

https://dspace.org/

Improved infrastructure delivery through effective implementation of IDMS and SCM systems and processes in the Department of Public Works, North West Province

Diko, Sifiso Isaac

2024

University of the Witwatersrand, Johannesburg

https://hdl.handle.net/10539/43581

Diko, Sifiso Isaac. (2024). Improved infrastructure delivery through effective implementation of IDMS and SCM systems and processes in the Department of Public Works, North West Province [Master's dissertation, University of the Witwatersrand, Johannesburg].WireDSpace. https://hdl.handle.net/10539/43581

Downloaded from a DSpace repository. https://dspace.org/

Improved infrastructure delivery through effective implementation of IDMS and SCM systems and processes in the Department of Public Works, North West Province

by

Sifiso Isaac Diko

Student Number: 870399

Dissertation submitted in partial fulfilment of the degree of

Master of Business Administration at the

University of Witwatersrand

Supervisor: Prof. Thomas Dorson Anning

February 2024

DECLARATION

I, Sifiso Isaac Diko, declare that this mini-dissertation, *Improved infrastructure delivery through effective implementation of Infrastructure Delivery Management System (IDMS) and Supply Chain Management (SCM) systems and processes in the Department of Public Work, North West province*, submitted as fulfilment of requirement to complete Master degree in the University of the Witwatersrand, is my own work and the original source cited in the research were acknowledged and properly referenced.

SIGNATURE:  **DATE: 25/02/2024**

Sifiso Isaac Diko

Student Number: 870399

ACKNOWLEDGEMENTS

Unconditional acknowledgements are directed to Father God and all Apostles of Twelve Apostolic Church in Christ (TACC), for encouragements, guidance and wisdom and given to me throughout the study journey. Furthermore, there are special individuals to be acknowledged for their unwavering contribution and dedication during my study journey:

First of all, my supervisor, Professor Thomas Dorson Anning for his unwavering support and guidance that kept on motivating and strengthening me to continue pushing despite the challenges and constraints.

To my lovely family, firstly my beloved spouse Ms Rita Saphokazi Diko, for unwavering commitment to support me as husband and understanding the objectives of pursuing this degree, secondly, my two sons Ntsika and Onele Diko, who have tirelessly travelled with me when attending classes and examinations during the period of study.

To all my colleagues in the workplace, your support and encouragement towards me completing the study is acknowledged, especially my Head of Department and Member of Executive Council (MEC), for affording me this opportunity and funding my studies.

To my syndicate and study group that kept on inspiring and encouraging me to remain focused and motivated during the study journey.

DEDICATION

In memory of my uncle Zwelinzima Diko, my grandmother Mrs. K.G Diko, and my fellow MBA syndicate groups from Wits Business School who believe that one day deliverables will realised.

ABSTRACT

The Infrastructure Delivery Management System and Supply Chain Management are concepts of strategic importance in service delivery and socioeconomic transformation in the public sector as they guide processes of procurement, planning and implementation of projects in communities. The aim of the study was to improve infrastructure delivery through effective implementation of the Infrastructure Delivery Management System and Supply Chain Management system and processes in the Department of Public Works, North West province. The aim further was to assess the procedures, benefits, challenges and critical success factors of effective implementation of the Infrastructure Delivery Management System and Supply Chain Management system and processes in the Public Works Department.

A semi-structured questionnaire was used to collect data on 10 purposive random samples. In order to understand the effects of supply chain management and the Infrastructure Delivery Management System in the public sector, the study used a case study design within an explanatory paradigm.

The findings of the study were that, application of IDMS reporting gates, approval gates, framework agreement gates by professional and committees in the Department of Public Works to control Infrastructure Delivery Management System and procedures established minimum requirements, and tracking and monitoring. The development of skills, knowledge, technology, and systems, stakeholder involvement, centralization of high-value transactions, compliance, transparency, and governance are essential for the successful adoption of the Infrastructure Delivery Management System. Infrastructure Delivery Management System innovations, technology, processes, rationalization, and efficient training are among the recommendations.

Keywords: Project Management System, Information Technology, Service delivery, Infrastructure Delivery Management System, infrastructure projects, infrastructure, Public Works, supply chain management,

TABLE OF CONTENTS

iiDECLARATION ii
ACKNOWLEDGEMENTS iii
DEDICATION iv
ABSTRACT v
LIST OF TABLES ix
LIST OF FIGURES ix
LIST OF APPENDICES ix
ACRONYMS and ABBREVIATIONS x
CHAPTER 1: INTRODUCTION AND BACKGROUND 1
1.1 Introduction 1
1.2 Background of the study 1
1.3 Research problem 3
1.4 Research objectives 3
1.5 Research questions 4
1.6 Significance of the study 4
1.7 Delimitations of the study 4
1.8 Assumptions 5
1.9 Research structure 5
1.10 Chapter summary 6
CHAPTER 2: LITERATURE REVIEW 7
2.1 Introduction 7
2.2 A brief overview of the IDMS 7
2.3 IDMS effective operations and expectations 9
2.4 Challenges faced by North West Department of Public Works 10
2.4.1 Processes and systems 10
2.4.2 Technology 11
2.5 Legislative framework 11
2.5.1 The Constitution, Act No. 108 of 1996 11
2.5.2 The Public Finance Management Act, Act No. 1 of 1999 11
2.5.3 The Preferential Procurement Policy Framework Act (PPPFA) 12
2.5.3.1 Improved allocation of risk 12
2.5.3.2 Promotion of transparency 13
2.5.3.3 Enhanced innovation 13

2.5.3.4 Improved quality 13
2.6 Mechanisms making the Department of Public Works effective 14
2.6.1 Linking procurement process and IDMS 14
2.6.2 Linking leadership with IDMS 15
2.6.3 Linking knowledge and skills with IDMS 15
2.6.4 Linking organisational culture with IDMS. 16
2.7 Theoretical framework 17
2.7.1 Theme 1: Classical Organisational Theory 17
2.7.2 Theme 2: Customer Relationship Management Theory 17
2.7.3 Theme 3: Resource Dependency Theory 18
2.7.4 Theme 4: Theory of Change 18
2.8 Chapter summary 18
CHAPTER 3: RESEARCH METHODOLOGY 20
3.1 Introduction 20
3.2 Research design 20
3.3 Sampling 21
3.3.1 Sampling methods 21
3.3.2 Sample size 21
3.4 Data collection, frequency and choice of data 22
3.4.1 Data collection and preliminary analysis 22
3.4.2 Interviews 23
3.4.3 Managing data 23
3.5 Data analysis 24
3.5.1 Coding data 24
3.5.2 Reading and writing memos 25
3.5.3 Generating categories, themes and patterns. 25
3.5.4 Testing emergent understanding 26
3.5 Reliability and validity 26
3.6 Ethical considerations 26
3.6.1 Voluntary participation 26
3.6.2 No harm to participants 27
3.6.3 Anonymity and confidentiality 27
3.6.4 Deceiving of participants 27
3.7 Chapter summary 27
CHAPTER 4: FINDINGS, DISCUSSION AND ANALYSIS OF DATA 28

