be in the form of short-term loans or long-term loans.

Another funding option is strictly private sector financing without partnering with the public sector (Maseko, 2014:131). This is when a private bank decides to go it alone without requiring the involvement of the government and can also make use of short-term loans or long-term loans. Calitz and Fourie (2007:7) pointed out that funding can also be in the form of equity financing where a bank provides capital as a venture capitalist. The bank finances the project and gets shares in the project. The financier will only recoup its money by sharing in profits and trading its shares when it is ready to do so. The involvement of the private sector through delivering finance and technical assistance may offer long-term opportunities and delivery of high quality and efficient services. (World Bank, 2010).

Infrastructure financing can also be through public financing. Public financing refers to financing infrastructure from government budget (Mabuza *et al.*, 2014:8). The government can raise finance through taxation and issuing debt instruments like bonds and treasury bills. The advantage of public financing is that the government borrows at lower interest rates than the private sector (Mabuza *et al.*, 2014:8). However, Mabuza *et al.* (2014:8) believe that public financing restricts project scope implementation due to limited funding. This raises the need for using PPPs in financing infrastructure to take advantage of public financing while at the same time neutralising the disadvantages of financing infrastructure purely from public finance.

Brown *et al.* (2013) highlight the fact that there are insufficient or limited sources of capital finance to meet the demand and close the gap for infrastructure development in South Africa,

which opens up the opportunity of further funding by DFIs such as the NDB, especially for municipalities who also need a great deal of technical support.

## **2.6 Determinants of Successful Development Financing**

This section discusses the empirical evidence relating to critical success factors for development financing. The critical factors for financing infrastructure development are widely reported in the existing literature (Chan *et al.*, 2010:484). This means there is vast empirical evidence on infrastructure development financing. However, most of the existing empirical evidence is from outside the national boundaries of South Africa.

These factors can be classified into various categories depending on different studies. For instance, Dada and Oladokun (2008:6) classified the factors into five categories, which are; appropriate risk allocation, sound financial package, and reliable consortium with strong technical competence, economic viability, and favourable investment environment. Chan *et al.* (2010:484) added two further categories, namely judicious government control and transparent and efficient procurement processes. Conversely, Geroniks and Legnieks (2015:31) believe that the factors can be grouped into two categories, which are general factors and project-related factors. The two categories cover almost all the factors explained in the earlier mentioned seven categories. These authors are generally in agreement on the critical success factors behind successful infrastructure development financing.

Appropriate risk allocation relates to identifying the risks affecting the project or infrastructure under consideration for funding (Dada & Oladokun, 2008:6). The identified risks will be covered by different arrangements that may include insurance cover, shareholder agreement, government guarantee, loan agreement and supply agreement (Dada & Oladokun, 2008:7). In the case of infrastructure financing through PPPs, contractual agreements ought to be signed between the parties to ensure the project risks are shared (Botlhale, 2016:32).

Consequently, the parties to the agreement concur that the project being financed might not succeed (Joynes, 2019:4). The European Network on Debt and Development (2017a:13) argues that the purpose of the project being financed ought to be clear to reduce risks to the financing institutions. Projects risks are normally high at the early development stage of the project

(Oberholzer, Schneider-Roos, Boulanger & Van Staden, 2018:4). It is therefore essential to target the early development stages of the projects with effective risk mitigation strategies.

A sound financial package will cover fixed and low-interest rate financing, long-term debt financing, low financial charges, ability to deal with fluctuation in interest rates and stable currency (Chan *et al.*, 2010:485). Low-interest rates have the impact of increasing infrastructure development financing as a result of improved ability to repay the loans (Tyson, 2018:13). However, Switala (2009:9) is of the view that projects associated with high risks attract high-interest rates.

A strong consortium refers to a good partnership agreement with required management competence and know-how (Chan *et al.*, 2010:485). This is important, especially in public-private partnership projects. Both the public and private sector project team members ought to have the requisite technical know-how relating to the project or infrastructure (European Network on Debt and Development, 2017b:13). A strong consortium is also critical to raise adequate funds for the project as well as promoting innovation in the financing structure (Brett, 2017:16). Mobilisation of financial resources for sustainable development in any country is the function of both the private and public sectors (World Economic Forum, 2019:6). Exclusion of one sector harms the sustainable development in any jurisdiction.

Economic viability is concerned with the economic feasibility of the infrastructure (Geroniks & Legnieks, 2015:30). The infrastructure has to be able to generate long-term cash-flows, have limited competition and be profitable over a long period (Geroniks & Legnieks, 2015:32). An infrastructure project that is not financially feasible is not worth financing as the borrower will struggle to repay the funding. Schoenmaker (2018:1) argues that economic viability should augment eradication of income inequality as well as promoting the provision of basic needs to all. The economic viability of the project has to be supported by stable macro-economic and political environments (Md Lasa, Ahmad & Takim, 2015:1243; World Bank, 2018:16).

The economy has to perform well in terms of inflation levels, the certainty of economic policies and efficient financial markets. Politically, the government ought to have enabling regulations as well as being supportive of the infrastructure project. Amirah (2005) argues that the funding mechanism should address cost recovery, and this affects pricing, especially in privately funded

infrastructure projects. This has the potential of pricing public goods beyond the affordability thresholds of most citizens.

At the same time, due to government interventions, the cost of the public goods is usually capped and private investors may find this unattractive as it makes the investment term too lengthy, impacts on their returns, and increases the risk, especially in developing countries like South Africa. For these reasons the introduction of the NDB will be beneficial as the government and its departments seek more affordable funding and technical support for the infrastructure development projects.

Another critical factor in the provision of funding for infrastructure is the stability of the country's financial sector. The financial system ought to be aligned with the sustainable developmental role of the state through effective regulation (Guterres, 2018:1). It is the role of the state to ensure the financial system is effectively regulated to support national economic objectives (European Commission, 2017:1). The flexibility of banking regulations is also essential to promote the stability of the financial sector (National Treasury, 2019:5; Samans, 2017:6).

Young (2013), argues that the development and sophistication of the financial markets in South Africa, due to strong regulatory and legal frameworks, is a positive aspect. This makes it easy for any investor or funding agency because they view this market as less risky than other developing countries. The NDB could exploit this factor and utilise the existing country systems to provide and manage funding for infrastructure in RSA. In South Africa, effective provision of public infrastructure can only be achieved through coordinated planning amongst the three spheres of government (DBSA, 2012). This becomes a determinant for the successful roll-out of infrastructure.

It is critical for the infrastructure development project to have a competitive procurement process to avoid overpricing of inputs and materials (Chan *et al.*, 2010:485). Chan *et al.* (2010:485) further argued that the scope of the infrastructure project has to be clear from the onset to avoid unnecessary cost escalation and scope-creep during the construction phase of the project. Table 2.1 below presents a summary from literature of success factors required for development financing.

**Table 2.1: Developmental Finance Success Factors**

No.	Author	Country	Analytical Framework	Findings
1	Arimah (2005)	Global (Developing Countries)	Determinants of infrastructure spending	Economic viability; Cost recovery
2	Bothale (2016)	Botswana	Economic Development through PPPs	Right legal & regulatory framework; Requisite technical skills; Type of contracts; Appropriate risk allocation
3	Chan <i>et al.</i> (2010)	China	Critical success factors of PPPs	Judicious government control; Transparent procurement system; Efficient procurement system; Scope clarity; Sound financial packages
4	Dada & Oladokun, (2008)	Nigeria	Critical success factors of PPPs	Appropriate risk allocation; Sound financial package; Reliable consortium; Favourable investment environment
5	DBSA (2012)	South Africa	Infrastructure development analysis	Effective planning; Effective coordination
7	European Commission (2017)	EU	Sustainable finance	Judicious government control
8	European Network on Debt and Development (2017)	EU	Project risk analysis	Appropriate risk allocation; Scope clarity
9	Geroniks & Legnieks (2015)	Latvia	Critical success factors of PPPs	Economic viability; Appropriate risk allocation; Sound financial package; Reliable consortium
10	Guterres (2018)	Global (UN)	Development Finance Flows	Financial system viability
11	Md Lasa <i>et al.</i> (2015)	Malaysia	CSFs for private financing	Economic viability; Favourable economic environment; Developed financial markets
12	Mabuza <i>et al.</i> (2014)	South Africa	The regulatory framework for infrastructure development	Supply chain processes; PPPs; Stakeholder engagement; funding strategies for infrastructure development
13	Oberholzer <i>et al.</i> (2018)	Switzerland	Project preparation considerations	Appropriate risk allocation
14	Qobo (2015)	South Africa	Role of DFIs	Sustainable infrastructure development; Socio-economic benefits; Appropriate risk allocation
15	Schoenmaker (2018)	Belgium	Sustainable Finance	Economic viability;
16	Tyson (2018)	United Kingdom	Private infrastructure financing	Sound financial package; Economic viability; Favourable economic environment
17	World Economic Forum (2019)	Global	Sustainable Finance	Economic viability; Requisite technical skills;
18	Young (2013)	South Africa	Financial Markets	Developed financial markets; Right legal & regulatory framework

## **2.2 Summary**

The existing literature in support of the study has been discussed in chapter 2. It commenced by highlighting the DFIs operating in South Africa which include the World Bank, IMF, IDC, NEF, AfDB and DBSA. Despite all these DFIs operating in South Africa, the state of infrastructure in the country is poor. The study is based on two theories, namely interest rate structure theory and intermediary theory. The study also discussed infrastructure funding strategies that include private sector funding, public sector funding and PPPs. Finally, critical success factors for successful infrastructure funding are discussed. The next chapter provides the research methodology of the study.

## **Chapter 3**

### **Methodology**

#### **3.1 Introduction**

This chapter explains in detail the research methodology used in executing the study. The subsections covered in this study are research approach, population and sampling, data collection and data analysis.

#### **3.2 Research Approach**

Three research approaches can be used in research, namely qualitative research, quantitative research and mixed research (Saunders, Lewis & Thornhill, 2009:108). The study employed a quantitative research approach to test the study's two research hypotheses. The study does not seek to develop new theories but to test existing theories. This is because the area of development finance and infrastructure development is widely reported in the existing literature. The quantitative research approach has also been chosen due to its promotion of objectivity. Objectivity is critical in the study to achieve incontestable research findings and credible recommendations that can resolve the infrastructure development challenges in South Africa.

#### **3.3 Population and Sampling**

A population can be defined as all units of analysis in the field of inquiry (Kumar, 2011:98). The targeted research participants, that are regarded as the population units, ought to be in a position to answer the research questions from the research instrument (Saunders *et al.*, 2007:151). The study is investigating financial and infrastructure development aspects which can only be competently answered by people with a background in those fields.

The population of this study consists of employees of the Development Bank of South Africa (DBSA) and the Industrial Development Corporation (IDC), which have been funding infrastructure development in South Africa since 1983 and 1940, respectively. The employees for these DFIs are therefore in a better position to answer questions on what the New Development Bank ought to do differently to successfully fund infrastructure projects in South Africa.

Probability sampling was used to select 20 employees to be the sample of the study. The small sample size was a result of the study being limited to the 2 DFIs as well the confinement to employees directly involved with funding of infrastructure development. While several authors argue that 50 is the minimum acceptable sample size (Hair et al., 1995), de Winter, Dodou and Wieringa (2009) argue that Exploratory Factor Analysis (EFA) can yield good quality results for small sample sizes under conditions of high communality, high number of observed variables and small number of factors. For the study, simple random sampling was used to give all employees of the DBSA and IDC involved with infrastructure development projects an equal chance of selection (Walliman, 2011:96). This probability sampling technique also makes it possible to generalise the research findings to the whole population. The quantitative research approach used in the study is also premised on the need to generalise research findings to the whole population. This makes simple random sampling an appropriate sampling technique for the study.

### **3.4 Data Collection**

A questionnaire was used to collect primary data from the 20 employees selected for the sample. Questionnaires are regarded as appropriate instruments for quantitative research as they also promote the collection of objective data (Saunders *et al.*, 2007:357). The other attributes of questionnaires that make them relevant for this study are that they are used in large samples and have low costs (Saunders *et al.*, 2007:357).

This study uses a relatively large sample of 20 employees and incurring low costs is of importance to the researcher. Likert scale-type questions (with responses ranging from strongly disagree to strongly agree), which are regarded as closed-ended questions, will be formulated for the questionnaire. Closed-ended questions will make it possible to focus on areas of importance to the study. This will assist in eliminating interviewer bias. The data collection took place in the period between 10 January 2020 and 31 January 2020. The research instrument covered questions on funding strategies and critical success factors on infrastructure financing which are explained as follows:

**Funding strategies:** Infrastructure development can be financed through public financing, public-private partnership, and private financing (The African Capacity Building Foundation, 2018:29). The government can issue bonds and treasury bills to finance infrastructure development while private sector financing can be in the form of equity financing and long-term loans. Funding strategy variables used in the study are related to PPPs and private funding strategies include bonds, treasury bills, long term financing and equity financing.

**Critical factors for successful infrastructure financing:** Critical success in infrastructure financing includes the following factors:

- efficient regulatory environment;
- technical skills;
- financial complexity (weak currency, lack of experience to finance infrastructure projects and narrow capital markets);
- enabling economic environment (sound financial discipline, price stability and lack of financial repression);
- enabling political environment (political stability, political will, government capacity and absence of corruption);
- adequate competition;
- efficient resource allocation in the economy;
- a strong legal system;
- efficient information flow in the economy; and,
- well-functioning accounting and audit systems  
(Development Bank of South Africa, 2011:6-9).

### **3.5 Analytical Framework**

A two-stage approach was used in data analysis. In the first stage, descriptive statistics measuring central tendency and dispersion were computed using the SPSS. The measures of central tendency are means, mode and median, while measures of dispersion are ranges, variance and standard deviation.

### **3.6 Confirmation Factor Analysis**

### **3.6.1 Sampling Adequacy Test**

Kaiser-Meyer-Olkin (KMO) sampling adequacy test and Bartlett's Sphericity Test (BST) were performed to determine whether the sampling for the study was adequate to proceed with the factor analysis. According to Chan and Idris (2017:403), a KMO value of greater than 0.6 and a BST value of less than 0.05 confirm factorability of the correlation matrix.

