

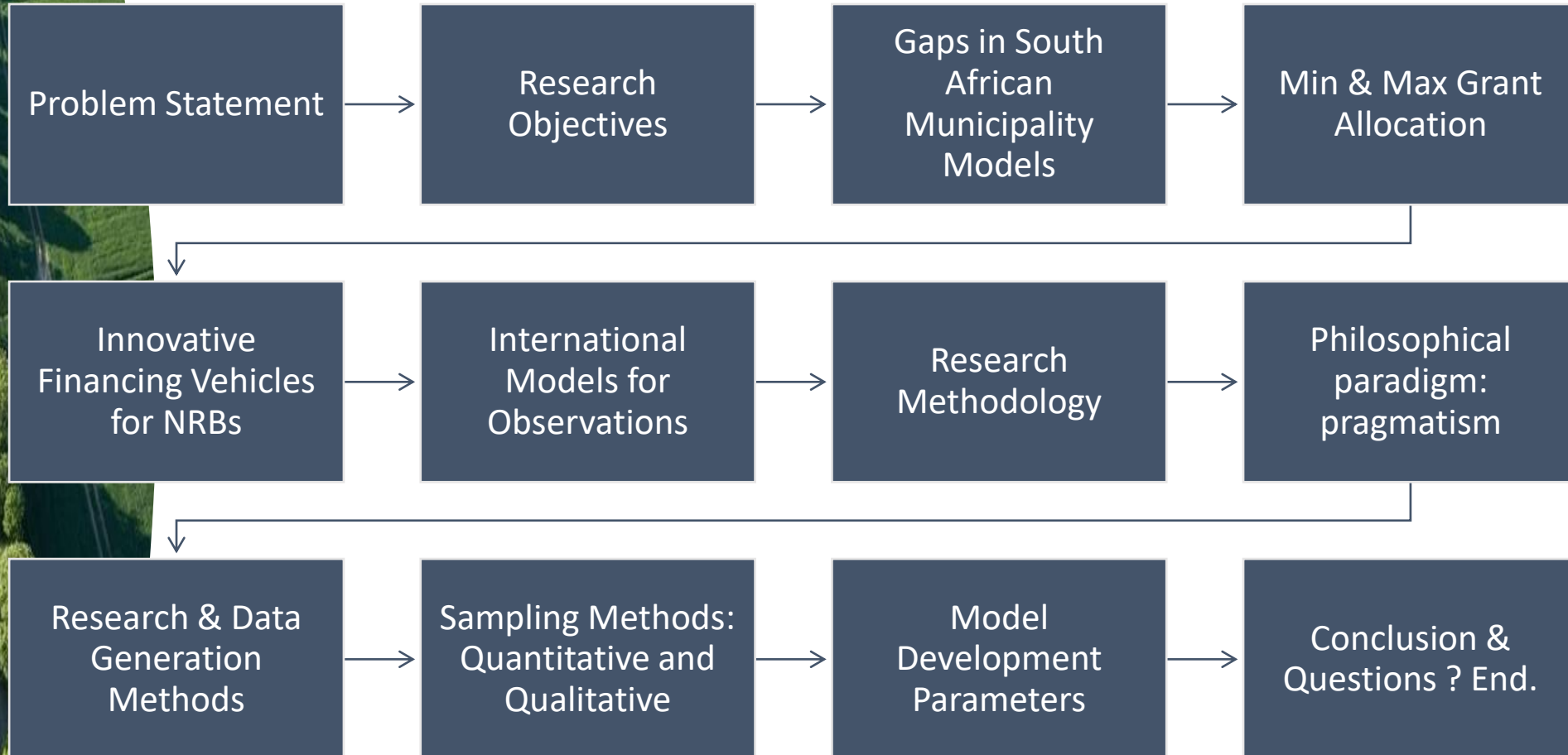
INFRASTRUCTURE FUNDING MODEL (IFM) IN NON-URBAN/RURAL AREAS

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A Study in fulfillment of Doctor of Business Leadership
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PRESENTATION LAYOUT



Problem Statement

The research addresses the critical lack of infrastructure in non-urban and rural borderline (NRB's) areas of South Africa, where existing funding models have failed to provide the necessary support (Flyvbjerg, Garbuio, and Lovalo (2009); Asoka, Thuo, Bunyasi, (2013); Tiwari (2019)).