4.1 Introduction 28
4.2 Participants' demographic information 28
4.3 Empirical data analysis 31
4.4 Discussion of the findings 31
4.4.1 Theme 1: Classical Organisational Theory 31
4.4.2 Theme 2: Customer Relationship Management Theory 33
4.4.3 Theme 3: Resource Dependency Theory Systems 33
4.4.3.1 Section 38(1) of the Public Finance Management Act (PFMA). 33
4.4.3.2 Procurement delays 34
4.4.4 Theme 4: Theory of Change 34
4.5 Chapter summary 34
CHAPTER 5: CONCLUSION AND RECOMMENDATIONS 36
5.1 Introduction 36
5.2 The findings of the study 36
5.2.1 The role of planning using the IDMS and SCM system 37
5.2.2 The role of reporting, budgeting and adherence to the IDMS and SCM 37
5.2.3 The role of compliance with legislations 37
5.3 Conclusions 38
5.4 Recommendations 38
5.4.1 IDMS implementation and evaluation 38
5.4.2 Supply Chain Management 39
5.4.3 Public sector governance 39
5.5 Areas for future research 39
5.6 Limitations of the study 40
REFERENCE LIST 41
APPENDICES 47

LIST OF TABLES

Table 1: IDMS Control Points (gates) related to contract packaging and management....9
Table 2: IDMS Control Points (gates) related to construction procurement system 10
Table 3: Research population and sample.....22
Table 4: Data selection and coding 24
Table 5: Data coding 25
Table 6: Demographic information of participants.....29
Table 7: List of actual final participants 30
Table 8: Problems identified by the study.....36

LIST OF FIGURES

Figure 1: Infrastructure Delivery Management System (IDMS) 8
Figure 2: Improved infrastructure delivery framework 13

LIST OF APPENDICES

APPENDIX A: REQUEST FOR PERMISSION TO CONDUCT RESEARCH.....47
APPENDIX B: ETHICAL CLEARANCE 49
APPENDIX C: LETTER OF INVITATION TO PARTICIPATE 50
APPENDIX D: INFORMED CONSENT FORM 52
APPENDIX E: INTERVIEW QUESTIONNAIRE 54
APPENDIX F: GRAMMARIAN LETTER 57

ACRONYMS and ABBREVIATIONS

ANC	African National Congress
AsGISA	Accelerated and shared growth initiative of South Africa
CBP	Community Based Programme
CPS	Construction Procurement System
CRM	Customer Relationship Management Theory
CWP	Community Work Programme
EPWP	Expanded Public Work Programme
FIDPM	Framework for Infrastructure Delivery and Procurement Management
GDP	Gross domestic product
IDMS	Infrastructure Delivery Management System
ICT	Information communication technology
IGIS	Infrastructure gateway system
IT	Information Technology
MTEF	Medium-term Expenditure Framework
NIP	National Infrastructure Plan
NW-DPW	North West-Department of Public Works
NSDS	National Skills Development Strategy
NSFAS	National Skills Student Financial Aid Scheme
PFMA	Public Finance Management Act
PPPFA	Preferential Procurement Policy Framework Act
SCM	Supply Chain Management

SIPDM	Infrastructure Procurement and Delivery Management
RDP	Reconstruction and Development Programme
RSA	Republic of South Africa
ToC	Theory of Change

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 Introduction

The study aimed to provide an understanding on failures of the Department of Public Works in North West Province in the implementation of the Infrastructure Delivery Management System (IDMS).

Infrastructure such as roads, buildings etc. remains the key driver of socio-economic growth and success. It is important for a country's development to provide the underlying foundation for a country to thrive (Arimah, 2016). Adequate infrastructure comprises water, sanitation, electricity, roads, transport and communication technology that contribute to sustainable and economic growth, enhance competition in local business and improve productivity as an investment of the economy (Arimah, 2016).

The study establishes basic economic growth theories to identify positive channels to improve the infrastructure and the impact thereof. Khumalo et al. (2017) argue that the infrastructure is a factor of production, and stimulates the aggregate demand as a significant tool in the industrial policy. The study found that poor service delivery in the public sector hinders investments in the infrastructure of the country. It further established that the National Development Plan may be affected by the inconsistency of the Gross Domestic Product (GDP) (Stats SA, 2022).

An overview is provided of the problems encountered in the Department of Public Works in North West Province. Furthermore, the study discusses the ineffective implementation of the IDMS and Supply Chain Management System (SCM) in the Department of Public Works in the North West Province. The study highlighted inefficient systems and technology as well as inadequate capacity to implement IDMS and SCM when planning, procuring and implementing public infrastructure projects for service delivery to the North West communities.

1.2 Background of the study

Ngumbela (2021) reports on the disgruntlement of the citizens regarding the appalling services received and the service providers from the public works. Chigangacha et al. (2021) supported this, describing that the IDMS was a set of facilities and systems required by institutions to function effectively. Lemanski (2019) asserts that 64% of the inhabitants and

service providers in the North West Province experienced challenges with service delivery from the Department of Public Works. Chigangacha et al. (2021) argue the definition of IDMS is the basic equipment and structure essential for the government to function efficiently for service delivery to the citizens.

Lemanski (2019) adds that poor infrastructure impacts socioeconomic conditions and leadership in the Department and affects all citizens.

Krugel et al. (2010) believe that challenges in the Department of Public Works relate to the ineffectiveness of systems, SCM and procurement. Krugel et al. (2010) elaborate that these challenges contribute to the negativity of the customers and communities who perceive their leadership as incapable and that service delivery has failed. Ngumbela (2021) reports that the service delivery challenges in the public sector are caused by political interference in government processes and systems, corruption, lack of relevant skills and poor governance. Khumalo and Scheepers (2021) believe that the current democratic dispensation still needs to put more effort into attempting to curb these challenges. These authors further insist that the Public Finance Management Act needs to be revisited concerning compliance, consistency and accuracy of the IDMS and SCM.