### **3.6.2 Reliability Analysis**

Cronbach's Alpha coefficient is used in the study to test the consistency of the research instrument's measurements. Taber (2016:6) is of the view that a Cronbach's Alpha coefficient of 0.7 or more is acceptable. However, scales of greater than 0.95 might indicate redundancy (Ursachi, Horodnic & Zait, 2015:681). The study used Cronbach's Alpha values ranging from 0.7 to 0.95 as acceptable.

### **3.6.3 Convergent Validity**

Convergent validity is guaranteed if the measurements are understood by the respondents in the same way they are understood by the researchers (Ibrahim, Shiratuddin & Wong, 2015:30). Factor loadings and probability values associated with the factor loadings are used in the study to assess convergent validity. Convergent validity is confirmed if the p-value is less than or equal to 0.05 and when the factor loading is equal or greater than 0.5 (Ibrahim *et al.*, 2015:30).

The study also employed an average variance extracted (AVE) and composite reliability to measure convergent validity (CR). AVE values of 0.7 and above are considered particularly good while the level of 0.5 is acceptable while CR values of 0.7 and above are considered acceptable (Fornell & Larcker, 1981:39).

## **3.7 Ranking Analysis**

In the second stage, the relevant importance index (RII) for funding strategies and critical success factors for infrastructure funding were calculated using SPSS. RII helps in finding the contribution of a particular variable that predicts a criterion variable both by itself and in combination with other predictor variables (Huan, 2016:108). For this study, the RII of each

factor is interpreted as the contribution of the factors to the successful development financing by the NDB in South Africa.

The ranging of the financing strategies and critical success factors for development financing was then ranked by comparing the factors' RII. According to Zunguze (2016:79), the factor with the highest RII is ranked highest while the factor with the lowest RII is ranked lowest. The following formula is used for computing RII for each factor:

$$\text{RII} = (\sum W)/(A*N) \text{ (Gunduz, Nielsen and Ozdemir, 2013).}$$

Where, W is the weighting given to each factor by the respondents based on the Likert scale and ranges from 1 to 5.

A is the highest weight, which is 5 for this study.

N is the total number of respondents.

### **3.8 Limitations of the Study**

The research is limited due to the small sample size of 20 participants. The other limitation is that the research is focused on 2 DFIs who fund infrastructure development projects. It is therefore recommended that generalisation of the results be done with caution. Further research is recommended with a larger sample and more organisations involved with infrastructure development funding in South Africa.

### **3.9 Ethical Consideration**

The research data was obtained transparently and ethically. This was achieved through a questionnaire that was sent online to the research participants. In fulfilment of the university's procedures, clearance to conduct the research was sought from the Ethics Committee before data collection. This was through the completion of the university's Ethics Committee clearance form and submitting it together with the proposed research questionnaire for approval.

Before sending out the questionnaire, an introductory letter detailing the purpose of the study and ensuring the confidentiality of the participants was sent to the respondents. In addition, to

eliminate any bias, all the questions were constructed as closed-ended which enabled focus on specific areas of the study.

### **3.10 Summary**

The study employed a quantitative research methodology intended to promote objectivity. The population for the study are employees of the IDC and DBSA. Simple random sampling was used to select a sample of 20 employees from the IDC and DBSA. A questionnaire, which is compatible with quantitative research was used in data collection. Quantitative data analysis, encompassing descriptive analysis, confirmatory analysis, and ranking were then used to make sense of the collected data. The next chapter is on research findings and discussions.

## Chapter 4

### Research Findings and Discussions

#### 4.1 Introduction

In this chapter research findings and discussions from descriptive analysis, confirmatory analysis and ranking analysis are presented. The chapter commences by discussing the response rate of the study followed by descriptive analysis research findings. Discussions on descriptive analysis of demographic information, funding strategies and critical success factors are then followed by confirmatory factor analysis results and discussions. Finally, research findings and discussions from the ranking analysis of funding strategies and critical success factors are presented.

#### 4.2 Response Rate

The sample of the study was made up of 20 employees from two DFIs, namely the DBSA and IDC. All employees selected through simple random sampling from the two DFIs completed and submitted their questionnaires. Thus, the response rate of the study is 100%. A high response rate is credited with enhancing the representativeness of a sample (Saunders *et al.*, 2009:220). It can thus be argued that the representativeness of the study's sample was enhanced by the perfect response rate of the study. This further enhances the generalisability of the research findings to the targeted population.

#### 4.3 Demographic Information Findings

The research participants responded to four demographic information questions. The questions were on an organisational name, role in the organisation, years of experience working for the organisation and highest academic qualification held by a research participant. The results are given and discussed below.

##### 4.3.1 Name of Organisation

The distribution of research participants between IDC and DBSA is given in the following Table 4.1.

**Table 4.1: Employer of Respondents**

<b>Organisation</b>	<b>Frequency</b>	<b>Percentage (%)</b>
DBSA	11	55%
IDC	9	45%
<b>Totals</b>	<b>20</b>	<b>100%</b>

Source: Researcher's estimates from Research data

Table 4.1 indicates that 45% of the respondents were IDC employees while 55% were DBSA employees. Thus, the views of the study are dominated by the DBSA employees as they formed the majority of the respondents. However, because the study sample was selected through simple random sampling, which promotes representativeness, the research findings can then be generalised to reflect views of both organisations.

### **4.3.2 Role in the Organisation**

The research participants were employed in the finance, infrastructure development, project management, contract management, and engineering functions of IDC and DBSA as revealed in the following Table 4.2.

**Table 4.2: Role in Organisation**

<b>Role</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Finance	5	25%
Investments	0	0%
Infrastructure development	4	20%
Project management	5	25%
Contract management	2	10%
Engineering	2	10%
Other	2	10%
<b>Totals</b>	<b>20</b>	<b>100%</b>

Source: Researcher's estimates from Research data

The largest group of the research participants (30%) were employed in the finance function of the two DFIs followed by those employed in the infrastructure development and project management functions with a proportion of 25% each. The least represented employees were employed in the contract management and engineering functions with a representation of 10% each.

The views of the study are therefore represented by employees from the two DFIs' five functions which are finance, infrastructure development, project management, contract

management and engineering. The research findings can be generalised to employees working in the five functions of the IDC and DBSA.

### 4.3.3 Years of Work Experience

**Table 4.3: Employment Duration**

Year of Experience	Frequency	Percentage (%)
1-5 years	0	0%
6-10 years	4	20%
11-15 years	5	25%
Over 15 years	11	55%
<b>Totals</b>	<b>20</b>	<b>100%</b>

Source: Researcher’s estimates from Research data

Table 4.3 above presents the employees’ work experience results. The results show that there were no research participants who had worked for less than six years for either the IDC or DBSA whilst 20% had worked for six to 10 years for the two DFIs. Twenty-five percent of the research participants had worked for 11 to 15 years, while 55% had worked for over 15 years. Further analysis indicates that the average years of experience for the respondents was 12.2 years. When considering the average years of experience for the respondents it can be concluded that they had adequate knowledge about funding strategies and critical success factors for funding infrastructure at the two DFIs. The responses from the research participants can be regarded as credible.

### 4.3.4 Highest Educational Qualification

**Table 4.4: Highest Educational Qualifications**

Educational Qualification	Frequency	Percentage (%)
Diploma	0	0%
Bachelor’s degree	2	10%
Postgraduate qualification	18	90%
<b>Totals</b>	<b>20</b>	<b>100%</b>

Source: Researcher’s estimates from Research data

Table 4.4 shows that no research participants held a qualification of a diploma while 10% held a bachelor’s degree as their highest qualification. The majority of the participants (90%) held postgraduate degrees. Educational qualifications offer several advantages to both employees and employers including; improved thinking capacity, improved competence, and positive attitude towards executing challenging work (Seymour, Hunter, Laursen & Deantoni, 2004:493).

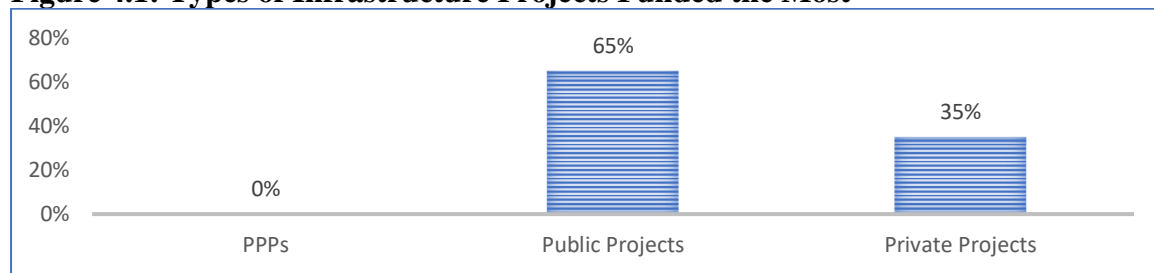
Given that the majority of participants (90%) held the highest education at postgraduate level and the lowest qualification was a bachelor’s degree (10%), this enhances their thinking capacity and competence in responding to the research questions. This enhances the reliability and validity of the research findings.

#### 4.4 Funding Strategies Findings

The research participants responded to three questions relating to funding strategies employed by IDC and DBSA in financing infrastructure development in South Africa. The results of the three questions are presented and further discussed below.

##### 4.4.1 Types of Infrastructure Projects Funded

**Figure 4.1: Types of Infrastructure Projects Funded the Most**



Source: Researcher’s estimates from Research data

Figure 4.1 above is a summary of the types of infrastructure projects most funded by the DBSA and IDC. In terms of the infrastructural development projects prioritisation, Figure 4.1 reveals that the IDC and DBSA mostly finance publicly (government) managed projects with 65% of the research participants confirming this. Thirty-five percent of the participants believed that their organisation mostly finances private sector managed projects. No research participants were of the perception that their organisation mostly finances private-public partnerships projects (PPPs). Although they fund PPPs, they are not the most financed.

It should be noted that PPPs are still a new concept in South Africa and the government has recently (in 2000) set up a PPP Unit under the National Treasury which approves projects to be implemented under this strategy. They also ensure that PPPs are not utilised to evade government procurement systems or evade budget constraints and deficits within state departments. This adds to the administrative layers of project approvals and deters most state

organisations from using this strategy. PPPs are credited with risk-sharing between the private and public sectors and they are also seen to be appropriate in large infrastructure projects (Maseko, 2014:130). The results therefore indicate that there is a lack of risk-sharing in the projects financed by IDC and DBSA.

#### 4.4.2 Effectiveness of Funding Strategies in South Africa

The research participants were asked for their views on the effectiveness in financing infrastructure in South Africa of PPPs, private financing, government financing from revenue collection, DFIs financing and government financing through government bonds or treasury bills. The perceptions of the research participants are summarised in Table 4.2.

**Figure 4.2: Effectiveness of Funding**

Strategies	Mean	SD	Min Value	Max Value
PPPs	3.63	1.18	1	5
Private financing	3.17	1.17	1	5
Government financing (revenue)	2.79	1.06	1	4
DFIs financing	3.89	0.97	2	5
Government bonds/treasury bills	2.89	1.07	1	5

Source: Researcher’s estimates from Research data

Using descriptive statistics, the researcher also wanted to establish the effectiveness of the strategies used above to fund infrastructural development in South Africa. Using the descriptive mean scores in Table 4.2 above, it indicates that DFIs have a mean value of 3.89 which means most research participants agreed that they are the most effective strategy for financing infrastructure development in South Africa. This was followed by private-public partnerships which as ranked second with a mean score of 3.63.

In the same study, private financing with a mean value of 3.17 was also considered to be an effective infrastructure development funding strategy. Interestingly, the study findings revealed that government financing sources were considered to be less effective, with financing from revenue considered to be the least effective financing strategy for infrastructure development, and lastly, followed by financing through treasury bonds. From the perspective of the respondents, DFIs, PPPs, and to some extent private financing, were considered to be effective strategies to enhance the funding model for infrastructural development.

In most cases DFIs by their nature invest in projects that commercial banks and the private sector deem to be risky (Barnard, 2016:10). According to Spratt and Ryan-Collins (2013), DFIs employ various instruments to achieve success in their projects including risk mitigation through loan guarantees, advisory and technical services to government departments and agencies as well as project preparation and development services.

These elements ensure that project funding, and of course implementation, is effective and successful. DFIs are therefore a government vehicle for a formal and structured state intervention to promote economic growth (Qobo, 2015). The effectiveness of DFIs in financing infrastructure development might explain their prevalence in South Africa. There are both local DFIs as well as international DFIs operating in the country. The local DFIs include the IDC, DBSA and Land Bank while the international DFIs include the AfDB, IMF and World Bank.

The effectiveness of PPPs as supported by the research participants can be due to sharing of risks between the private and public sectors as well as improved capacity to raise large financial resources to finance large infrastructure projects (Maseko, 2014:130). Sharing of risks and raising of large financial resources can enhance the success of the funded infrastructure projects (Bothhale, 2016:32; Brett, 2017:16).

With mean values of 2.79 and 2.89 respectively, the respondents viewed government sources of infrastructure funding through public funds (revenue) and treasury bills to be less effective strategies for infrastructure funding. Additionally, the mean values are close to neutral, meaning most of these respondents disagreed or were neutral. The South African government has been maintaining a budget deficit since 2007/2008 (Statistics South Africa, 2019). It is hard for the government to have adequate funds to finance infrastructure through revenue collection which makes the strategy less effective. Low-interest rates associated with government financing make the funding strategy attractive (Mabuza *et al.*, 2014:8) but government structures lack the capabilities and resources to implement projects. Low-interest rates have the effect of enhancing the success of infrastructure development (Tyson, 2018:13).