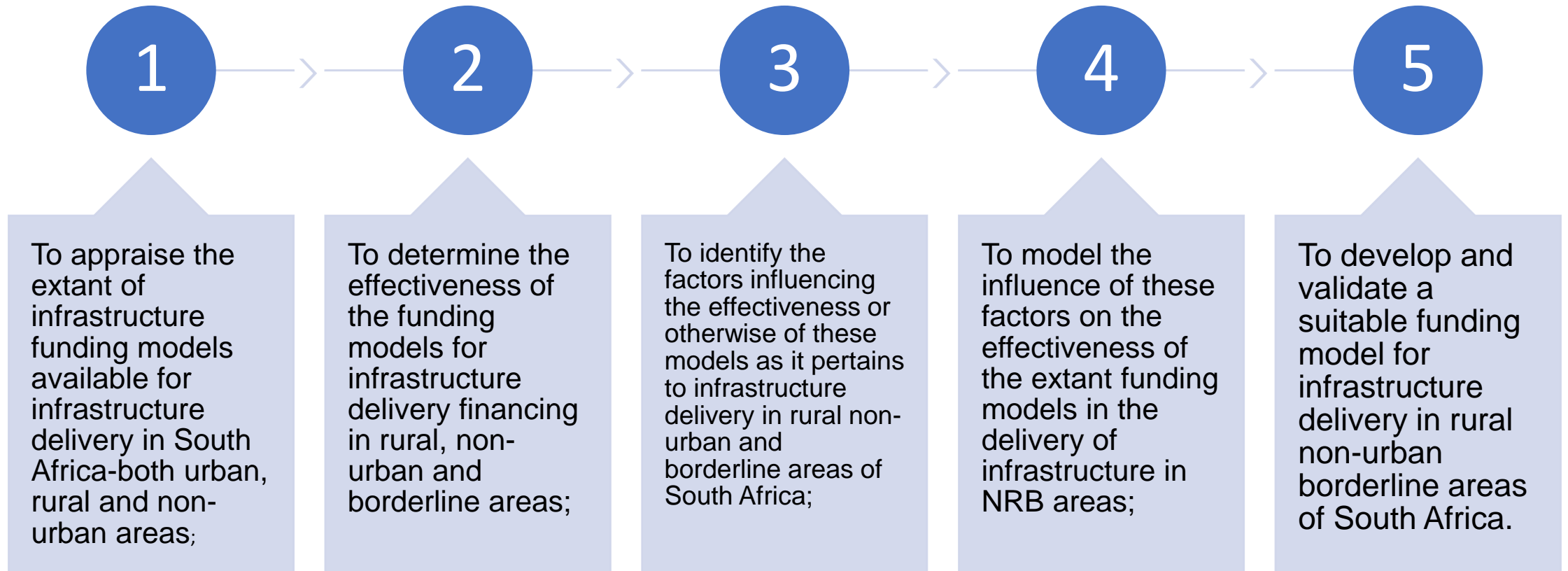
Despite national projects and initiatives, these areas remain underdeveloped, hindered by inadequate infrastructure in water, sanitation, electricity, roads, and more Kopung et.al., (2016) and Bjärstig and Standström (2017).

The current models do not consider the unique challenges faced by these areas, such as the inability to generate their own revenue or the absence of reliable data about municipal infrastructure performance (ruiters, 2013; COGTA, 2016; and DBSA, 2010).

The existing models has shown limited success in the reasonable distribution of financial resources for the NRB's.

There is a challenge on how revenue is allocated from different tiers of government in relation to the constitutionally assigned functions, additionally so, there is a challenge on how revenue is allocated in local government (Dang, 2013).