It is therefore important to clearly indicate that the model of infrastructure delivery management systems in the public sector is about controls and making effective decisions when delivering infrastructure services to the public. The IDMS is a government management system for planning, budgeting, procurement, delivery, maintenance, operation, monitoring and evaluation of the infrastructure (South Africa, 2015).

The IDMS was designed and developed to deal with the front-end planning and procurement phase and decision-making. The procurement authority defines the strategic objectives, shapes the governance structures, scopes the projects, decides the funding options, secures the financing and prepares the contracting, procurement, and packaging strategy (Ambe & Badenhorst-Weiss, 2012).

The G20 governments and industries have shown improvements to the infrastructure delivery process by developing delivery challenges and improvements in the framework. The public IDMS intended to improve institutional ability to adequately plan, deliver, operate and maintain quality infrastructure. Finally, the IDMS in the public works was designed to enhance the capacity of the State to plan, design, construct, maintain and manage

the socioeconomic in the country, especially in the North West and other provinces. The IDMS is a system in place used in the public works to bring accuracy and consistency in terms of reporting, budgeting and making decisions in the procurement department.

The IDMS was inappropriately implemented in the public works in the North West. The attitude created inertia and disgruntlement among the service providers and citizens for the service they acquired.

IDMS is the government management tool for infrastructure planning, procurement, budgeting, delivery, maintenance, operation, monitoring and evaluation of the infrastructure (National Treasury, 2012).

1.3 Research problem

According to the Auditor General (AGSA) (2021), basic infrastructure such as roads and government buildings managed by the Department of Public Works in the North West province is in poor condition. The infrastructure should connect communities with socioeconomic activities and public services such as schools and hospitals.

Mhlongo (2014) reports that infrastructure departments are clouded with irregularities, fraud, incompetence and bureaucracy in leadership, together with the substantial financial mismanagement occurring in the Department of Public Works. Boateng (2008) emphasises the primary problem of this study is the lack of infrastructure delivery and supply chain inefficiencies in the Department of Public Works.

The SCM deals with purchasing, use of goods and services of demand, logistics, disposal and performance management (National Treasury, 2011).

The focus of this study is that the inefficiencies in procurement and service delivery are primarily caused by a lack of systems and innovations, corruption, bureaucracy, nepotism and the incompetence of the leadership of the province (Ngumbela, 2021).

1.4 Research objectives

The purpose of the study is to identify constraints affecting the Department of Public Works in implementing IDMS, SCM and planning projects.

A further objective is to drive that IDMS and SCM procedures and standards are followed and that the Department of Public Works complies with the prescripts of the Public Finance Management Act (PFMA) in planning and implementing projects.

In addition, this study seeks to establish the effective benefits of the SCM processes and to improve efficient leadership.

1.5 Research questions

The research aimed to answer the following research questions to meet the set objectives.

1) To what extent does the Department of Public Work apply IDMS and SCM systems when planning and implementing infrastructure projects?
2) What are the Department of Public Works' constraints in the effective implementation of IDMS and SCM systems when planning and implementing infrastructure projects?
3) What are the benefits of effective implementation of IDMS and SCM systems and processes when planning and implementing infrastructure projects?
4) How do leadership, organisational culture and skills affect infrastructure service delivery in the DPW?

1.6 Significance of the study

The North West Province has poor roads and government-building infrastructure (AGSA, 2021). In terms of the Constitution of the Republic of South Africa, the Department of Public Works is the custodian of the aforesaid infrastructure, responsible for developing and maintaining this service to the public (South Africa, 1996). Poor infrastructure delivery can be improved through effective systems and processes with planning, acquisition and implementation of public infrastructure. The outcome of the study indicated that the Department of Public Works in the North West Province failed to effectively implement the IDMS and fully adhere to the SCM systems and processes due to inadequate capacity and the lack of systems and innovations.

1.7 Delimitations of the study

Iyanda (2021) defines delimitation as the boundaries determined by the researcher in managing the study while ensuring the achievement of the set objectives. The delimitation of this study was the restriction to one provincial infrastructure department in the North West

province that has 57 employees responsible for infrastructure planning procurement and implementation. In this study, the number of participants was restricted to approximately 10. The population concerned is determined by the filled positions in line with the Department's organisational structure.

1.8 Assumptions

According to Iyanda (2021), assumptions are unproven beliefs of the researcher which need to be verified and proven. In this study, the first assumption was that 10 participants responsible for infrastructure planning and implementation would be adequate to achieve research saturation on the effective implementation of IDMS and SCM systems and processes in the Department of Public Works. Secondly, it was assumed that all participants would agree to be interviewed and respond fully and truthfully to the research questions. Lastly, it was assumed that the effective implementation of IDMS and SCM systems and processes would improve infrastructure delivery by the Department of Public Works in the North West province.

1.9 Research structure

This study was structured as follows:

Chapter 1: Introduction

Chapter one introduces the study and commences by providing background of the study. The research problem is stated, and the objectives of the study. The research questions formulated to achieve the set objectives are stated. The chapter also outlines how the Public Works Department in the North West Province fails its customers and communities.

Chapter 2: Literature Review

Chapter 2 reviews the literature that underpins the study. It discusses the IDMS and SCM conducted inappropriately in the identified province. The study focuses on the empirical literature and theories relevant to resolving the problem in the North West Province.

Chapter 3: Methodology

This chapter discusses the research methodology and approach adopted by this qualitative study. Data was collected from employees in the Department of Public Works in North West Province. A sample of 10 participants was selected to respond to four identified theoretical themes. The validity and reliability of the study are addressed.

Chapter 4: Findings and analysis of data

This chapter presents, discusses and analyses the data obtained from the interviews with participants. The IDMS and SCM are addressed fully with certain mechanisms to ensure the systems are in place for effective operation.

Chapter 5: Discussion, Conclusions and Recommendations

This chapter concludes the study. It synthesises findings on the implementation of the IDMS and SCM systems. Recommendations for future research are made.

1.10 Chapter summary

The chapter introduced this qualitative study and gave a brief background to it. It further outlines the research problem, study objective and research questions. Research questions were formulated to achieve the research purpose. The chapter briefly outline how the Public Works Department in the North West Province fails its customers and communities in delivering services due to lack of systems and skills.