The country's consistent trade deficit since 2007/2008 means the country's public debt is high making the government's debt service expensive due to high-interest payments (Statistics South Africa, 2019). The high level of public debt reduces the effectiveness of government bonds or treasury bills in financing infrastructure due to high-interest payments. These factors

may have affected the respondents being close to neutral on public funding strategies. The neutrality on whether government bonds or treasury bills were effective or not in financing infrastructure development might be due to the unpopularity of this funding strategy and most participants might not have been exposed to it.

#### 4.5 Critical Success Factors Findings

The respondents were requested to give their views on factors that have an impact on successful infrastructure development in the country. The results from the views of the respondents are presented and discussed in this section. The factors are categorised into five groups, which are project attributes, the borrower or implementing party attributes, government attributes, financing attributes, and political and economic attributes (Md Lasa *et al.*, 2015).

##### 4.5.1 Project Attributes

Table 4.5 below shows the project attributes and their influence in infrastructure development in South Africa. Project attributes specifically relate to issues surrounding each project and how its key components or dimensions contribute to the success of infrastructural development. Results on respondents' views on the 10 project attributes are presented in Table 4.5.

**Table 4.5: How Project Attributes Impact on Successful Funding for Infrastructure**

Project Attributes	Mean	SD	Min Value	Max Value
The economic viability of the project (bankability, viability)	4.21	1.44	1	5
Project Life Cycle Cost	3.88	1.05	1	5
Repayment period	3.56	0.96	1	5
Strength of project proposal	3.63	1.22	1	5
Credibility of Project Execution Plan & coordination	3.26	1.41	1	5
Effective and enforceable contracts	3.21	1.47	1	5
Project Risk	3.68	1.30	1	5
Technological advancement	3.00	0.94	1	4
Type and size of project	3.21	0.77	2	5
Location of project	3.21	1.06	1	5

Source: Researcher's estimates from Research data

From Table 4.5 above, with a mean value of 4.21, it can be seen most respondents agreed that economic viability of the project is the most influential factor under project attributes for the

success of infrastructure development funding in South Africa. This is collaborated by Geroniks and Legnieks (2015:30) who argue that an infrastructure project has to be able to generate long-term cash-flow and have limited competition and be profitable over a long period for it to be a candidate for funding. An infrastructure project that is not financially feasible is not worth financing, as the borrower will struggle to repay the loan (Geroniks & Legnieks, 2015:30).

However, respondents considered technological advancement to have less influence on the success of infrastructural development funding in South Africa. Key learning lessons from the findings were that repayment period and credibility of project execution, including the location of the project, nature of the contracts and project size were not perceived to have a huge bearing on the propensity to invest or finance infrastructural development in South Africa.

The views of the research participants varied from strongly disagree to strongly agree on the suggestion that the project life-cycle cost influences the success of infrastructure development funding in South Africa. However, the mean of 3.88 indicates that on average respondents agreed that the life-cycle cost of a project is influential in the successful funding of infrastructure in the country.

This implies that the majority of employees at the IDC and DBSA have a perception that the project life-cycle influences the success of funding infrastructure development in South Africa. The project life-cycle cost refers to the total funding required for financing the project from its inception to the end of its useful life and beyond. This view of the majority of the employees may be corroborated by Mabuza *et al.* (2014:574) who explain that South Africa's infrastructure problems are largely due to lack of funding. Infrastructure projects that require large amounts of funding might not be prioritised in funding when compared to projects that require small amounts of funding due to lack of funding in the country.

A mean value of 3.56 indicates that on average the research participants agreed that the repayment period taken by a project to settle a loan facility is critical in successful financing of infrastructure development in South Africa. The opinions of the research participants varied from strongly disagree to strongly agree on the suggestion that the repayment period is crucial to the success of infrastructure development financing in South Africa. Thus, the largest group

of employees at the two DFIs perceive the repayment period as a determinant factor in the successful funding of infrastructure development in the country.

Long-term projects might have higher uncertainty when compared to short-term projects. Uncertainty in long term projects increases their risk . Project risk is reported to be an important determinant in the successful funding of infrastructure projects (Dada & Oladokun, 2008:7; Botlhale, 2016:32).

A mean of 3.63 suggests that on average the respondents agreed that the strength of the project proposal influences the successful financing of infrastructure development in South Africa. However, the views of the research participants ranged from strongly disagree to strongly agree. Therefore, to approve development loans, DFIs in South Africa require good project proposals detailing the need for the project, its benefits and alignment to the DFI's strategies for its development agenda.

Overall, the respondents' perception was neutral on whether the credibility of the project execution plan and project coordination was important to the success of infrastructure development financing in South Africa. This is supported by the mean value of 3.26. Nevertheless, the perceptions of the research participants ranged from strongly disagree to strongly agree.

However, the DBSA (2012) explains that in South Africa, the provision of public infrastructure can only be done through effective planning and coordination between the three spheres of government. Thus, effective planning and coordination is crucial in the successful funding of infrastructure development in the country. The perception of the respondents indicates that this aspect of project planning is not being emphasized, which probably contributes to the failures of some infrastructure development projects.

The mean value of 3.21 suggests that on average the respondents were neutral on the view that effective and enforceable contracts are essential for successful funding of infrastructure development in South Africa. The perceptions of the respondents ranged from strongly disagree to strongly agree. Effective and enforceable contracts should not only operationalise the relationship of the parties involved in the infrastructure development but also ensure risks are shared by the parties (Dada & Oladokun, 2008:7). Risk-sharing between parties is essential

as a risk management strategy (Dada & Oladokun, 2008:6) and so is the appropriate allocation of risks.

On average the research participants agreed that project risk was critical to the success of infrastructure development financing in South Africa, as indicated by the mean value of 3.68. The views of the research participants varied from strongly disagree to strongly agree as shown by the minimum and maximum values. Project risk was considered to be a crucial attribute for funding infrastructure development in South Africa. Based on the perception of the majority of the research participants it is the conclusion of the study that project risk is a critical attribute for infrastructure development funding in South Africa. This finding is supported by previous studies (Bothale, 2016:32; Dada & Oladokun, 2008:6).

The average view of the research participants was that technological advancement properties of an infrastructure project neither improve nor negatively impact the success of infrastructure development financing in South Africa. This is following the mean value of 3.00. Technological advancement involves the inclusion of new technologies in infrastructure development as well as in the products. Technological advancement can have a positive impact on infrastructure development (National Infrastructure Commission, 2016:15).

The above is a result of new technology making existing infrastructure obsolete and creating the need for developing new infrastructure in response to new demands (National Infrastructure Commission, 2016:15). Most infrastructure development projects do not involve technological advancement as they deal with the provision of public goods such as roads, provision of water and sanitation, and healthcare. This attribute might not be a critical consideration for the DFIs.

The views of the respondents varied from disagreeing to strongly agreeing on the suggestion that the size and type of project is crucial to successful funding of infrastructure development in South Africa. On average, the respondents were neutral about whether the size and type of project was critical to the success of financing infrastructure development in the country as shown by the mean value of 3.21. Therefore, the employees at the IDC and DBSA are not sure if the size and type of projects are critical factors in infrastructure development funding in South Africa.

The research participants were on average neutral on the view that project location is critical to the success of infrastructure financing in South Africa as shown by the mean value of 3.21. Nevertheless, the perceptions of the respondents ranged from strongly disagree to strongly agree. Conclusively, the largest group of employees at the IDC and DBSA are of the view that the location of a project is essential in the success of infrastructure development funding in South Africa.

#### 4.5.2 Borrower or Implementing Party Attributes

The research analysed the influence of eight attributes of the borrower or implementing party attributes on infrastructure development funding. The results are presented in Table 4.6 below.

**Table 4.6: Borrower Attributes Results**

<b>Borrower Attributes</b>	<b>Mean</b>	<b>SD</b>	<b>Min Value</b>	<b>Max Value</b>
Financial position of implementing party/borrower (liquidity etc)	3.68	1.13	1	5
Experienced & relevant management & technical expertise	3.42	1.50	1	5
Risk profile of borrower/implementing party	3.89	1.33	1	5
Adequate collateral	3.05	1.39	1	5
Adequate resources (plant/equipment, material, financial)	2.95	1.32	1	5
Relevant company experience and track record	3.26	1.41	1	5
Governance structure	3.79	1.24	1	5
Adequate skilled human resources	3.32	1.30	1	5

Source: Researcher’s estimates from Research data

From the results in Table 4.6 above, it can be noted that on average the respondents agreed that the financial position of the implementing party or borrower is critical for the success of infrastructure development financing in South Africa, as indicated by a mean value of 3.68. The minimum and maximum values further suggest that the views of the respondents ranged from strongly disagree to strongly agree. The results indicate that majority of the employees at the IDC and DBSA see the financial position of an implementing party or borrower as an important attribute in infrastructure development funding in the country. DFIs require financial statements from implementing parties or borrowers to evaluate their financial positions.

The minimum and maximum values indicate that the views of the respondents ranged from strongly disagree to strongly agree on the suggestion that the management experience and technical expertise are influential to the success of financing of infrastructure development in

South Africa. Moreover, a mean value of 3.42 confirms that on average the respondents were neutral on the suggestion that management experience and technical expertise are critical to the success of infrastructure development financing in the country.

Dada and Oladokun (2008:6) found strong technical competence to be a critical factor in infrastructure development funding. The technical and management ability of the management team of the borrower indicates that the infrastructure project can be managed effectively throughout its implementation. This sways the DFI to approve the loan application. A mean value of 3.89 confirms that the respondents agreed on average that the risk profile of the borrower or implementing party has an influence on infrastructure financing in South Africa.

The minimum and maximum values reveal that the views of the research participants ranged from strongly disagreeing to strongly agreeing that the risk profile of borrower or implementing party is critical. DFIs normally fund infrastructure projects that are perceived to be risky by the commercial banks and private sector and this includes the risk posed by the implementing agent. Its critical for the DFI to evaluate the risk profile of the implementing party and put in mitigating measures to minimise the impending risk, this also eliminates the problems associated with asymmetric information which tend to be costly and affect project delivery.

According to the UN (2011), development finance is defined as the provision of finance to those projects that are not well served by the financial system as a whole. As such it would be expected that the borrower is not expected to always provide collateral. On average, as indicated by a mean value of 3.05, the respondents were neutral on the view that adequate collateral is important to the success of infrastructure development financing in South Africa.

However, the perceptions of the respondents ranged from strongly disagree to strongly agree as reflected by the minimum and maximum values. The view of the largest group of employees is collaborated by Nkosi (2017:14) who argues that lack of collateral is not a hindrance for getting funding for infrastructure development from DFIs. However, this is contrary to the requirements of commercial banks that demand adequate collateral from borrowers upfront before approving loan applications.

On whether adequate resources in terms of equipment, material and finance are influential in determining the success of infrastructure development funding in South Africa, a mean value

of 2.95 indicates that on average, the respondents were undecided on the influencing attribute. Chan *et al.* (2010:485) argue that implementing parties should form a strong consortium with adequate resources to ensure the success of infrastructure development. The maximum and minimum values further reveal that the views of the respondents ranged from strongly disagree to strongly agree.

On average the respondents were neutral on the view that borrower's relevant experience and track record are critical in successful financing of infrastructure development in South Africa. This is following the mean value of 3.26. The views of the research participants varied between strongly disagree to strongly agree supported by a standard deviation of 1.41. The relevant experience and track record ensures that project team members have the requisite technical know-how relating to the project or infrastructure (European Network on Debt and Development, 2017b:13). Technical know-how is a key element for successful implementation of infrastructure development projects. The DFIs normally assist with project preparation and technical assistance but this is after prior assessment of the capacity of the borrower or implementing party.

The respondents were also asked if the governance structure of the borrower is critical in the infrastructure development funding in South Africa. The mean value of 3.79 indicates that on average the respondents agreed that the governance structure of the borrower is crucial to the success of infrastructure development financing. Also, the minimum and maximum views reveal that the perceptions of the respondents varied from strongly disagree to strongly agree. Governance mechanisms give confidence to the DFIs that the funds will be used for the intended purposes (World Economic Forum, 2019:17). Thus, the DFIs are likely to approve the infrastructure development funding application based on governance mechanisms that are put in place by implementing parties.

The mean value of 3.32 indicates that on average the respondents were neutral to the suggestion that adequate skilled human resources influence the success of infrastructure development financing in South Africa. The minimum and maximum values further reveal that the views of the research participants ranged from strongly disagree to strongly agree.

### 4.5.3 Government Attributes

Table 4.7 presents the results on the views of research participants on how nine government attributes impact the infrastructure development funding in South Africa.

**Table 4.7: Government Attributes Results**

Government Attributes	Mean	SD	Min Value	Max Value
Stability of government structures/instruments	3.74	1.16	1	5
Favourable and stable policies	3.74	1.21	1	5
Favorable legal framework	3.84	1.23	1	5
The efficiency of public service agencies	3.37	0.87	2	5
Adequately skilled public officials	3.00	1.17	1	5
Low bureaucracy levels	2.74	1.25	1	5
Issuance of government guarantees	3.39	1.06	1	5
Government incentives for funding public infrastructure	3.56	1.01	1	5
Country risk	3.94	1.11	1	5

Source: Researcher's estimates from Research data

The respondents on average agreed that stability of government structures is influential in successful financing of infrastructure development in South Africa as indicated by a mean of 3.74. The maximum and minimum values reflect that the views of the respondents ranged from strongly disagree to strongly agree. The South African government seems to support this view as the government set up the Presidential Infrastructure Coordinating Commission (PICC) in 2012, which developed the country's first National Infrastructure Plan, and which then identified 18 strategic integrated projects (SIPs) covering seven key infrastructure categories, which are; water and sanitation, energy, knowledge, social infrastructure, spatial, geographic and regional integration (Finance and Fiscal Commission, 2016). The government recognised the importance of creating structures to manage infrastructure development in the country in support of the NDP.

A mean value of 3.65 indicates that on average the respondents agreed that favourable and stable government policies are influential in the financing of infrastructure development in South Africa. However, the perceptions of the research participants ranged from strongly disagree to strongly agree. Therefore, the majority of employees at the IDC and DBSA view favourable and stable government policies as important for infrastructure development funding in the country. Stability of the policies allows for certainty in planning for both projects implementing agencies and the DFIs.