Research Objectives



Gaps in South African Municipality Models

To appraise the extant of infrastructure funding models available for infrastructure delivery in South Africa-both urban, rural and non-urban areas;

Traditional revenue generation methods include:

Own-revenue index,

- generated from a ratio of own revenues to total revenues.
- **own revenue** serves as the primary income source for over **70%** of newly demarcated municipalities.
- **Own Revenue** = taxes and fees, tax incentives
- infrastructure grants,.

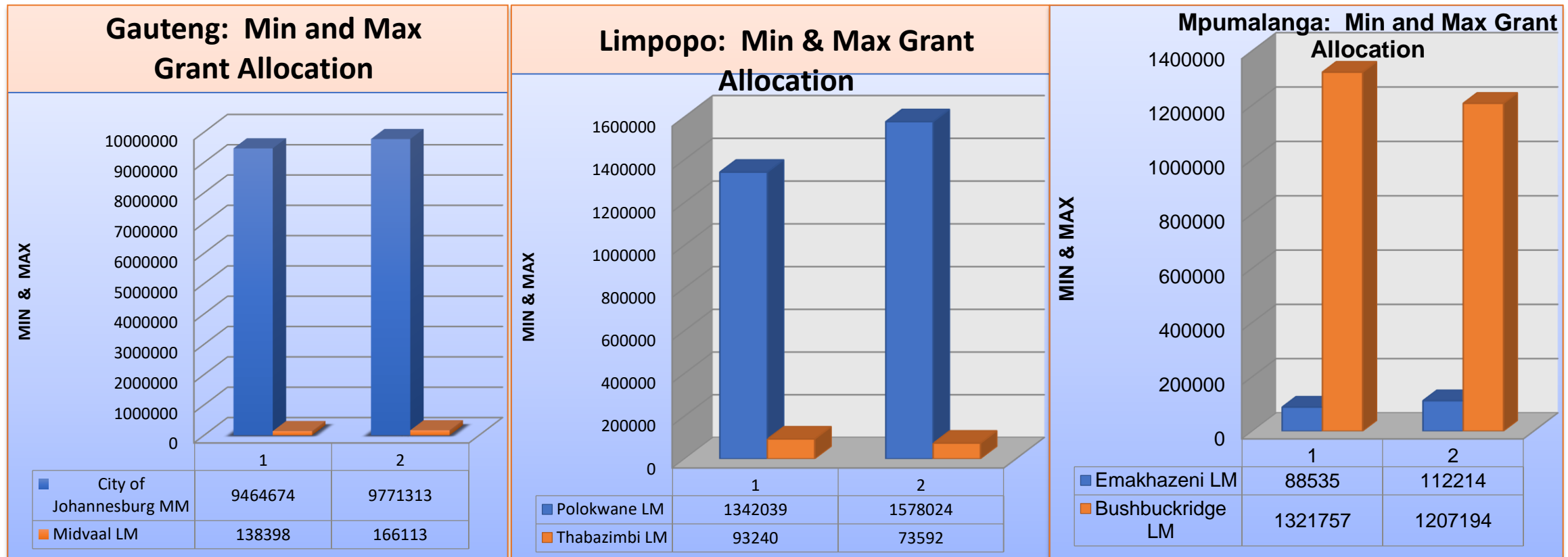
However, due to the lack of tax generation and service charges in non-urban areas, many municipalities struggle to generate their own revenues.

Innovative financing vehicles (not in NRBs) include:

- bond-based finance; has been implemented in metropolitan equity.
- structured finance; PPP; has been implemented in metropolitan equity with the objective to obtain ROI over specified period.