The following chapter presents the literature review which will offer further insight into the problems faced by the Department of Public Works and the improvement of its infrastructure.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The previous chapter introduced the study, covering the research problem, objectives research questions formulated to achieve the study objectives. This chapter deals with the literature review and is divided into two parts—the empirical literature and the theory framework. The empirical literature addresses the IDMS in the Department of Public Works and analyses the core of the problem regarding the IDMS and SCM. It will also highlight the challenges in the Department of Public Works and elaborates on the legislation governing this Department. Finally, the chapter addresses the theoretical framework that will assist in resolving these problems.

2.2 A brief overview of the IDMS

The IDMS is a government model that was formulated in 2004 to ameliorate infrastructure delivery. According to the CIDB (2010) reports the IDMS is described as the guide and framework of be practice for public sector infrastructure delivery. The system outlines all the procedures as well processed pertaining to infrastructure delivery and procurement in the construction industry (CIDB, 2010). The system controls infrastructure planning, procurement, budgeting, delivery, maintenance, operation, monitoring and evaluation of the infrastructure in all infrastructure departments (National Treasury, 2012)". It is a standardized approach to the "planning, budgeting, procurement, delivery, maintenance, operation, monitoring and evaluation of infrastructure" (National Treasury, 2012).

The IDMS was formulated mainly to address the need for improved and adequate quality infrastructure and to curb the various challenges affecting infrastructure delivery.

According to Chigangacha (2021), the main objectives of the IDMS could be summarized as:

(i) It foster infrastructure delivery to society
(ii) It encourages public sector to be innovative
(iii) Encourages department to develop capacity
(iv) Improve infrastructure rollout
(v) Improves fairness, transparency and cost effectiveness
(vi) encourage the institutions to plan better

The current study indicates that the IDMS comprises the following:

- An infrastructure planning system
- An infrastructure gateway system (IGIS)
- A construction procurement system (CPS)
- A programme and project management system
- An operation and maintenance system

The system and the processes of IDMS work as a total organisational management system that encompasses infrastructure planning, procurement, implementation and operation and maintenance as indicated in Figure 1 below.

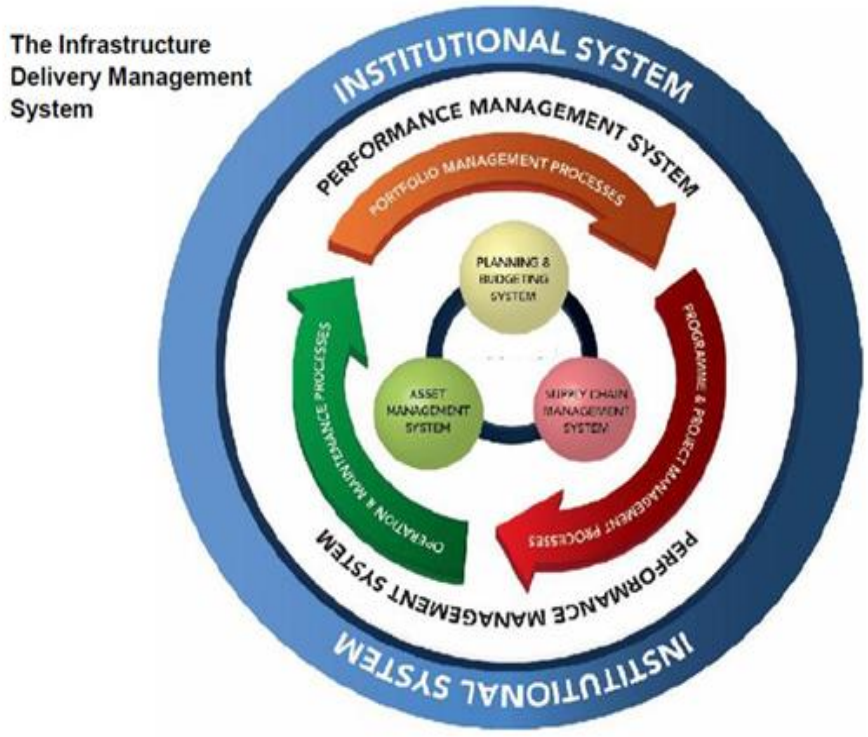


Figure 1: Infrastructure Delivery Management System (IDMS)

Source: Manzini et al. (2018)

Chigangacha (2021) further state that IDMS was designed to be linked to the government planning cycles. It has a strong focus on outcomes, value for money and the effective and efficient functioning of the procurement and delivery management system in compliance

with relevant legislation. It includes an SCM and can be readily integrated into various systems that the accounting officers and accounting authorities are required to implement.

2.3 IDMS effective operations and expectations

The focus of this study is on service delivery that impacts the democratic rights of the majority of South Africans. Hoftstetter et al. (2020) argue that the democratic government and apartheid failed to improve the system and processes as well as technical capacity in the public sector. The IDMS in the Department of Public Works did not provide any action to ensure effective and efficient infrastructure service delivery to all South Africans. This failure motivated leaders and opportunistic politicians to lean toward outsourcing or using consultants or contractors instead of developing internal capacity that is cheaper and sustainable.

Manzini et al. (2018) argue that the IDMS remain a crucial guide and framework that regulates how the public sector plans, budgets, procures, monitors, operates and maintains public structure (National Treasury, 2011). Manzini et al. (2018) indicates that the system comprises sub-systems such as infrastructure planning, infrastructure construction projects, infrastructure projects, Programme Management and Infrastructure operation and maintenance of sub-systems.

Tables 1 and 2 reflect the control points related to contract packaging and management, and the construction procurement system, respectively.

Table 1: IDMS Control Points (gates) related to contract packaging and management

GATE	DELIVERABLE
GF1	Uploaded data on the Financial System
PG7	Accepted offer
PG8	Authority to take specified actions in relation to the contract /authorizations

Manzini et al. (2018) and Chigangacha (2021)

Table 2: IDMS Control Points (gates) related to construction procurement system

CONSTRUCTION PROCUREMENT SYSTEM (CPS)	GATE DELIVERABLES
	PG1: Authorization to proceed
	PG 2: Procurement Strategy
	PG 3: Procurement Documents
	PG 4: Confirmed Budget
	PG 5: Shortlist following and EOI
	PG 6: Recommended

Source: Manzini et al. (2018) and Chigangacha (2021)

2.4 Challenges faced by North West Department of Public Works

The literature review describes the study objectives as the critical attributes contributing to organisational underperformance. The following are some of these critical attributes (Robichaud et al., 2011).

2.4.1 Processes and systems

Lugada et al. (2022) argue that systems and processes are vital in ensuring effective service delivery operated by SCM processes.