The research participants were also asked if a favourable legal framework is crucial in infrastructure development funding in the country. The mean value of 3.84 reveals that the respondents on average agreed that a favourable legal framework is critical. Nevertheless, the opinions of the respondents varied from strongly disagree to strongly agree. It can be concluded that the perception of employees at the IDC and DBSA is that a favourable legal framework is crucial for infrastructure development funding in the country.

Young (2013), argues that the development and sophistication of the financial markets in South Africa due to strong regulatory and legal frameworks is a positive aspect in infrastructure development in the country. DBSA (2011) is also of the view that a strong legal system is critical for infrastructure development in any jurisdiction.

The research participants were also asked if the efficiency of public service agencies is influential in the success of financing infrastructure development in South Africa. A mean value of 3.37 confirms that on average the respondents were neutral. However, the opinions of the respondents ranged from disagree to strongly agree, and with a standard deviation of 0.87 it indicates that most of the perceptions were within neutral to agree with the statement. In South Africa, the government has created quasi-government institutions such as DFIs to help with infrastructure development in the country. The institutions include the IDC, DBSA, NEF and Land Bank (Qobo, 2015:99). The efficiency in these DFIs may help with the turnaround for infrastructure development funding applications approval.

It was the view of the respondents on average that adequately skilled public officials were neither important nor unimportant in the successful financing of infrastructure development financing in South Africa. This aligns with the mean value of 3.00. Further analysis reveals that the perceptions of the respondents varied from strongly disagree to strongly agree. The results indicate neutrality on the respondent's perception of adequately skilled public officials being critical for infrastructure development funding in South Africa and those who oppose this proposition. The skilled public officials might be critical in leading the government's vision of infrastructure development as well as formulating relevant infrastructure development policies. Incompetence at government level may hinder the successful formulation of infrastructure development strategies and policies which can have a knock-on negative effect on both the DFIs and the implementing agencies.

A mean value of 2.74 indicates that the respondents were on average neutral on the suggestion that low bureaucracy levels are crucial to the success of infrastructure funding in South Africa. The minimum and maximum values further reveal that the perceptions of the respondents ranged from strongly disagree to strongly agree. According to Nkosi (2017:47), inefficient government bureaucracy is a contributory factor to poor financing of enterprises by the banking sector in South Africa.

Sovereign guarantees are an assurance to the lenders that the government will take certain actions to minimise risks affecting the project and ensure project success. The respondents were asked if sovereign guarantees were crucial in the success of financing infrastructure development in South Africa. A mean value of 3.39 implies that on average the respondents were neutral on the importance of sovereign guarantees. The views of the respondents varied from strongly disagree to strongly agree as per the minimum and maximum values. According to Dada and Oladokun (2008:7), government guarantees reduce project risks which makes the infrastructure development project favourable for funding. It is the view of the majority of employees at the IDC and DBSA that the issue of government guarantees improves the likelihood of approval for infrastructure development funding applications due to reduced project risks.

The respondents were also asked if government incentives for funding public infrastructure influence the success of infrastructure development financing in South Africa. A mean value 3.56 indicates that on average the respondents agreed with this assertion. However, the views of the respondents varied from strongly disagree to strongly agree. Government incentives may include tax incentives whereby enterprises financing public infrastructure are charged a lower tax rate than the normal company tax rate.

Lastly, on the government attributes, the research participants were asked if country risk influences the success of infrastructure development funding in South Africa. A mean value of 3.94 indicates that the respondents agreed that country risk influences the success of infrastructure development financing. This view of the majority of the employees at IDC and DBSA is collaborated by Prinsloo (2017) who explains that country risk relating to the political and economic environment is critical to the funding of infrastructure projects by multilateral institutions. The instability of political leadership may contribute to multilateral institutions

being reluctant to finance infrastructure projects in a given country. This also true for the poor economic environment which hampers the ability of the government to repay its debts. The multinational institutions may find it is a risk to fund public infrastructure in a country with poor ability to repay debts.

#### 4.5.4 Financing Attributes

Table 4.8 below summarises results on the views of IDC and DBSA employees on the importance of nine financing attributes on infrastructure development funding in South Africa.

**Table 4.8: Financing Attributes Results**

Financing Attributes	Mean	SD	Min Value	Max Value
Availability of funding	4.28	1.24	1	5
Stable and vibrant financial markets	3.67	1.05	2	5
Strong financial instruments/structures	3.89	0.87	2	5
Favourable economic conditions (interest rates, inflation etc)	3.72	0.93	1	5
Stable exchange rates	3.17	0.96	1	5
Return on investment	3.44	0.90	1	5
Debt to equity ratio	3.61	1.01	1	5
Repayment period	3.39	1.06	1	5
Financial risk	3.83	1.01	1	5

Source: Researcher's estimates from Research data

Geroniks and Legnieks (2015:30) found that financial aspects relating to financial markets and economic performance are determinant factors in the infrastructure development funding by DFIs. The study sought to evaluate whether this is the case with South Africa. The research participants were asked if the availability of funding is influential in infrastructure development funding. A mean value of 4.28 indicates that on average the respondents agreed that availability of funding is an influential factor in infrastructure development financing. The views of the respondents varied from strongly disagree to strongly agree. Thus, if DFIs lack adequate funds some infrastructure projects earmarked for development might not succeed in obtaining funding from the financial institutions.

The minimum and maximum values show that the views of the research participants ranged from disagree to strongly agree on the suggestion that stable and vibrant financial markets are critical to the successful financing of infrastructure development in South Africa. The mean

value 3.67 reveals that on aggregate the respondents agreed that stable and vibrant financial markets are crucial to the financing of infrastructure development in the country. Conclusively, the majority of IDC and DBSA employees perceive that the stability and vibrancy of financial markets are important to the success of infrastructure development funding in the country. Young (2013) also argues that the development and sophistication of the financial markets in South Africa are critical to the success of infrastructure development funding in the country.

The respondents agreed collectively that strong financial instruments are influential in the financing of infrastructure development in South Africa. This is an indication of the mean value of 3.89. However, the views of the research participants ranged from disagree to strongly agree as per the minimum and maximum values. DFIs can raise funds from the capital markets to finance infrastructure projects. It is the view of the majority of employees at the IDC and DBSA that strong financial instruments are critical for the success of infrastructure development funding in the country. The development and sophistication of South Africa's financial markets as alluded to by Young (2013) may contribute to strong financial instruments which in turn improves the success of infrastructure development funding in the country.

The research participants were also asked if favourable economic conditions as measured by interest rates and inflation are important in the financing of infrastructure development in South Africa. A mean value of 3.72 indicates that on average the respondents agreed that economic conditions are critical to the successful funding of infrastructure development. The perceptions of the research participants ranged from strongly disagree to strongly agree.

It can thus be concluded from the results that employees at the IDC and DBSA largely believe the stability of interest rates and inflation is important to the success of infrastructure development funding in the country. This is confirmed by the interest rate structure theory that posits that the level of interest rates is critical to the relationships between financiers and borrowers. Borrowers generally require low-interest rates while financiers might require high-interest rates to cover risks. High-interest rates might, therefore, hinder some infrastructure project promoters from applying for funding from DFIs due to lack affordability.

A mean value of 3.17 indicates that the respondents on average neither disagreed nor agreed that stability of exchange rates is important to the success of infrastructure development financing in South Africa. Nevertheless, the perceptions of the respondents varied from

strongly disagree to strongly agree as indicated by the minimum and maximum values. Stability of exchange rates might be critical to multilateral institutions that might want to repatriate returns or funds to other countries. If the Rand depreciates significantly against other international currencies, the multilateral institution might incur a currency exchange loss. Stability of exchange rates might also impact import and export enterprises. The majority of the respondents were, however, unsure of the effect of the exchange rate stability to infrastructure funding in South Africa.

The employees that participated in the study were also asked if the return on investment is influential on the success of infrastructure development funding in South Africa. The mean value of 3.44 indicates that the respondents on average neither agreed nor disagreed with the statement but the perceptions of the respondents varied from strongly disagree to strongly agree. Both DFIs and implementing agencies prefer infrastructure projects that have higher investment returns. The higher returns make investing in the infrastructure projects worthwhile.

The study also investigated whether the debt to equity ratio of the borrowing party is critical to the success of infrastructure development funding in the country. A mean of 3.61 points out that on average the research participants agreed that the debt-to-equity ratio was a critical factor in the successful funding of infrastructure development projects. The views of the respondents ranged from strongly disagree to strongly agree. A standard deviation of 1.01 implies that the responses are concentrated between the neutral and strongly agree.

Debt-to-equity ratio indicates the extent to which a borrowing party is financed by debt. It is a risk to provide further debt finance to enterprises with a high debt proportion in their capital structure. This makes debt-to-equity ratio a critical financial ratio that influences the success of implementing parties to get funding from DFIs. This supports the view of the majority of employees at IDC and DBSA that the debt-to-equity ratio is influential to the success of infrastructure development funding in South Africa.

The research participants were also asked if the loan repayment period is essential to the success of infrastructure development financing in South Africa. On average, the respondents neither agreed nor disagreed with the statement. This is in accordance with the mean value of 3.39. The interest rate structure theory suggests that borrowers and financiers prefer varying repayment period (Nyman-Andersen, 2018:3). Some prefer a long-term period while others

prefer a short-term period (Nymand-Andersen, 2018:3). An implementing agent of an infrastructure project is likely to agree to the funding terms that are in line with the preferred repayment period.

Lastly, the employees were requested to provide their perception of the importance of financial risk on infrastructure development funding in South Africa. On average the respondents agreed that financial risk is critical as indicated by the mean value of 3.83. The minimum and maximum values point out that the perceptions of the respondents varied from strongly disagree to strongly agree. Poor creditworthiness of the borrower might lead the DFIs to decline a funding application. However, borrowers with a good financial track record might be treated favourably by DFIs in the funding application.

#### 4.5.5 Political and Economic Attributes

The respondents’ perceptions of the importance of political and economic attributes on infrastructure development funding in South Africa are summarised in Table 4.9.

**Table 4.9: Political and Economic Attributes Results**

Political & Economic Attributes	Mean	SD	Min Value	Max Value
Political risk	3.72	0.99	2	5
Rule of law	3.56	1.17	1	5
Political & economic stability	3.78	1.27	1	5
Social acceptance of project	3.50	1.26	1	5
Political support	3.83	1.12	1	5
Social and economic benefits like employment creation	3.78	0.97	2	5

Source: Researcher’s estimates from Research data

The political and economic attributes were grouped into six categories as shown in the table above. The mean of 3.72 indicates that the respondents on average agreed that political risk is a critical consideration for the success of infrastructure development financing in South Africa. The minimum and maximum values indicate that the views of the respondents varied from disagree to strongly agree. Thus, the majority of employees at the IDC and DBSA perceive that political risk is critical to the success of infrastructure development funding in South Africa. Prinsloo (2017) also reports that political risk is a determinant factor in the success of infrastructure development funding.

The respondents were also asked if the rule of law is a critical factor in the successful financing of infrastructure development in South Africa. A mean value of 3.56 indicates that on the average the respondents agreed that the rule of law is a critical determinant of financing infrastructure. However, the perceptions of the respondents ranged from strongly disagree to strongly agree. It can thus be concluded that most of the employees at the IDC and DBSA believe the rule of law in South Africa is critical in the successful infrastructure development funding. The government should, therefore, ensure justice for all residents and institutions and the respect for the rule of law in general.

The study also investigated if political and economic stability influences the success of infrastructure development funding in South Africa. The mean of 3.78 highlights that on average the research participants agreed that both political and economic stability are essential to the success of infrastructure development financing in the country. Nonetheless, the opinions of the respondents varied from strongly disagree to strongly agree. Thus, the employees at the IDC and DBSA believe economic and political stability are important in the infrastructure development funding in South Africa. This is supported by Md Lasa *et al.* (2015:1243) and World Bank (2018:16) who argue that economic viability of the project has to be supported by stable macro-economic and political environments for DFIs to approve the funding application.

The mean value of 3.50 indicates that the respondents agreed that social acceptance of a project is important to the success of infrastructure development financing in South Africa. However, the perceptions of the research participants ranged from strongly disagree to strongly agree. Infrastructure development which is not supported by the community like the motorway e-tolls system in Gauteng Province might lead to revolt and protests, which might dissuade DFIs to fund such infrastructure projects. However, support and buy-in from the community may persuade the DFIs to fund such infrastructure projects.

On average the respondents agreed that political support is a critical factor in successful financing of infrastructure development in South Africa. This is in accordance with the mean value of 3.83. Nevertheless, the opinions of the responding employees varied from strongly disagree to strongly agree. Political support might entail the government enacting laws that are supportive of infrastructure development or the government making it easy for multilateral institutions to finance infrastructure development promoted by both the private and public

sectors. In South Africa, the government has shown political will in infrastructure development by establishing DFIs like NEF and DBSA.

Lastly, in this category, the employees were asked if social and economic benefits of the infrastructure projects are critical for the funding of infrastructure development in South Africa. The mean value of 3.78 is pointing out that on average the respondents agreed with the suggestion. The minimum and maximum values indicate that the perceptions of the respondents ranged from disagree to strongly agree and this is supported by a standard deviation of 0.97. DFIs normally conduct a cost-benefit analysis when deciding to fund infrastructure projects. Projects are only funded if benefits are higher than the cost. These benefits include economic and social benefits that cover all positive externalities, employment creation, poverty alleviation and increase in industrial output.