Min & Max Grant Allocation Y-O-Y (2017-2018)

Observation: Yearly Grant allocation decline for Local Municipalities



Innovative Financing Vehicles for NRBs:

Country	Funding Model	Infrastructure Projects	Author/s
South Africa	PPP	Water & Sanitation	Ruiters (2011)
Botswana	Cooperative Society Model	Rural economic development	Moepeng (2013)
Lesotho	Transport Sector Programme(TSP)	Rural road Infrastructure and Maintenance	Tanga, Monaheng, Matobo and Abie (2014)
Swaziland	WASH	Water Supply and Sanitation	Mlenga (2016)
Namibia	Donor Funding	Tourism	Kavita, Erling & Jarkko Saarinen (2016).
Nigeria	Five-fold Impact on the Economy	Five Channels of rural development	Bery, Gupta, Krishna and Mitra (2004)
India	PPP	Rural Infrastructure Development	Bery, Gupta, Krishna and Mitra (2004)
China	Asian Infrastructure Fund/ AIF Capital	Rural economic development	Ray (2015)

International Models for Observations

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Funding Model	Purpose
Manchester Devo-Manc Model	Model is implemented in the non-urban environment in the UK (Scotland and Manchester) for local development in transport and public service.
Co-Lending Model	Model is implemented in the Rural environment in Australia, with the purpose of funding privately financed initiatives(PFI). Co-Lending Model is comparable to the PPP model and has an objective of enhancing rural and local economic development.
Cost-Benefit first-best Model Asset-Based Approach	Model is implemented in the Rural environment in the United States in the roads and transport sector. Development of an operational approach that is grounded in a public economics framework is one of the drivers for successful implementation.



RESEARCH METHODOLOGY

Philosophical paradigm: Pragmatism

"Pragmatism is based on the proposition that researchers should use the philosophical and/or methodological approach that works best for the particular research problem that is being investigated (Tashakkori and Teddlie 1998)".

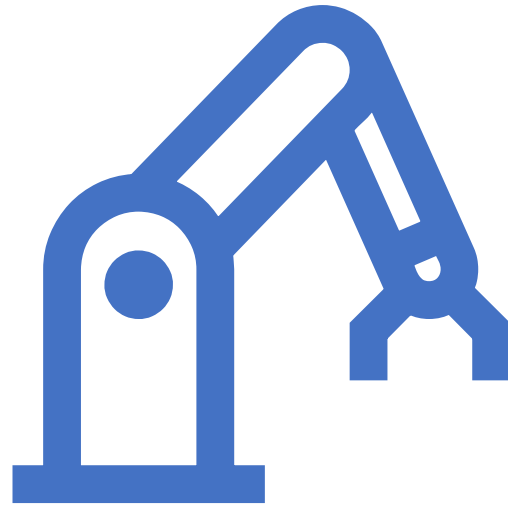
The pragmatic philosophy guiding the mixed methods research design/strategy is outlined and enables an analysis of the phenomena using Mixed Method Research(MMR) (Dudovskiy, 2018). Which incorporates quantitative and qualitative methods to address the research questions through the involvement of collecting, analysing, interpreting, and reporting both the methods(Saraswati, Shrestha, and Ram, 2021).



Pragmatism is a philosophy that views language and thoughts as tools for prediction, problem solving, and action rather than describing, representing reality (Kaushik and Walsh, 2019).



As a paradigm, pragmatism disrupts the assumptions of older approaches based on the philosophy of knowledge, while providing new direction for understanding the nature of the research (Morgan, 2014)



DATA GENERATION METHODS

RESEARCH METHOD: QUANTITATIVE

01

Quantitative data will be collected through surveys

02

Aims to describe, explain and predict phenomena using probability sampling and relies on larger sample sizes (Khalid et. al., 2012).

03

Develops statistical relationships amongst variables through complex Analytical modelling (Saunders, Lewis and Thornhill, 2009).

04

It relies on deductive reasoning and makes use of multiple variables of quantitative analysis techniques.

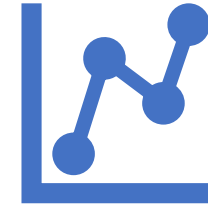
Quantitative Data Generation Method



The survey questions have been constructed with the consideration of the research problem at hand. (Statisticssolutions, 2018).



A timeline of 3 weeks is granted to the targeted recipients with the objective to send two reminders during this period.



Surveys responses will be analyzed and conceptualized by the researcher .

This MMR is vested in inductive and deductive techniques depending on where the deductive approach is being channeled (Tashakkori et. al., 2020).