The SCM process needs to be managed effectively as it ensures the availability of services required by institutional customers (Lugada et al., 2022). In healthcare institutions, the process and function of the SCM system include forecasting, lifecycle planning, procurement, shipping, storage and issuing of medication to patients (Lugada et al., 2022). The above process is not different from the process of effectively delivering infrastructure services to the North West communities, which require planning and feasibility, project initiation, concept design and development, and procurement, construction work handover and project closure (South Africa, 2015).

2.4.2 Technology

Vaishnavi and Suresh (2019) argue that challenges such as infrastructure delivery services require the introduction of new technologies and methods to improve the quality of services rendered. It therefore becomes clear that the positives resulting from advancements in technology are incomparable. Vaishnavi and Suresh (2020) assert that public works requires continuous and systematic improvements which need compliance, honesty and technological empowerment

2.5 Legislative framework

The study focuses on the legislation of the post-apartheid dispensation that guards against irregularities in the public sector about performance.

The Department of Public Works in North West Province is failing to implement its own software design for the infrastructure delivery services. The personnel failed to comply with legislation which supports transparency and accountability in the organisation.

2.5.1 The Constitution, Act No. 108 of 1996

The Constitution,1996 and Chigangacha (2021) defines the constitution as the obligation that governs business and procedures of government, be it National, Provincial and/or Local sphere of government in the Republic of South Africa. Section 217 of the constitution state whenever the organ of state procure goods or services, must do so following the system that is transparent, fair, equitable, cost effective and competitive (Constitution,1996).

The Constitution of South Africa is the fundamental legislation that promotes accountability and responsibility through service delivery. The Constitution of South Africa, Act No. 108 of 1996, outlines that adequate and effective IDMS and SCM in a healthy country is essential for a sustainable economy (Luyt, 2008).

2.5.2 The Public Finance Management Act, Act No. 1 of 1999

The South African Public Finance Management Act (PFMA, Act No. 1 of 1999) is the fundamental legislation governing transparency and accountability in the public sector. The Act promotes good financial management to maximise service delivery and transparency in the public sector.

This legislation empowers leadership, officials and employees in the Department of Public Works to improve service delivery, transparency and accountability. Ambe and Badenhorst-

Weiss (2012) argue that non-compliance with these regulations in the public sector has a undesirable impact on service delivery and citizens of this country.

This legislation assisted the National Treasury to establish regulations and policies that made the IDMS, SCM and other procurement procedures provide efficiency in the public sector. Ambe and Badenhorst-Weiss (2012) maintain that the effectiveness and efficiency of the Department of Public Works through this legislation can eliminate corruption and fraud and enhance adequate service delivery in the Procurement department. The legislation in this study will assist in providing compliance in terms of planning, leading, organising and controlling the organisation (Luyt, 2008).

2.5.3 The Preferential Procurement Policy Framework Act (PPPFA)

This framework applies to the public sector procurement system of all organs of the State in the national, provincial and local government. The preference point system was applied to all procurements, was associated with historically disadvantaged populations and had set objectives for development (National Treasury, 2011).

The provincial government in the Department of Public Works has focused their attention on contract management as service providers in the procurement role (Kaye, 2009). Davis (2008) describes active supply chain management as an important instrument to achieve cost effect and improved results to all the participants inside and outside the organisation. Ambe and Badenhorst-Weiss (2012) highlighted that this regulation provides the following benefits to the organisation.

Ambe and Badenhorst-Weiss (2012) further elaborate that, regulations offers efficacy in SCM and improvement of risk allocation, promotion of transparency, enhancement of innovation, improved quality and adequate service delivery through the IDMS in the Department of Public Works. This regulation provides the following dimension in the Department of Public Works.

2.5.3.1 Improved allocation of risk

Ambe and Badenhorst-Weiss (2012) assert that risk is a significant factor that needs attention in the acquisition process in procurement in the public sector. The authors further maintain that the allocation of risk needs to be in line with the responsible officials entrusted with the management of risk to promote the effective operational requirements for service delivery

2.5.3.2 Promotion of transparency

This legislation in terms of Ambe and Badenhorst-Weiss (2012) means that the effective implementation of the IDMS and supply chain management promotes transparency and equal opportunities for sub-contractors in the Department of Public Works. Effective implementation in this regard increases competition, and skill levels and makes the department a market player in the economy. Figure 1 below illustrates the phases of an improved infrastructure delivery framework.

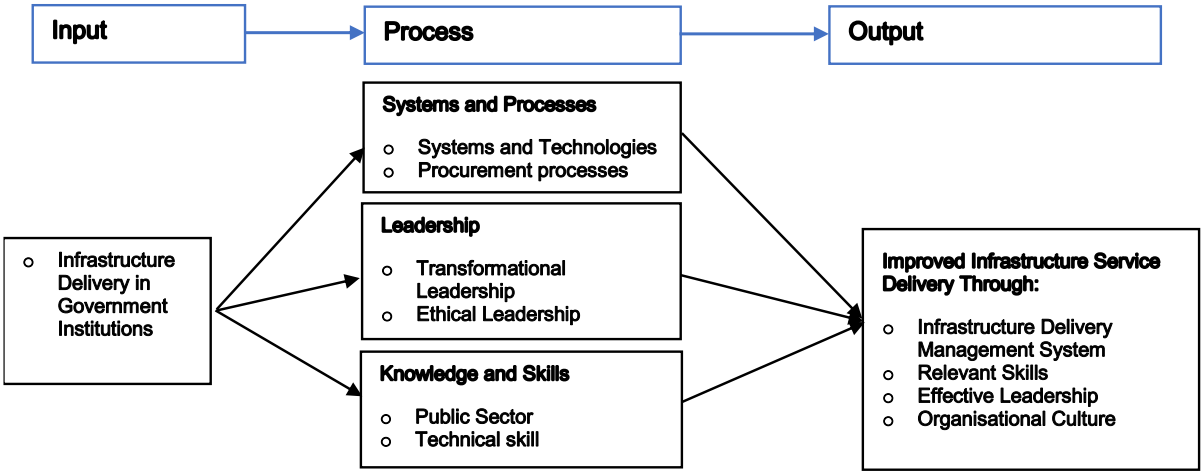


Figure 2: Improved infrastructure delivery framework

Source: Author's own construct

2.5.3.3 Enhanced innovation

Ambe and Badenhorst-Weiss (2012) argue that innovation in the supply chain plays a critical role in improving quality, effective service delivery and reducing operational costs.