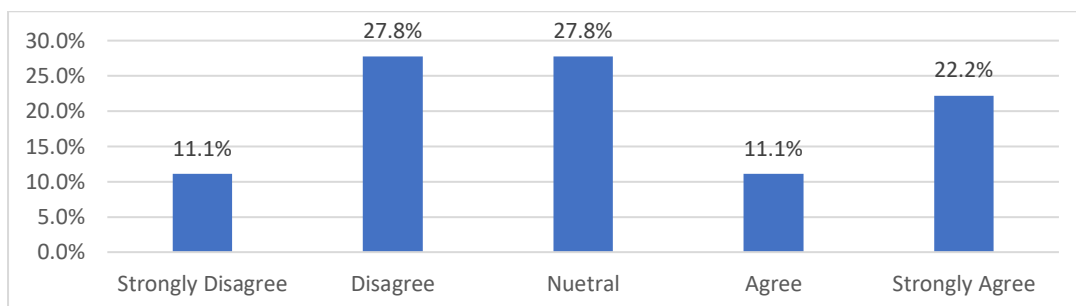
#### 4.6 Infrastructure Development Funding in South Africa

The study also evaluated the state of infrastructure development funding in South Africa. The research respondents answered four questions on this evaluation.

##### 4.6.1 Adequacy of Funding

The research participants were first asked if there is adequate funding of infrastructure in South Africa. The results are presented in the following Figure 4.3.

**Figure 4.3: Funding Adequacy**



Source: Researcher's estimates from Research data

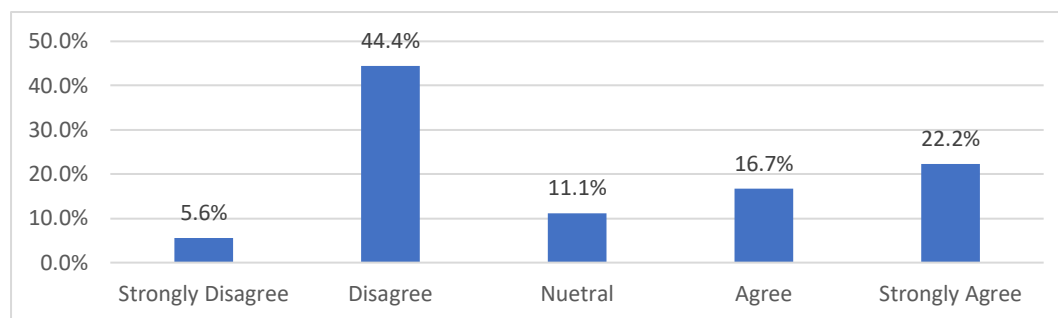
The views of the respondents ranged from strongly disagreeing to strongly agreeing. From Figure 4.3 above, 38.9% of the respondents believed that there are inadequate resources for

infrastructure funding in South Africa whilst 33.3% thought the resources were adequate. 28% of the respondents were neutral. The country's infrastructure relating to roads and electricity are in a poor state. Mabuza *et al.* (2014:574) attributes the poor state of infrastructure to lack of funding. This is supported by the majority of the respondents (38.9%) who are of the view that there is inadequate funding for infrastructure development in the country. Further analysis gave a mean value of 2.95 which indicates that on average the respondents neither agreed nor disagreed that there is adequate funding for infrastructure development in South Africa.

#### 4.6.2 Adequacy of DFIs

The employees that took part in the study were also asked if there are enough DFIs funding infrastructure development projects in South Africa. Figure 4.4 presents the results.

**Figure 4.4: Adequate DFIs in RSA**



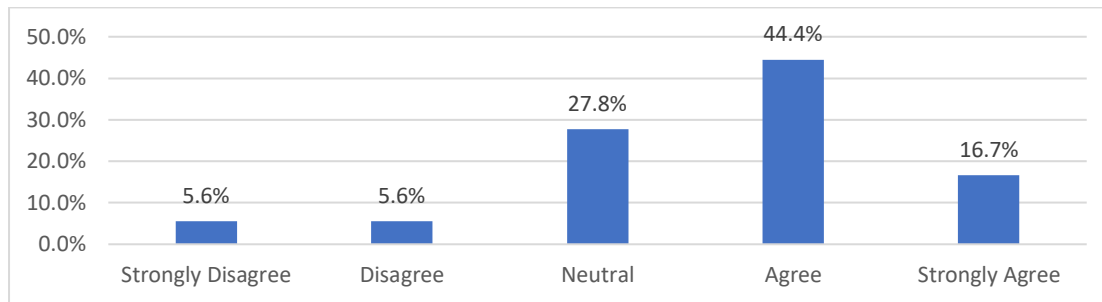
Source: Researcher's estimates from Research data

The perceptions of the responding employees varied from strongly disagree to strongly agree. The results show that 50% of the research participants were of the perception that South Africa does not have enough DFIs funding infrastructure development projects with 38.9% of them disagreeing. Eleven percent of the respondents were neutral. Thus, the largest group of employees at the IDC and DBSA believe there are inadequate DFIs funding infrastructure development projects in the country. The funding gap ought to be filled to improve the poor state of infrastructure in the country (Mabuza *et al.*, 2014:574). The coming of the NDB in South Africa is therefore essential to fill the gap of DFIs lacking in the country as well as reduce the infrastructure funding gap. The mean value of 2.95 indicates that on average the respondents were neutral on the suggestion that there are sufficient DFIs funding infrastructure development in the country.

### 4.6.3 Importance of NDB

The respondents were also asked if the introduction of the NDB can offer an alternative to funding for sustainable infrastructure development projects in South Africa. The results are given in the following Figure 4.5.

**Figure 4.5: Effect of the NDB Introduction**



Source: Researcher's estimates from Research data

Figure 4:5 is showing that the views of the respondents ranged from strongly disagree to strongly agree. The majority of the respondents (61.1%) thought the introduction of the NDB by the BRICS countries will offer an alternative to funding for sustainable infrastructure development projects in the country, while 11.2% of the respondents disagreed.

The mean value of 3.5 also indicates that on average the respondents agreed that the introduction of the NDB will offer an alternative sustainable funding for infrastructure development projects in South Africa. The results confirm that there is a market in the country that is not being served by the existing DFIs that the NDB can take advantage of. It is, therefore, a correct decision by the NDB management for the DFI to serve the South African market.

### 4.6.4 Impact of the NDB Strategy Policies

The framework for the NDB's mission is to mobilize resources for infrastructure and sustainable development (BRICS, 2013). The focus on infrastructure financing is mainly because the BRICS countries have prioritised infrastructure development in their development agendas. (CIGI, 2014). The NDB strategies are, therefore, mainly focused on making funding easily accessible by borrowers and to offer technical assistance beyond the implementation phases.

The respondents were asked for their views on the impact of the strategies highlighted in the NDB strategy policy document on successful funding of infrastructure development in South Africa. The results of the employees' views are summarised in Table 4.10 below.

**Table 4.10: Impact of the NDB Strategy Policies**

NDB Strategy Policy Element	Mean	SD	Min Value	Max Value
A new approach that is flexible and streamlined for assessing and approval of project funding and reviews	3.61	1.11	1	5
Projects are funded as sovereign operations or under sovereign guarantees	3.39	1.11	1	5
Focus on clean energy, transport infrastructure, water resources & sanitation, sustainable urban development, economic integration of member states.	3.72	1.24	1	5
Access to capital markets at good terms	3.78	1.13	1	5
Establishment of regional offices to identify and prepare bankable projects in BRICS member states	3.22	1.03	1	5
Partnership with several international development organisations, National Development Bank and commercial banks to allow for NDB to tap into expertise for the implementation of projects	4.00	1.00	1	5
The bank is independently evaluated to allow for improvements to be effected	3.56	1.17	1	5

Source: Researcher's estimates from Research data

The respondents were asked if a new approach that is flexible and streamlined for assessing and approval of project funding and reviews is critical for the successful financing of infrastructure development in South Africa. A mean value of 3.61 indicates that on average the responding employees agreed that this aspect is critical in the financing of infrastructure in RSA. However, the perceptions of the responding employees ranged from strongly disagree to strongly agree. The majority of the respondents, therefore, feel that NDB's strategy of flexible and streamlined approach for assessing and approval of project funding and reviews will be effective for successful funding of infrastructure development in South Africa as it removes all red tape and bureaucratic tendencies that delay and impact on projects.

The research participants were also asked if the funding of projects as sovereign operations or under sovereign guarantees has the effect of enhancing the success of infrastructure development financing in South Africa. A mean value of 3.39 means that the respondents were neutral on this aspect. Sovereign guarantees highlight the government's commitment to infrastructure development. The credit risk towards DFIs is mitigated which may persuade DFIs to approve funding for infrastructure development projects.

Furthermore, the employees were asked if the NDB's strategy policy of focussing on clean energy, transport infrastructure, water resources and sanitation, sustainable urban development and economic integration of member states is critical to successful funding of infrastructure development in South Africa. The mean value of 3.72 indicates that on aggregate the respondents agreed with this notion. However, the views of the responding employees varied strongly disagree to strongly agree.

The results indicate that the NDB's strategy of focussing on clean energy, transport infrastructure, water resources and sanitation, sustainable urban development and economic integration of member states is critical to the success of infrastructure development in South Africa. South Africa is facing the challenge of poor infrastructure in areas relating to electricity, road infrastructure and water provision. The focus areas of the NDB are therefore important for improving the state of infrastructure in the country. This strategy is in line with the UN's SDGs focus on clean and renewable energy.

A mean value of 3.78 points out that on average the respondents agreed that access to capital markets at good terms is critical for successful financing of infrastructure development in South Africa. It is important to note that the views of the respondents ranged from strongly disagree to strongly agree. The capital markets terms might refer to maturity terms and interest rate levels of bonds (Nymand-Andersen, 2018; Balling & Gnan, 2013). The preferred financial package includes long-term maturity and low-interest rates (Chan *et al.*, 2010:485). It is the view of the majority of the IDC and DBSA employees that access to capital markets at good terms is critical to the success of infrastructure development funding in South Africa.

The perceptions about whether the establishment of regional offices to identify and prepare bankable projects in BRICS member states is critical for successful financing infrastructure development in South Africa, ranged from strongly disagree to strongly agree. A mean value of 3.22 indicates on average the responding employees were neutral on the effects of this strategy policy on infrastructure financing. The opening of regional offices can assist the NDB to better understand local factors of successful funding of infrastructure development projects which can lead to the success of the projects.

A mean value of 4.00 indicates that on average the responding employees agreed that strategic partnerships with other international development organisations can lead to successful

financing of infrastructure development by the NDB in South Africa. The maximum and minimum values point out that the perceptions of the respondents varied from strongly disagree to strongly agree. It can thus be concluded that the majority of employees at the DBSA and IDC perceive a working relationship between the NDB and other international development organisation to be an important strategy to enhance the success of infrastructure development funding in South Africa. The collaboration would mitigate project risks as well as raise adequate resources for the infrastructure projects (Brett, 2017:16).

Lastly, on the NDB strategies, the respondents were asked if an independent evaluation of the NDB to allow for improvements in its processes would influence the success of infrastructure development funding in South Africa. The mean value of 3.56 indicates that on average the respondents agreed with this view. It is also important to note that the views of the respondents ranged from strongly disagree to strongly agree. The independent evaluation entails auditing the Bank’s processes by external parties to give a reliable and valid opinion on the Bank’s shortcomings and strengths. The majority of employees at the DBSA and IDC are of the view that the external auditing of the NDB’s processes can lead to an improvement in infrastructure development funding in South Africa. External auditing eliminates bias associated with internal auditing.

#### **4.7 Confirmatory Factor Analysis**

This section provides results on sampling adequacy test, reliability analysis and convergent validity.

##### **4.7.1 Sampling Adequacy Test Results**

Sampling adequacy was tested using Kaiser-Meyer-Olkin (KMO) sampling adequacy test and Bartlett’s sphericity test (BST). This was done to establish how variables are correlated and variance between them. This test allows one to check the suitability of data for factorial analysis (data reduction). The following are the results of the test:

**Table 4.11: KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.714
Bartlett's Test of Sphericity	Approx. Chi-Square	14,354.21
	df	703
	p-value	0.001

Source: Researcher’s estimates from Research data

The average KMO value of 0.714 is a good measurement of sampling adequacy as it is above the minimum acceptable threshold of 0.6. This indicates that the sample of the study was large enough to proceed with further analysis. Bartlett's sphericity test gave a chi-square value of 14354.21 and a p-value of 0.001. The p-value is lower than the minimum acceptable threshold of 0.05 which further confirms the adequacy of the study's sample (Chan & Idris, 2017:403). It was, therefore, appropriate to proceed with the factor analysis.

#### **4.7.2 Reliability Analysis Results**

Reliability of the measurements of the study's questionnaire is assessed using Cronbach's alpha coefficient. The analysis produced a Cronbach's alpha coefficient of 0.94. As the alpha coefficient is above 0.7 but not more than 0.95 it can be concluded that the questionnaire's measurements are consistent (Ursachi *et al.*, 2015:681; Taber, 2016:6). Thus, if the questionnaire is tested on the same population multiple times it would produce the same results. The results of the study are therefore reliable.

#### **4.7.3 Convergent Validity Results**

The study evaluated convergent validity using factor loadings, average variance extracted (AVE), composite reliability and Cronbach's alpha coefficient (CA). Factor analysis of the study's items produced factor loadings presented in Table 4.12.