RESEARCH METHOD: QUALITATIVE

01

Qualitative data is essential to validate data collected through Interviews.

02

Qualitative data is used to discover patterns, concepts, themes and meanings.

03

Qualitative research seeks to define and interpret unclear phenomena through non-numerical methods of measurement that focus on meaning and insight (Kakabadse and Steane, 2010).

04

Through inductive reasoning qualitative research aims to acquire an in-depth understanding of human behaviour and the reasons of occurrence of that behaviour (Khalid, Hilman and Kumar, 2012).

The Qualitative Data Generation Method

Achieved through;

- semi-structured interviews with officials in the NRB municipalities identified as Key Informant officials.



Inductive analysis will be used for the qualitative approach with semi-structured questions posed to stakeholders in the local municipality whereby a response will be required in writing,



Key Informant Interviews will be conducted with the respective stakeholders who are holding the largest responsibility for infrastructure funding.



Interviews will be targeting individuals in the following departments: National Treasury, The Department of Public Works, Department of Provincial and Local government.



Sampling method: Quantitative and qualitative

Data is targeted to be collected from three (3) provinces: **gauteng, limpopo and ultimately mpumalanga.**

It is projected to sample surveys from all the provinces defined in the study with the optimism of receiving 60% within the set time for responses.

Local, provincial and district municipalities are targeted for interviews in line with surveys issued to municipality officials.



Sampling structure

In Quantitative A random sample of local municipalities is identified for the dissemination of surveys in different NRB areas, the developed survey is distributed to the targeted audience.

In Qualitative a snowballing technique will be exercised for the selection of Key Informant Interviews.



Quantitative Sampling



Sampling Technique

The probability sampling technique is used and further enhanced into the random sampling strategy. The collected data from surveys encourages the use of randomised cluster sampling (Statistics SA, 2015).

Saunders et. al., (2009), notes that simple random sampling involves a sample selection from a sample frame using either random number table manually or on computer or by an online number generator.

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Sample Analysis

- Regression analysis will be performed through a co-variance test in efforts of determining the comparison between variables (dependant and independent), an ultimately elucidating the co-variant variables. Data will be simplified by grouping them into clusters and therefore conduct randomised-cluster sampling.

Qualitative Sampling



Sampling Technique

- The qualitative aspect of the study will make use of purposive sampling, which means that purposive sampling represents a group of different non-probability sampling techniques. The researcher will depend on snowballing sampling strategy specifically where a referral is proposed by the candidate to obtain more information.

Sample Analysis

- This study will explore two types of the non-probability sampling method, the application of **thematic and trend analysis** will derive accurate results from the samples by analysing data sets to identify and report repeated patterns.

SAMPLE

The data samples below are allocated per province.

MPUMALANGA, LIMPOPO AND GAUTENG				
Method	Type	Local Municipality (3)	Provincial Municipality	District Municipality
Quantitative	Survey	20	10	10
Total	Surveys	60	10	10
Qualitative	Interviews	10	10	10
Total	Interviews	30	10	10
Total MMR	Both	90	20	20



MODEL DEVELOPMENT PARAMETERS

THEORY ATTRIBUTES



Infrastructure Funding Model

$$(ra)^n = bp(1+x)^n - pe^n \text{ if } \sum_{pi=0}^{ea} = \frac{-sa \pm \sqrt{pcs^0 - pcs^p}}{P_0(1+r)^t}$$





Conclusion

Rapid urbanization presents both opportunities and challenges for societies worldwide. Your research highlights critical aspects related to this phenomenon, particularly the impact on poverty, infrastructure, and migration. Let's delve into your points:

- **Urban Congestion and Poverty:**
- **Infrastructure and Rural-Urban Migration:**
- **Economic Growth and Citizen Welfare:**
- **Investment Imperative:**
- **Disparity in Infrastructure Spending:**

In the context of South Africa, addressing this disparity is crucial. By directing resources toward rural infrastructure, the nation can create a more equitable and sustainable future.

THANK YOU

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