Supply chain management systems like the IDMS provide vitality and innovation in all respects (Ambe & Badenhorst-Weiss, 2012).

2.5.3.4 Improved quality

Ambe and Badenhorst-Weiss (2012) report that effective supply chain and infrastructure delivery services increase quality. Ambe and Badenhorst-Weiss (2012) highlight that effective procurement will enhance transparency and quality in the organisation when processes are implemented according to the required standard. The legislation indicated that

transparency and accountability will result from compliance with the legislation and policies and procedures of procurement.

An effective supply chain and infrastructure delivery service will enable transparency in the operation of service providers through tenders and others to function appropriately in the organisation.

2.6 Mechanisms making the Department of Public Works effective

2.6.1 Linking procurement process and IDMS

The process that is always problematic in the public sector is SCM. SCM in the public sector remains a responsibility of government departments that procure services and products from local to international suppliers. Section 217 of the Constitution and Turley and Perera (2014) state that acquired products and services shall always be cost-effective, fair, competitive and transparent.

If therefore the process is clean and managed properly, infrastructure service delivery improves as well as value for money. Lugada et al. (2022) report that an effective SCM system is there to ensure that institutions are supplied with quality goods and services at a cost-effective price. This is where the public sector always finds itself wanting in terms of service delivery. Management of SCM requires a combination of technical and administrative skills and experience coupled with integrity and honesty. Management of the SCM system needs three vibrant bid committees to carry the interest of public institutions, customers and communities. These are the bid specification committee, the evaluation committee, and the adjudication committee.

Lugada et al. (2022) assert that the systems and processes are vital in ensuring effective service delivery. This current study has determined that the Department of Public Works' SCM system and IDMS are ineffective.

Lugada et al. (2022) indicate that the SCM process needs to be carefully managed as it ensures the availability of services required by the customers. In the public sector, the process and function of SCM systems, including forecasting, life cycle planning, procurement, shipping and storage are linked to ineffectiveness in North West Province (Lugada et al., 2022).

The above process is not different from the process of effectively delivering infrastructure services to the North West communities, which requires planning and feasibility, project initiation, concept, design and development, design and procurement, construction, work handover and project closure (South Africa, 2015).

Vaishnavi and Suresh (2020) state that the use of technology for the improvement of SCM is critical for ensuring the standardisation of processes, accountability, good governance and competitive or cost-effective prices of goods and services acquired. Recommendations on technologies and effective processes in the study are important to ensure change and improvement in the public sector.

2.6.2 Linking leadership with IDMS

Enwereiji and Uwizeyimana (2021) believe that poor infrastructure service delivery to customers and communities in the public sector is directly associated with a lack of servant and ethical leadership.

When a public institution fails to provide services to its customers, people resort to violence and protest as a way of demonstrating anger.

Khumalo and Scheepers (2021) argue that cutting-edge countries' challenges are a result of abuse of power by those who were elected into positions of authority, corruption in the private and public sectors, and lack of accountability of those entrusted with executive authority.

Diko (2022), suggests that South Africa and its organisations require effective leadership to overcome the above challenges. Khumalo and Scheepers (2021) emphasise that sound leadership improves performance due to increased production during operations. Effective leadership therefore improves organisational performance and becomes what is required for service delivery in the public sector.

2.6.3 Linking knowledge and skills with IDMS

Sheoraj (2013) insists that knowledge, skills and experience in SCM remain the main challenge affecting service delivery. In the process, SCM is not exempt from the shortage of capacity and skills that hinder public sector performance. When this gap is realised by unethical opportunists, Van Zyl (2015) reports that public sector leaders and opportunist politicians first weaken the SCM system and processes with unskilled SCM workforce and

inappropriate committees, namely the Bid Specification, Bid Evaluation and Bid Adjudication committees, use of wrong Procurement processes, utilisation of less knowledgeable and skilled suppliers and bidding methods. This compromises the system and processes. Bolton (2015) asserts that the public sector needs to employ knowledgeable, skilled and experienced personnel that will manage the sector and improve the delivery of services to the communities.

2.6.4 Linking organisational culture with IDMS

Okwata et al. (2022) describe culture as value and norms that govern the value of an individual or a group of people performing their duties. Dyah et al. (2021) define organisational culture as a system of values, norms and beliefs that have long been valid and agreed regarding processes and methods of doing work.

Okwata et al. (2022) state that culture determines the acceptance or rejection of a plan or idea. Therefore, the performance or non-performance of the public sector depends on the organisational culture that governs the institution. Okwata et al. (2022) further argue that culture changes over time and this requires a transformational leader who is committed to changing the bad habits of the public sector employees who do not prioritise service delivery to the people but rather enrich themselves and those around them.

People are critical resources that the organisation must have to deliver services, therefore if this critical resource fails to perform, automatically, the public sector brand gets affected Dyah et al. (2021).

The empirical literature indicates that the organisation needs to appoint employees who are ethical and will provide the required value and add to the acceptable standards expected in the organisation and that will serve the citizens properly.

According to the literature, institutional performance depends on the cultural practices that the organisation employs. This means that bad culture attracts bad performance, which might be the reason why people are unhappy with the service rendered by the public sector.

2.7 Theoretical framework

Nyanga (2015) opines that a theory is a set of statements developed to explain a group of realities about a phenomenon, more so if it has been tested, or if it is widely accepted that it can be utilized to make predictions about a phenomenon.

2.7.1 Theme 1: Classical Organisational Theory

Brynard (2005) reports that the classical organisational theory guides the management and public administration dealing with planning, organising, capacitating, guiding, coordinating, financial management and reporting remain crucial in developing government institutions. Efficiency guides the principles of administration if comprehensively applied in the attainment of efficiency in the process of management (Agrawal & Vashistha, 2013). This theory will assist the Department of Public Works in the planning, budgeting and organising of the Procurement department in the offering of tenders.

Zhu et al. (2011) further define the classical organisational theory as management insight that aids organisational behaviour and strategies in the structures of an organisation. This theory will help in promoting good behaviour in the organisation.

The academic exploration of the management of supply chain has already been undertaken extensively. It has been established that the management of various supply chains could be founded on several theories. Zhu et al. (2011) identified and studied complexity, resource-based views, resource dependence and the stakeholder theory, which will assist the functioning of the supply chain in the North West Province.