**Table 4.12: Factor Loadings**

LATENT VARIABLE	ITEM DESCRIPTION	FACTOR LOADING	AVE	CR	CA
Funding strategies	PPPs	0.571	0.52	0.68	0.70
	Private financing	0.416*			
	Government financing from revenues	0.060*			
	DFIs	0.847			
	Government bonds/treasury bills	0.441*			
	Resources adequacy	0.235*			
Project attributes	Economic viability of project (bankability, viability)	0.886	0.56	0.91	0.90
	Project life cycle cost	0.614			
	Repayment period	0.656			
	Strength of project proposal	0.849			
	The credibility of project execution plan & coordination	0.696			
	Effective and enforceable contracts	0.779			
	Project Risk	0.863			
	Technological advancement	0.547			
	Type and size of the project	0.484*			
	Location of project	0.188*			
Borrower or implementing agency attributes	Financial position	0.878	0.61	0.92	0.94
	Competent management & technical expertise	0.820			
	Risk profile	0.835			
	Adequate collateral	0.508			
	Adequate resources (plant/equipment, material, financial)	0.731			
	Relevant company experience and track record	0.824			
	Governance structure	0.829			
	Adequate skilled human resources	0.745			
Government attributes	Stability of government structures/instruments	0.907	0.63	0.91	0.89
	Favourable and stable policies	0.824			
	Favourable legal framework	0.846			
	The efficiency of public service agencies	0.679			
	Adequately skilled public officials	0.475*			
	Low bureaucracy levels	0.491*			
	Issuance of government guarantees	0.492*			
	Government incentives	0.705			
Country risk	0.765				
Financing attributes	Availability of funding	0.592	0.64	0.94	0.95
	Stable and vibrant financial markets	0.709			
	Strong financial instruments/structures	0.856			
	Favourable economic conditions (interest rates, inflation etc)	0.908			
	Stable exchange rates	0.786			
	Return on investment	0.883			
	Debt to equity ratio	0.795			
	Repayment period	0.744			
Financial risk	0.884				
Political and economic attributes	Political risk	0.799	0.64	0.92	0.93
	Rule of law	0.704			
	Political & economic stability	0.821			
	Social acceptance of project	0.774			
	Political support	0.895			
	Social and economic benefits like employment creation	0.809			
Infrastructure development state	Funding adequacy	0.534	0.45	0.87	0.83
	Adequacy of DFIs	0.286*			
	An offering of new alternative funding	0.620			
	The new streamlined and flexible approach of project funding and reviews	0.640			
	Sovereign guarantees	0.529			
	Focus on clean energy, transport infrastructure, water resources & sanitation, sustainable urban development and economic integration of member states.	0.607			
	Access to capital markets at good terms	0.847			
	Establishment of regional offices	0.798			
	Partnership with international development organisations	0.955			
	Independent bank evaluation	0.683			

Note: AVE=Average variance explained; CR=composite reliability; CA=Cronbach alpha; \*=Factor loadings < 0.5 and items dropped from further analysis. Source: Researcher's estimates from Research data

From the results in Table 4.12, it is indicative that after factor analysis, 10 items with factor loadings less than 0.5 were dropped for further analysis (as indicated by the asterisks \*). These factors include:

- funding strategies of private financing, government financing from revenues;
- government bonds and adequacy of resources;
- project attributes of type, size, and location of the project;
- government attributes of low bureaucracy levels;
- issuance of government guarantees;
- adequately skilled public officials; and,
- adequacy of DFIs funding infrastructure development projects in South Africa.

AVE and CR for the remaining factors were then evaluated. All the latent variables have an AVE of above the acceptable minimum value of 0.5 except for the state of infrastructure development in South Africa, which has an AVE of 0.45. However, the state of infrastructure development in South Africa was not dropped as it has a CR value of 0.87 which is above the acceptable value of 0.7. Generally, all the latent variables have acceptable CR values of above 0.7 except for financing strategies which has a CR value of 0.68.

However, financing strategies were not dropped for further analysis due to its AVE value of 0.52 which is above the acceptable minimum threshold of 0.5. All the latent variables have Cronbach's alpha coefficient (CA) of at least 0.7 indicating that the measurements of all the latent variables are acceptable. The two variables of financing strategies and 37 critical success factors that were not dropped after confirmatory factor analysis were taken for ranking analysis to determine their significance in infrastructure development funding by DFIs in South Africa.

#### **4.8 Ranking Analysis**

The relevant importance index (RII) for funding strategies and critical success factors for infrastructure funding were calculated using SPSS. The results are presented in Table 4.13 below. and indicate that availability of funding has the highest impact on contributing to successful infrastructure development funding in South Africa followed by the viability of the infrastructure development project.

Strong financial instruments on the financial markets are being ranked third in terms of its impact on infrastructure development funding in South Africa while financial risk is ranked

fourth and political backing and support of the project is ranked fifth. Therefore, the top 5 ranking factors that influence successful funding of infrastructural development projects in South Africa are presented in Table 4.14:

**Table 4.13: Ranking Analysis**

LATENT VARIABLE	ITEM DESCRIPTION	RII	RANK
Funding strategies	PPPs	0.758	14
	DFIs	0.800	6
Project attributes	Economic viability of project (bankability, viability)	0.863	2
	Project life cycle cost	0.768	12
	Repayment period	0.726	19
	Strength of project proposal	0.747	16
	Credibility of project execution plan & coordination	0.674	26
	Effective and enforceable contracts	0.663	27
	Project Risk	0.758	14
	Technological advancement	0.621	29
Borrower or implementing agency attributes	Financial position	0.758	14
	Competent management & technical expertise	0.705	22
	Risk profile	0.800	6
	Adequate collateral	0.632	28
	Adequate resources (plant/equipment, material, financial)	0.611	30
	Relevant company experience and track record	0.674	26
	Governance structure	0.779	9
	Adequate skilled human resources	0.684	24
Government attributes	Stability of government structures/instruments	0.768	12
	Favourable and stable policies	0.769	11
	Favourable legal framework	0.789	7
	Efficiency of public service agencies	0.695	23
	Government incentives	0.716	21
	Country risk	0.780	8
Financing attributes	Availability of funding	0.900	1
	Stable and vibrant financial markets	0.778	10
	Strong financial instruments/structures	0.822	3
	Favourable economic conditions (interest rates, inflation etc)	0.789	7
	Stable exchange rates	0.678	25
	Return on investment	0.733	18
	Debt to equity ratio	0.767	13
	Repayment period	0.722	20
Political and economic attributes	Financial risk	0.811	4
	Political risk	0.789	7
	Rule of law	0.756	15
	Political & economic stability	0.800	6
	Social acceptance of project	0.744	17
	Political support	0.811	5
Social and economic benefits like employment creation	0.800	6	

Source: Researcher's estimates from Research data

**Table 4.14: Top 5 Ranked Factors**

Ranking	Factor	Attribute Category
1	Availability of funding	Financing
2	The economic viability of the project (bankability, viability)	Project
3	Strong financial instruments/structures	Financing
4	Financial risk	Financing
5	Political support	Political & Economic

Source: Researcher's estimates from Research data

It can be noted from Table 4.14 above that financing attributes have the highest impact on the successful funding of infrastructure development in South Africa. The factor that has the least impact on infrastructure development funding in South Africa is the adequacy of the borrower's resources relating to equipment, finance, and material, and followed by the technological advancement of the project or the industry in general. Adequacy of collateral from the borrower is ranked as the third least factor with minimal impact on infrastructure development funding in the country, followed by the project's effective and enforceable contracts.

The ranking analysis results in Table 4.13 also confirm that there are factors with the same level of impact on infrastructure development funding in South Africa. For instance, using DFIs to fund infrastructure projects, borrower's risk profile, the country's economic and political stability, and a project's social and economic benefits like employment creation, have the same level of RII. This is also the same as the favourable legal environment, favourable economic conditions like interest rates and inflation, and political risk. Essentially Table 4.9 indicates that the relative importance of the factors is random across various categories of critical success factors of project attributes, borrower attributes, government attributes, financing attributes and political and economic attributes, as well as financing strategies.

#### **4.9 Summary**

This chapter presented and discussed results from the descriptive analysis, confirmatory factor analysis and ranking analysis. Essentially, the descriptive analysis indicates that the IDC and DBSA are funding both private and public sector managed projects. The majority of the research participants further indicated that PPPs and funding from DFIs to be the most effective funding strategies for successful infrastructure development in South Africa. The descriptive analysis further shows that critical success factors for infrastructure development funding in

South Africa relate to project attributes, borrower's attributes, financing attributes, government attributes and political and economic attributes.

The ranking analysis confirmed factors with the highest prediction on infrastructure development funding in South Africa included the following:

- availability of funding from financial institutions;
- economic viability of the project;
- strong financial instruments on the financial markets; and,
- financial risk and political support.

These factors have RII of above 0.8. The next chapter provides the conclusions and recommendations of the study.

## **Chapter Five**

### **Research Conclusions and Policy Recommendations**

#### **5.1 Introduction**

This chapter presents and discusses the conclusions and recommendations of the study. The conclusions are based on key findings of the study and are structured to address the study's objectives. The proposed recommendations are there to improve infrastructure development funding in South Africa by focussing on enhancing the policies of the NDB. This chapter proposes recommendations for future research which are earmarked to address the limitations of this study towards contributing to enhanced infrastructure development funding in South Africa.

#### **5.2 Summary of the study**

This study focused on the critical success factors for infrastructure development funding in South Africa and how the BRICS' NDB can utilise these factors to successfully fund infrastructure development projects in the country. The population for the study was employees of the DBSA and IDC which are the two biggest DFIs funding infrastructure projects in the country. A sample of 20 employees was selected using simple random sampling from the two DFIs.

The respondents were required to respond to the online questionnaire with closed-ended questions for data collection. The questionnaire was comprised of three sections covering funding strategies, critical success factors for infrastructure development financing and infrastructure development funding in South Africa. The collected data was analysed using two techniques, namely confirmatory factor analysis and ranking analysis.

Confirmatory factor analysis was comprised of sampling adequacy test, reliability analysis and convergent validity analysis. The ranking analysis was performed to assess the contribution of funding strategies and critical success factors to the successful development financing by the NDB in South Africa. From the analysis of the results, DFIs and PPPs are recommended strategies for financing infrastructure development in South Africa.

## 5.3 Conclusions

The conclusions of the study are structured in line with the objectives of the study as given below.

### 5.3.1 Appropriate Funding Strategies

Conclusions in this subsection seek to address the study's first research objective that is restated below:

- *To investigate the funding strategies that can be employed by the New Development Bank in South Africa to improve the state of infrastructure in the country.*

In line with the findings of the study, it can be concluded that DFIs that fund infrastructure development in South Africa ought to finance both public and private sector infrastructure projects. The private sector infrastructure projects are promoted by private sector institutions while public sector infrastructure projects are promoted by government and quasi-government institutions. These projects may focus on clean energy, transport infrastructure, water resources and sanitation, sustainable urban development, and economic integration with other countries.

It can also be concluded that DFIs are the appropriate financial institutions to fund infrastructure development in the country. This is because DFIs can finance infrastructure projects that might be considered as high risk by other financial institutions (Barnard, 2016:10). DFIs are also credited with charging low-interest rates which is critical for successful funding of large infrastructure projects (Andries, 2009:254). PPPs were also identified as the appropriate arrangement to fund infrastructure development projects in South Africa. According to Maseko (2014:130), PPPs are appropriate in large infrastructure projects as they address the limitation of funding associated with a lack of collaboration between the private and public sector.

DFIs that fund infrastructure development projects should also request sovereign guarantees from the government to ensure successful funding of the projects. Sovereign guarantees address credit risk of the project promoters. Thus, the government makes an undertaking to repay the loan if the project promoter fails to honour the obligations of the loan agreement. A collaboration by the NDB with other international development organisations is also critical to

ensure the successful funding of infrastructure development projects. The collaboration helps with sharing expertise on funding and implementation of the infrastructure projects. The NDB can, therefore, mitigate the lack of capacity in areas of funding and implementation of the infrastructure projects.

Independent evaluation of DFIs is also a crucial strategy in ensuring successful funding of infrastructure development projects in South Africa. The auditing of the DFIs internal processes and external processes should be performed by external stakeholders. The audit results should be taken seriously by management to ensure successful funding of infrastructure projects.

Finally, DFIs should raise funds from the capital markets at good terms. Good terms entail appropriate repayment periods and interest rates. The appropriateness of the repayment periods and interest rates is determined by the needs of the infrastructure projects' borrowers and the nature of the projects. It is only reasonable to sell long-term financial instruments at the capital markets if the infrastructure projects under consideration are likely to take a longer period to complete or to generate cash flows.

### **5.3.2 Critical Success Factors**

The conclusions below are addressing the study's second research objective which is restated below:

- *To identify the critical success factors in financing infrastructure development in South Africa.*

The critical factors in financing infrastructure development in South Africa are categorised into three categories based on the levels of the RII. Critical factors with RII ranging from 0.8 and above are regarded in the study as factors with very high prediction impact on the financing of infrastructure development while factors with RII of between 0.7 and 0.8 are regarded to have a high impact on infrastructure development funding in South Africa. Finally, critical factors with RII of between 0.6 and 0.7 are taken to have a moderate impact on financing infrastructure development in the country.

Critical factors with an extremely high impact on financing infrastructure development in South Africa include:

- economic viability of a project;
- risk profile of the borrower;
- availability of funding from DFIs;
- strong financial instruments from the capital markets;
- financial risk;
- economic and political stability in the country;
- political support; and,
- social and economic benefits like employment creation.

The infrastructure project ought to be bankable for DFIs to find it worthwhile to fund while borrowers with the low-risk profiles are likely to be preferred by DFIs over borrowers with high-risk profiles. The government should also be seen as supportive of infrastructure development by instituting the right regulations. Finally, a project can be favourable to DFIs if it has a positive impact on the community in terms of poverty alleviation, employment creation and other positive externalities.

Critical success factors with high impact on successful financing of infrastructure development in South Africa are life-cycle costs of the project, loan repayment periods, the strength of project proposal, project risk, the financial position of the borrower, management competence and technical expertise, governance structure of the borrower, stability of government structures, favourable and stable government policies on infrastructure development.

Other factors with high impact on the financing of infrastructure development include the favourable legal environment, government incentives to infrastructure development, country risk, stable and vibrant financial markets, project's return on investment, favourable economic conditions, and debt to equity ratio of the borrower.

Finally, rule of law, political risk, and acceptance of the project by the community also have a high impact on the financing of infrastructure development in the country. Thus, there are project factors, borrower factors, financing factors, government factors and political and

economic factors with high impact on the success of infrastructure development financing in South Africa.

The research findings further indicate there are nine factors with moderate impact on the success of infrastructure development funding in the country. The factors include credibility of project execution plan and coordination, effective and enforceable contract, technological advancement in project implementation, adequate collateral from the borrower and implementing agent's adequate resources. The resources cover equipment, material, and financial resources.

Additional factors with moderate impact on successful financing of infrastructure development in South Africa are the implementing agent's relevant experience and track record, implementing agent's skilled human resources, the efficiency of public service agencies involved in the infrastructure development and stable exchange rates. It can be concluded that the moderate factors on infrastructure development funding cover project attributes, the borrower or implementing agency attributes, government attributes and financing attributes.

## **5.4 Policy Recommendations**

This section provides recommendations to the NDB on how the DFIs can successfully fund infrastructure development projects in South Africa. The recommendations are presented in three categories, namely decision on the DFI's involvement in funding South African infrastructure development projects, appropriate strategies of funding infrastructure development projects and suitable infrastructure development policies.

### **5.4.1 A decision on the NDB's Involvement in Funding South African Infrastructure Projects**

Based on the research findings, the NDB is advised to invest in infrastructure in South Africa. This is because the findings of the study indicate that there is a lack of DFIs funding infrastructure development projects in the country. The NDB is in a position to serve a niche market of infrastructure development projects in South Africa that is not being serviced by existing DFIs.

The country is experiencing a shortage of electricity which leads to frequent load-shedding, the railway and road infrastructures are also in poor condition leading to accidents and other logistical problems. Furthermore, the country is experiencing a water shortage as a result of lack of investment in new infrastructure, poor maintenance and lack of refurbishment of existing water infrastructure. The NDB can focus on financing these types of infrastructure to improve the quality of life in the country.

#### **5.4.2 Appropriate Infrastructure Development Funding Strategies**

It is recommended that the NDB should employ PPPs in funding infrastructure development projects. This financing structure involves the collaboration between the private sector and the public sector in financing infrastructure development projects (Maseko, 2014:130). The NDB can collaborate with the government of South Africa and its various agencies to fund infrastructure development projects.

The PPPs would assist the NDB with sharing risks with the government as well as ensuring that large projects are adequately funded and providing a structure for the repayments and cost recovery. This collaboration would also promote the sharing of technical expertise on infrastructure development funding between the NDB and the government. The involvement of the government in the funding arrangement has the effect of lowering interest rates since the government is in a position to borrow at low-interest rates due to its perceived low risk (Mabuza *et al.*, 2014:8).

#### **5.4.3 Suitable Infrastructure Development Policies**

The following policies are recommended for the NDB to guarantee the successful funding of infrastructure development projects in South Africa:

- The NDB is advised to prioritise funding of economically viable infrastructure projects. These viable infrastructure projects ought to generate adequate cash flows for the repayment of the advanced credit. Apart from the generation of adequate cash flows, the projects should be associated with low risk. The low risk can be as a result of parties entering into effective and enforceable contracts, the project having a credible

execution and coordination plan, and the project having a low repayment period and high rate of return.

- The NDB should also prioritise funding projects that are accepted by the communities. The projects can be accepted by the community if the project promoter engages the community from the beginning and if the project contributes economic and social benefits like employment creation. Thus, the NDB should only finance projects upon the borrower providing evidence that the community was engaged throughout the process up until the project is approved. Social and economic impact assessments should be part of the approval process for funding infrastructure development projects. Poor engagement with this important stakeholder has led to many a project failing and some being abandoned. Therefore, the borrower or the implementing agent should highlight the practical economic and social benefits of the project in the project proposal.
- Focus should be mainly on funding borrowers or implementing agents with low-risk profiles. The low-risk profile might entail low debt-to-equity ratio, good liquidity position, good profitability position, appropriate governance structure, having adequate collateral, traceable company experience in infrastructure development and competent management and employees.
- The DFI can also seek government support to ensure the success of infrastructure development projects. The NDB can lobby the government to enact laws that create a conducive environment for infrastructure development, lobby the government to introduce policies that lower the inflation rate, engage the government to introduce policies that promote stability of the value of the Rand against other currencies, and request the government to establish stable capital markets that trade in strong financial instruments.
- Finally, the NDB is also advised to lobby the government to promote political stability and rule of law. Political instability can destabilise the country leading to protests and thereby negatively affecting infrastructure development. NDB can also participate in the promotion of the rule of law by contributing to the financing of maintenance of law and order as a corporate social responsibility.

## **5.5 Recommendations for Future Research**

This study employed the deductive approach which seeks to validate or invalidate factors reported in the existing literature. Factors reported in the existing literature might have been investigated in an environment different from this study's environmental settings. This makes the existing empirical evidence factors irrelevant to this study.

It is therefore recommended that future researchers ought to use the inductive approach which uses an in-depth analysis from a natural environmental setting. This approach would ensure only factors relevant to the study and its circumstances are included.

The study only focused on the IDC and DBSA when investigating financing strategies of DFIs and critical success factors for infrastructure development financing. These are the two main national DFIs that fund infrastructural development, the other national DFIs like Land Bank and NEF fund other economic development aspects like agribusinesses and SMMEs. However, there are multilateral DFIs operating in South Africa like the World Bank, AfDB, IMF and IFC.

The above means the sample of the study is not representative of all the DFIs in the country. It is, therefore, recommended that future researchers should include other DFIs excluded from this study as part of their population to ensure the representativeness of the sample.

## References

- African Development Bank. (2018). The Africa Infrastructure Development Index. Retrieved from [https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Economic Brief - The Africa Infrastructure Development Index.pdf](https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Economic_Brief_-_The_Africa_Infrastructure_Development_Index.pdf) [Accessed 8 Sep. 2019].
- Arimah, B. C. (2005). What drives infrastructure spending in cities of developing countries? *Urban Studies*, 42(8), 1345-1368.
- Andries, A. M. (2009). Theories Regarding Financial Intermediation and Financial Intermediaries – A Survey. *Economics and Public Administration*, Volume 9, Number 2, pp. 254 – 261.
- Ballig, M and Gnan, E. (2013). The Development of Financial Markets and Financial Theory – 50 Years of Interaction. Online. Retrieved from: <https://econpapers.repec.org> (Accessed 13 July 2018).
- Barnard, A. (2016). The Impact of Development Finance Institutions on Socio-Economic Transformation: The Case of South Africa. (Master of Management in Finance and Investment Thesis). Johannesburg: Wits Business School.
- Bertocco, G. (2006). Are Banks Special? A Note on Tobin’s Theory of Financial Intermediaries. Italy: Università degli Studi dell’Insubria.
- Bhattacharya, A., Oppenheim, J and Stern, N. (2015). Driving Sustainable Development through Better Infrastructure: Key Elements of a Transformation Program. *Global Economy and Development*, Working Paper 91. London: Brookings Institution.
- Bothale, E. K. (2016). Financing Development Through Public Private Partnerships (PPPs) in Botswana. Gaborone: University of Botswana.
- Brett, L. (2017). What Makes A Successful FinTech Hub in the Global FinTech Race. London: Deloitte.
- Brown K., T. Motsoane, and L. Liu (2013), “South Africa: Leveraging Private Financing for Infrastructure”, in O. Canuto and L. Liu L. (eds), *Until Debt Do Us Part: Subnational Debt, Insolvency, and Markets*, World Bank, February 2013, <http://dx.doi.org/10.1596/978-0-8213-9766-4>

- Camane, C. T. (2013). A Framework for Financing Public Infrastructure in South Africa. (Master of Management). Johannesburg: Wits University.
- Cankaya, S and Abaci, S. H. (2015). A Comparative Study of Some Estimation Methods in Simple Linear Regression Model for Different Sample Sizes in Presence of Outliers. *Turkish Journal of Agriculture - Food Science and Technology*, Volume 3, Number 6, pp 380 – 386.
- Calitz, C and Fourie, J. (2007). Infrastructure in South Africa: Who is to Finance and Who is to Pay? Conference of the Economic Society, Johannesburg.
- Cawood, J. (2014). Capital projects and infrastructure in east africa, southern africa and west africa: Trends, challenges and future outlook. PWC report. Retrieved from [www.pwc.co.za/en/assets/pdf/capital-projects-and-infrastructure.pdf](http://www.pwc.co.za/en/assets/pdf/capital-projects-and-infrastructure.pdf) (Accessed 12 July 2019)
- Chan, A. P. C., Lam, P. T. I., Chan, D. W. M., Cheung, C and Ke, Y. (2010). Critical Success Factors for PPPs in Infrastructure Development: Chinese Perspective. *Journal of Construction Engineering and Management*, Volume 10, pp. 484 – 494.
- Chan, L.L. and Idris, N. (2017) ‘Validity and Reliability of the Instrument Using Exploratory Factor Analysis and Cronbach’s Alpha’, *International Journal of Academic Research in Business and Social Sciences*, p. 403.
- Cooper, A. F and Farooq, A. B. (2015). Testing the Club Dynamics of the BRICS: The New Development Bank from Conception to Development. *International Organisations Research Journal*, Volume 10, Number 2, pp. 1 – 15.
- Dada, M. O and Oladokun, M. G. (2008). Critical Success Factors for Public-Private Partnership Projects in Nigeria: A Perceptual Survey. Lagos: University of Lagos.
- Degu, G. and Yigzaw, T. (2006). *Research Methodology*, Gondor: University of Gondor
- Denzin, N.K. and Lincoln, Y.S. (2000). (Eds.) *Handbook of Qualitative Research* 2nd ed. Thousand Oaks, CA: Sage
- Development Bank of Southern Africa. (2012). The DBSA infrastructure barometer – Progress in infrastructure development since democracy. Midrand. Retrieved from <http://www.dbsa.org/EN/About-Us/Publications/General/Barometer%202012.pdf>

- de Winter, J. C. F., Dodou, D., & Wieringa, P. A. (2009). Exploratory factor analysis with small sample sizes. *Multivariate Behavioral Research*, 44(2), 147–181. <https://doi.org/10.1080/00273170902794206>
- European Commission. (2017). *Financing Sustainability Triggering Investments for the Clean Economy*. EPSC Strategic Notes, Volume 25, 1 – 18.
- European Network on Debt and Development (2017b). *Public Development Banks: Towards a Better Model*. Brussels: Oxfam International.
- Evans, M. (2019). Funding Africa's Infrastructure Gap. Retrieved from <https://www.bakermckenzie.com/en/newsroom/2019/05/funding-africas-infrastructure-gap> (accessed 25 May 2019).
- Financial and Fiscal Commission. (2015) Financial and Fiscal Commission. (2015). Submission for the Division of Revenue 2016/2017, May 2015, Midrand. Retrieved from: <https://www.cesa.co.za/sites/default/files/Finance%20&%20Fiscal%20Comm%20report%20Division%20of%20revenue%20June%202015.pdf>
- Fornell, C. and Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39 – 50.
- Fourie, J. (2007). A Note on Infrastructure Quality in South Africa. (Stellenbosch Economic Working Papers: 03/07). Stellenbosch: University of Stellenbosch.
- Geroniks, A. and Legnieks, P. (2015). Critical Success Factors for Public-Private Partnership Implementation in Latvia. *Student Research Papers*, Volume 11, pp. 1 – 51.
- Goldkuhl, G. (2012). Pragmatism vs Interpretivism in Qualitative Information Systems Research, Palgrave Macmillan, *European Journal of Information Systems*, (21), 2, 135-146, <http://dx.doi.org/10.1057/ejis.2011.54>.
- Government of South Africa. (2014). *Infrastructure Development Act of 2014*.
- Guba, E.G. and Lincoln, Y.S. (1994). Competing Paradigms in Qualitative Research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117), Thousand Oaks, CA: Sage.

- Gunduz, M., Nielsen, Y. and Ozdemir, M. (2013). Quantification of Delay Factors using the Relative Importance Index Method for Construction Projects in Turkey. *Journal of Management in Engineering*, 29(2), 133 – 139.
- Gumede, W, 2008. Delivering the South African democratic developmental state. In: Maclellan, A & Munslow, B (eds), *The politics of service delivery in South Africa*. Johannesburg: Wits University Press.
- Gumede, W., Govender, M., & Motshidi, K. (2011). The role of South Africa’s state-owned development finance institutions (DFIs) in building a democratic developmental state. Development Bank of South Africa. Retrieved from: <http://www.dbsa.org> › About-Us › Publications › Documents › DPD No29.
- Guterres, A. (2018). Financing for Development: Progress and Prospects. Report on the Inter-Agency Taskforce on Financing and Development. New York: UN.
- Hair, J.F. Jr., Anderson, R.E., Tatham, R.L., and Black, W.C. (1995). *Multivariate Data Analysis*, Upper Saddle River, NJ, USA: Prentice-Hall, Inc.
- Harneit-Sievers, A., Grimsditch, M., Yin, Y., Chandrasekhar, C.P., Qobo, M., Tautz, C., Pinto, J.R.L. and Ramo, F. (2015). *Development Finance in BRICS Countries*. Heinrich Böll Foundation, New Delhi.
- Hermann, J. (2014). Financial Constraints on Economic Development: Theory and Policy for Developing Countries. *CEPAL Review*, Volume 114, pp. 68 – 82.
- Huan, L. C. (2016). *Critical Success Factors for Entrepreneur*. (Master of Project Management Dissertation). Perak: Universiti Tunku Abdul Rahman.
- Hub, G. I. (2017). Forecasting infrastructure investment needs and gaps.
- Ibrahim, M. F. Shiratuddin & K. W. Wong (2015). Instruments for Measuring the Influence of Visual Persuasion: Validity and Reliability Tests, *European Journal of Social Sciences Education and Research*, vol. 4, Nr. 1, pp. 30–37.
- Infrastructure Consortium for Africa (ICA). 2017. *Infrastructure Financing Trends in Africa: ICA Annual Report 2017*. African Development Bank. Retrieved from [www.icafrica.org/fileadmin/documents/Annual\\_Reports/IFT2017.pdf](http://www.icafrica.org/fileadmin/documents/Annual_Reports/IFT2017.pdf) (Accessed 5 Sep. 2019)

Infrastructure Development and Financing in Sub-Saharan Africa: Toward a Framework for Capacity Enhancement Occasional paper. www.acbf-pact.org. ISBN: 978-1-77937-047-1. African Capacity Building Foundation, 2016.

Jafta, X. (2017). Infrastructure Led Growth as a Tool for Economic Transformation. Johannesburg: IDC.

John, L. (2014). The BRICS Development Bank: Why the world's newest global bank must adopt a pro-poor agenda. Oxfam.