2.7.2 Theme 2: Customer Relationship Management Theory

The Customer Relationship Management Theory (CRM) entails a universal method of procuring, preserving, developing and managing the relationship with the consumers to sustain in the market or economy (Becker et al., 2009). Furthermore, Palmatier et al. (2006) indicate that CRM is an abbreviation for customer relationship management, not customer relationship marketing. This theory will assist service providers and the officials and administrators in the North West Province in terms of transparency, compliance and accountability. Bureaucracy and corruption in the Department of Public Works in the North West Province created significant dissatisfaction among all citizens regarding service delivery. Bias and nepotism were rife in the office and there was no transparency, which the

CRM theory would address. De Lange (2011) argues that customer satisfaction is the core of the business and it is imperative to establish a good culture and stable business image.

2.7.3 Theme 3: Resource Dependency Theory

This theory means that the organisation could be considered as an open system which depends on unexpected actions and factor from the external environment. According to Ntibana, (2018), efficacy of the institution includes the ability of the organisation to produce acceptable results beneficial to the organization. Therefore, efficacy of institution according to Ntibana, (2018) remain an exterior standard, that measure capability of the institution in fulfilling its mandate.

2.7.4 Theme 4: Theory of Change

The Theory of Change (ToC) is a tailor-made approach for planning and participation in and evaluation of social change. The theory defines the long-term goals of an intervention. It focuses on generative causation, examining the process and context leading to different intervention outcomes (Blamey & Mackenzie, 2007).

The theory is prominent in different government and non-government organisations and is used in addressing some of the challenges encountered by evaluators when assessing the impact of complex social development initiatives. This includes poorly articulated assumptions, lack of clarity on how change processes unfold, and insufficient attention being given to the sequence of changes necessary for long-term goals to be reached (Alford & O'Flynn, 2012). This theory will address cultural change and innovation in the organisation. The procedures and processes in the organisation will be guided by technological advancement with innovation in all respects.

2.8 Chapter summary

This chapter provides a summary of views from different authors concerning the efficient execution of IDMS and SCM processes in South Africa's public sector. Descriptions of applicable legislation are included. The chapter examines concepts and empirical studies in detail considering the challenges of IDMS and SCM in the Department of Public Works in the North West Province. The study demonstrated the failures of the Department of Public Works in the North West to effectively implement the IDMS and SCM systems and processes, thereby compromising service delivery to the citizens. Recommendations are

made for ways to improve the IDMS and its brand. Literature from various authors confirms that the culture of the organisation affects the behaviour of the Department of Public Works.

The Department of Public Works remains challenged with a lack of systems and innovations, inadequate capacity and incompetency in the effective implementation of the IDMS and SCM processes and systems aimed at improving service delivery through public infrastructure such as roads and government buildings.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The methodology applied in this study is discussed. Research methodology is the process that the researcher choses when undertaking a research project. It entails the phases and stages followed when conducting scientific research. De Vos et al. (2011) assert that the researcher must investigate people's beliefs, behaviours, interactions and their institutions.

De Vos et al. (2011) outline the research on social science as objective study of human activity in social authenticity with the intentional attainment of valid insight into it. This study explored and observed the social phenomenon concerning the implementation of infrastructure in the Department of Public Works in the North West Province, which was failing in service delivery.

3.2 Research design

Bordens and Abbott (2008) state that a research design describes the methods to utilized for the collection of information. It defines the circumstances under which the information is gathered, how participants are selected and indicates how data is collected to meet the study's objectives. Bogdan and Biklen (1998) opines that qualitative research is cheap compared to quantitative research.

Mouton (2011) indicates that a qualitative research approach allows the researcher to understand instead of forecasting and explaining. Jonker and Pennink (2009) assert that qualitative research depends on the way the knowledge about the reality is acquired through the eyes of someone else, which in essence was the goal of this study.

The researcher used qualitative methods that include face-to-face interviews, case studies, documents analysis and case studies (Babbie & Mouton, 2010) to understand the constraints affecting the Department of Public Works in improving infrastructure delivery as well as to address the study objectives outlined in Chapter 1. The focus of the study was on the SCM and infrastructure delivery systems. The study endeavoured to make clear recommendations on how the Department of Public Works could improve infrastructure delivery for the people of the North West Province.

The researcher adopted face-to-face interviews as a data collection tool to discover the experience and knowledge of the participants.

3.3 Sampling

Keller (2012) defines a research sample as set of data from the studied population. According to Jonker and Pennink (2010), sampling allows for the identification of individual characteristics in the population as whole. The sample attributes can only be applied to the population as whole provided that the sample is random.

3.3.1 Sampling methods

Non-profitability sampling was used for the purpose of this study, since it was not possible to determine probability that the population element would be included in the sample, the probability was higher than zero (Welman et al., 2010).

Sampling methods used were systematic as the choice of units of analysis or participants was made intentionally. This approach allows the researcher to study in detail and again a better understanding of key themes and issues that are expected to be covered by the research, because sample units have been selected for their characteristics (Richie & Lewis, 2003).

3.3.2 Sample size

The purposive sampling approach entails the deliberate selection of a unit of analysis or participants or other sampling units (Ritchie & Lewis, 2003).

The participants selected from the Department of Public Works are listed in Table 3 below.

The population for the study was selected using the following criteria.

a) Participants must be employed in the Department of Public Works in the North West Province.
b) Participants must be employed as middle, senior or project managers.
c) They must be professionals or graduates in the built environment, supply chain and finance management.
d) Participants must be willing to participate freely and share their experiences and knowledge about IDMS-related issues.

Table 3: Research population and sample

PARTICIPANTS	TARGET POPULATION	SAMPLE SIZE
Chief Directors, Public Works	15	3
Dir. Public works	12	3
Project Managers and Engineers	30	4
TOTAL	57	10

3.4 Data collection, choice and frequency

3.4.1 Data collection and assessment

De Vos et al. (2011) describes a two-method approach to data analysis. In the first phase, the researcher approaches the initial analysis prior and during collection of data. Phase two visits the environment conducive to research after data collection. The chosen research methodology was inductive. The researcher found it difficult to forecast data that would be collected, hence initial data analysis was conducted when data collection commenced (Neuman, 2006).

The qualitative research recognises relationships and patterns in the research during data collection. In qualitative research analysis of data start during data collection which assist and guide process of collecting the data.

Initial data analysist did not persuade the researcher to deviate from the strategy employed of asking the questions as they were contained in the interview schedule (De Vos et al., 2011).

The researcher became aware during interview sessions on further insight in relation to question asked to study participants provoking new critical question that were asked and answered. emerged new questions from the interviews are contained in the recommendation for future research as contained in chapter five of the report.