Joynes, C. (2019). *An Overview of Innovative Financing Mechanisms for Education in Development Contexts*. Liverpool: Education Development Trust.

Kumar, R. (2011). *Research Methodology: A Step by Step Guide for Beginners*. (1<sup>st</sup> Edition). London: Sage Publications Limited.

Leedy, P. & Ormrod, J. (2001). *Practical Research: Planning and Design* (7th ed.). Upper Saddle River, NJ: Merrill Prentice Hall. Thousand Oaks: SAGE Publications.

Mabugu, R. E. (2016). Responding to South Africa's Infrastructural Challenges. Online: [www.ffc.co.za](http://www.ffc.co.za). (Retrieved on 13 July 2018).

Mabuza, P., Ismail, Z., Pillay, K and Xolo, S. (2014). [Infrastructure development within a regulated environment: concerns for regulators](#), *Journal of Economic and Financial Sciences*, Volume 1, pp. 569 – 586.

Maseko, M. (2014). Analysis of Critical Success Factors for Public-Private Partnerships in Infrastructure Development in South Africa. The 6<sup>th</sup> International Platinum Conference. The Southern African Institute of Mining and Metallurgy.

Massa, I. (2011). Impact of Multilateral Development Finance Institutions on Economic Growth. London: Overseas Development Institute. Retrieved from: <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8324.pdf>

Mazenda, A., Ncwadi, R. (2016). The rise of BRICS development finance institutions: a comprehensive look into the New Development Bank and the Contingent Reserve Arrangement. Cape Town: Center for Chinese Studies, Stellenbosch University.

- Md Lasa, Y. M., Ahmad, N and Takim, R. (2015). Critical Success Factors in Obtaining Project Financing for Private Finance Initiatives in Malaysia. 31<sup>st</sup> Annual ARCOM Conference. Lincoln, UK.
- Mkansi, M and Acheampong, E, A. (2012). Research Philosophy Debates and Classifications: Students' Dilemma. *The Electronic Journal of Business Research Methods*, Volume 10, No 2.
- Mudaliah, A., Moynihan, K and Bass, R. (2016). *The Landscape for Impact Investing in Southern Africa*. New York: Global Impact Investing Network.
- National Infrastructure Commission. (2016). *The Impact of Technological Change on Future Infrastructure Supply and Demand*. London: NIC.
- National Treasury. (2019). Economic Transformation, Inclusive Growth, and Competitiveness: Towards an Economic Strategy for South Africa. Pretoria: Economic Policy Department.
- Nemataheni, G. (2016). Financial Position of Public-Sector Institutions. Pretoria: National Treasury.
- Nkosi, T. (2017). The risk appetite of development Finance Institutions (DFIs) and funding of start-ups in South Africa. University of Cape Town.
- Nyman-Andersen, P. (2018). Yield Curve Modelling and a Conceptual Framework for Estimating Yield Curves: Evidence from the European Central Bank's Yield Curves. Statistics Paper Series. Germany: European Central Bank.
- Oberholzer, B., Schneider-Roos, K., Boulanger, C and Van Staden, M. (2018). *Summary of Good Practice of Successful Project Preparation Facilities*. Basel: Global Infrastructure Basel.
- Palmer, I., Graham, N., Swilling, M., Robinson, B., Eales, K., Fisher-Jeffes, L., Sally-Anne, K and Skeen, J. (2016). South Africa's Urban Infrastructure Challenge. Contribution to the Integrated Urban Development Framework. Retrieved from: [www.cogta.gov.za](http://www.cogta.gov.za) (Accessed 2 July 2019).
- Patton, M.Q. (1990). *Qualitative Evaluation and Research Methods*, Newbury, CA: Sage Publications
- Qobo, M. (2015). Development Banks and Civil Society in South Africa. (In Development Finance in BRICS Countries). New Delhi: Heinrich Boll Foundation.

- Qunta, N. Z. (2015). A Review of the Effectiveness of the Development Finance Institutions in KwaZulu Natal. (Doctor of Philosophy Dissertation). Johannesburg: Wits School of Governance.
- Samans, R. (2017). The Inclusive Growth and Development Report. Insight Report. Geneva: World Economic Forum.
- Saunders, M., Lewis, P and Thornhill, A. (2007). *Research Methods for Business Students*. (4<sup>th</sup> Edition). London: Pearson Education.
- Saunders, M., Lewis, P and Thornhill, A. (2009). *Research Methods for Business Students*. (5<sup>th</sup> Edition). London: Pearson Education.
- Schoenmaker, D. (2018). *Common Good: A Sustainable Finance Framework*. Brussels: Bruegel.
- Sekaran, U. (2003). *Research Methods for Business – A Skill Building Approach* (4th Edition), New York: John Wiley & Sons.
- Seymour, E, Hunter, A., Laursen, S. L and Deantoni, T. (2004). *Establishing the Benefits of Research Experiences for Undergraduates in the Sciences: First Findings from a Three-Year Study*. Wiley Periodicals, 6, 493 – 534.
- Spratt, S. and Ryan-Collins, L. (2013) ‘Development finance institutions and infrastructure: Findings from a systematic review of evidence for development additionality’. Online: <https://ecdpm.org/great-insights/financing-infrastructure/development-finance-institutions-infrastructure/>
- Statistics South Africa. (2019). Government Finances: Surplus, Deficit and Debt. Online: [www.statssa.gov.za](http://www.statssa.gov.za) (Accessed 7 February 2020).
- Switala, H. (2009). Project Finance and Obtaining Sufficient Funding for the Successful Completion of your Project. Johannesburg: DBSA.
- Teddle, C. & Tashakkori, A. (2009). *Foundations of Mixed Methods Research*, Thousand Oaks, CA: Sage Publications
- Tyson, J. E. (2018). Private Infrastructure Financing in Developing Countries. London: ODI. European Network on Debt and Development (2017a). Public Development Banks: Towards a Better Model. Brussels: Eurodad.

Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How Reliable are Measurement Scales? External Factors with Indirect Influence on Reliability Estimators. *Procedia Economics and Finance*, 20(15), 681–686.

Van Heerden, H., Burger, M., Coetsee, M. P. A., Mahlangu, N. B and Naude, K. (2015). The Current Infrastructure Conditions and the Problems Relating to It: Focusing on Rietkol, Delmas, Mpumalanga, South Africa. The 3<sup>rd</sup> Global Virtual Conference. Online: [www.gv-conference.com](http://www.gv-conference.com) (Retrieved 13 July 2018).

World Bank. (2018). Maximizing the Impact of Development Policy Financing in IDA Countries. Washington: Independent Evaluation Group.

World Economic Forum. (2019). From Funding to Financing Transforming SDG finance for Country Success. Geneva: WEF.

Walliman, N. (2011). *Research Methods: The Basics*. (2011). London: Routledge Taylor & Francis Group.

Yin, R.K. (2003). *Case Study Research: Design and Methods* Third Edition, Thousand Oaks, CA: Sage.

Zaernjuk, V. M., Kryukova, E. M., Bokareva, E. V and Chernikova, L. I. (2014). A Study of the Theoretical Approaches to Banking Financial Intermediation and its Development Trends. *World Applied Sciences Journal*, Volume 30, Number 12, pp. 1723 -1725.

Zunguze, T. (2016). Defying the Odds: Understanding the Critical Success Factors for Financing Independent Power Producers in Zimbabwe. (Master of Commerce in Development Finance Degree Dissertation). Cape Town: University of Cape Town.

## Appendices

### Appendix A: Research Questionnaire

My name is Thulani R. Ncube, a student at University of Cape Town doing a **Master of Commerce degree in Development Finance** at the Development Finance Centre (DEFIC), Graduate School of Business of University of Cape Town with registration number NCBTHU004. You are invited to participate in this research by providing your views on the topic: **“Critical Success Factors for Infrastructure Financing in South Africa: Enhancing the Role of New Development Bank”**. The study aims at ascertaining the factors responsible for the successful infrastructure development financing by paying attention to the existing Development Finance Institutions and the introduction of the BRICS’ New Development Bank, noting how it came about, the challenges that existed and the prospects of success of the new BRICS’ bank to fund infrastructure development projects in South Africa. The information you provide will be used strictly for academic purposes only. Participation in this research is voluntary and your confidentiality will be preserved as the analysis will only focus on the patterns in the data over a number of informants. No names or information about individuals will be published. Please tick the appropriate box for your answer with **1 being the least affirmative answer and 5 being the most affirmative or strongest answer**, that is:

1 = strongly disagree

2 = disagree

3 = neutral

4 = agree

5 = strongly agree

Also fill in the spaces provided where necessary.

*Participation in this study is **voluntary** and you **MAY** at any time during the study decide to pull out or **discontinue** your participation. Please tick against answers provided and also write on spaces provided to indicate your views. You are assured your views will remain **confidential**, accessible only for academic purposes by GSB Lecturers and External Examiners. For purposes of **anonymity**, pseudonyms or Respondent Numbers will be used where necessary.*

*This research has been approved by the Commerce Faculty Ethics in Research Committee.*

Name of Organisation: \_\_\_\_\_

Role in the Organisation: \_\_\_\_\_

Years of Work Experience: \_\_\_\_\_

Highest Academic Qualification: (Diploma/Bachelors/Post Grad)\_\_\_\_\_

<b>FUNDING STRATEGIES</b>										
<b>1</b>	<b>Which type of infrastructure projects does your organisation fund the most? Please mark with an X</b>									
	Private Public Partnerships (PPPs)									
	Public (government) managed projects									
	Private sector managed projects									
<b>2</b>	<b>Indicate if the following strategies are effective in funding infrastructure development in RSA. (Please tick appropriate box)</b>					<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
2.1	PPPs									
2.2	Private Financing									
2.3	Government Financing from Revenue									
2.4	DFIs									
2.5	Government Bonds/Treasury Bills									
<b>3</b>	<b>Confirm if your organisation has adequate resources to meet the requests for both private and public infrastructure development funding? (Please indicate tick appropriate box. Yes (Y) or No (N))</b>							<b>Y</b>	<b>N</b>	
<b>CRITICAL SUCCESS FACTORS</b>										
<b>a. Project Attributes</b>										
<b>4</b>	<b>In your experience, are the following project attributes influential in the funding of infrastructure development projects in South Africa? (Please tick appropriate box)</b>					<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
4.1	Economic viability of project (bankability, viability)									
4.2	Project Life Cycle Cost									
4.3	Repayment period									
4.4	Strength of project proposal									
4.5	Credibility of Project Execution Plan & coordination									
4.6	Effective and enforceable contracts									
4.7	Project Risk									
4.8	Technological advancement									
4.9	Type and size of project									
4.10	Location of project									
<b>b. Borrower/Implementing Party Attributes</b>										
<b>5</b>	<b>In your experience, are the following borrower/implementing party attributes influential in the funding of infrastructure development projects in South Africa? (Please tick appropriate box)</b>					<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
5.1	Financial position of implementing party/borrower (debt, liquidity etc)									
5.2	Experienced & relevant management & technical expertise									

5.3	Risk profile of borrower/implementing party					
5.4	Adequate collateral					
5.5	Adequate resources (plant/equipment, material, financial)					
5.6	Relevant company experience and track record					
5.7	Governance structure					
5.8	Adequate skilled human resources					
5.9						
<b>c. Government Attributes</b>						
<b>6</b>	<b>In your experience, are the following government attributes influential in the funding of infrastructure development projects in South Africa? (Please tick appropriate box)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
6.1	Stability of government structures/instruments					
6.2	Favourable and stable policies					
6.3	Favourable legal framework					
6.4	Efficiency of public service agencies					
6.5	Adequately skilled public officials					
6.6	Low bureaucracy levels					
6.7	Issuance of government guarantees					
6.8	Government incentives for funding public infrastructure					
6.9	Country risk					
<b>d. Financing Attributes</b>						
<b>7</b>	<b>In your experience, are the following financing attributes influential in the funding of infrastructure development projects in South Africa? (Please tick appropriate box)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
7.1	Availability of funding					
7.2	Stable and vibrant financial markets					
7.3	Strong financial instruments/structures					
7.4	Favourable economic conditions (interest rates, inflation etc)					
7.5	Stable exchange rates					
7.6	Return on investment					
7.7	Debt to equity ratio					
7.8	Repayment period					
7.9	Financial risk					
<b>e. Political &amp; Economic Attributes</b>						
<b>8</b>	<b>In your experience, are the following political &amp; economic attributes influential in the funding of infrastructure development projects in South Africa? (Please tick appropriate box)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
8.1	Political risk					
8.2	Rule of law					
8.3	Political & economic stability					
8.4	Social acceptance of project					
8.5	Political support					
8.6	Social and economic benefits like employment creation					

<b>INFRASTRUCTURE DEVELOPMENT FUNDING IN RSA</b>						
<b>9</b>	<b>In general, would you say there is adequate funding for infrastructure development projects in South Africa?</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	<b>(Please tick appropriate box)</b>					
<b>10</b>	<b>Would you say there are enough DFIs funding infrastructure development projects in South Africa?</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	<b>(Please tick appropriate box)</b>					
<b>11</b>	<b>Do you think the introduction of the BRICS' New Development Bank (NDB) will offer an alternative to funding for sustainable infrastructure development projects in RSA?</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	<b>(Please tick appropriate box)</b>					
<b>12</b>	<b>From the NDB's strategy policy document, will the following elements have great influence in successful funding of infrastructure development in South Africa?</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	<b>(Please tick appropriate box)</b>					
12.1	New Approach that is flexible and streamlined for assessing and approval of project funding and reviews					
12.2	Projects are funded as sovereign operations or under sovereign guarantees					
12.3	Focus on clean energy, transport infrastructure, water resources & sanitation, sustainable urban development, economic integration of member states.					
12.4	Strong finances and access to capital markets at good terms					
12.5	Establishment of regional offices to identify and prepare bankable projects in BRICS member states					
12.6	Partnership with several international development organisations, National Development Banks and commercial Banks to allow for NDB to tap into expertise for implementation of projects					
12.7	Bank is independently evaluated to allow for improvements to be effected.					