3.4.2 Interviews

Bogdan and Biklen (1998) opine that qualitative research method lean more on how people think and act in their own unique and general situations. According to Bogdan and Biklen (1998), this study provide better insight on the data collection tool used understanding of the semi-structured questionnaires that were used during interview sessions with participants of the Department of Public Works of the North West Province. The researcher employed open and closed ended type of questions aimed to encourage participants to share more of their knowledge and experience. The participants for this study were selected from the Department of Public Works; middle, senior and/or project managers took part in the study.

All potential participants who met the outlined criteria were invited to participate in the research. The invites were communicated to participants through a signed register and emails, where the following documents were included in the invitation:

(i) Participation invitation letter
(ii) Approval by the Accounting Officer of the Department of Public Works to conduct the study
(iii) Ethic Clearance Certificate from the University of the Witwatersrand
(iv) Participation invitation letter
(v) Letter of consent
(vi) The interview guide

All conducted interviews were done in manner that ensures comfortability and deriving participations and sufficient responses from the research participants. The interviews were conducted in a manner to ensure that the participants were comfortable, and to produce a variety of responses. The researcher treated all the participants with respect and dignity. The interviews focused on the Improvement of the Infrastructure Delivery by the Department of Public Works in North West province. Audio recordings were made and in-depth discussions enabled the researcher to obtain comprehensive knowledge of the concepts. The interviews were conducted in English because it was the shared language of most of the participants.

3.4.3 Managing data

The volume of in-depth data generated by the interviews was extensive. The interviews were recorded using a recording device which facilitated its easy retrieval. The researcher

transcribed the recorded interviews. All the transcribed data was saved on the researcher's server with an encryption code that no one else could access (De Vos et al., 2011).

3.5 Data analysis

Welman et al. (2010), argue that qualitative analysis include content and interview analysis. interview analysis were conducted by means of critical themes identification from participants responses, data coding followed by creating frequency distribution of the themes. This study contains qualitative content analysis technique.

Content analysis was used to analyse qualitative data. Ritchie and Lewis (2003), view content analysis as method that analysis documentation content, in the following manner: themes are identified, with the researcher focusing on the way the theme is treated or presented and the frequency of its occurrence. In line with arguments Robson (2002), age, gender and role of the contributor were linked with external variable of the study.

3.5.1 Coding data

During data coding, diagnostic intelligence played pivotal role. This is when categories and themes were generated. Themes and categories were organised from the raw data (Neuman, 2006). Subsequently, coding system was applied to themes, where correlations were drawn and displayed, where a name, number or some code was assigned as a form of identification after grouping the similar categories and patterns. Codes were subject to change in the analysis process (Van de Sande & Schwartz, 2011). See Tables 4 and 5 below.

Table 4: Data selection and coding

Data Coding Steps	Description
First Step	Data familiarisation
Second Step	Data coding through selective, open and axial coding
Third Step	Theme searching
Fourth Step	Themes review
Fifth Step	Interpreting themes meanings

Source: de Wet (2021)

Table 5: Data coding

Research Steps	Description
First Step	Fieldwork preparation
Second Step	Outlining data collection process
Third Step	Process to analyse data
Fourth Step	Presentation of results and findings
Fifth Step	Conclusion and recommendations

Source: de Wet (2021)

3.5.2 Reading and writing memos

The data collected from the interviews was organised into files and the transcripts were read time and again as to familiarise the researcher with the data (Van de Sande & Schwartz, 2011). The review and analysis of the data enabled the researcher to become familiar with the relevant content. Unmanageable data was ‘cleaned-up’ and patterns, categories and themes started to emerge (De Vos et al., 2011).

3.5.3 Generating categories, themes and patterns

The most complex and challenging part on data analysis was the generation of themes, categories and patterns (De Vos et al., 2011). The data exhibited the delicate, unspoken word in relation to social life, and the researcher paid close attention to it. The key notions, ideas, and trends were noted. Data could be categorized into a meaningful understanding thanks to sub-themes and patterns that supported the main ones (Steinberg, 2004). By analyzing the exact transcripts of the participants' answers, the researcher was able to decipher what the participants had to say (Steinberg, 2004). Themes, subjects, or other issues were then noted in the transcript's margin. Through the inter-transcript exercise, the researcher was able to determine how participants disagreed with one another about the same issue under the same heading. By examining what the participants said differently, the researcher was able to determine the "how" (Steinberg, 2004).

3.5.4 Testing emergent understanding

In this phase, the researcher examined whether the data were understood. In addition, the researcher determined the relationship between the data collected and the primary questions explored and identified how they were related to the phenomenon under study (De Vos et al., 2011). The researcher endeavoured to establish the patterns and contradictions of data collected in the study.

3.5 Reliability and validity

Maree et al. (2017) describe validity and reliability as the key measures in quantitative research, while trustworthiness is more applicable in qualitative research. Validity refers to complying with sound research principles that allow certain deductions and conclusions to be made in a research finding.

Van der Riet and Boettiger (2009) reports that validity is the degree to which research conclusions are sound, based on credible results that can be used to make certain generalizations. Content validity is the simplest form and indicates the extent to which a test represents the universe of items from where they were drawn. The content validity of semi-structured questionnaires was assessed by the researchers for relevancy of the study.

Babbie and Mouton (2010) opine that results are valid when they provide the real and precise meaning of the concept they intend to measure. Furthermore, Babbie and Mouton (2010) report that reliability in a research study is achieved when a specific technique is applied repetitively to the same object and produces the same results.

3.6 Ethical considerations

According to Mouton (2011), scientific ethics is concerned with what constitutes appropriate and inappropriate research practices. It also outlines specific guidelines or conventions that researchers should adhere to when conducting research. Babbie and Mouton (2010) further elaborated that these phenomena can be summarized as follows:

3.6.1 Voluntary participation

Vos et al. (2011) argue that the research project should be conducted voluntarily and no one should be coerced to participate unwillingly. The researcher is entitled to describe the aim of the study to the participants, giving the participants the option of accepting or declining.

Vos et al. (2011) state that the researcher must indicate to the participants that the study is not reward-oriented.

3.6.2 No harm to participants

Babbie and Mouton (2010) emphasise that the fundamental rule is that there should be no harm to the participants. The researcher has the responsibility to ensure that the participants are protected at all times to minimize any potential harm, emotional or physical, in the research.

3.6.3 Anonymity and confidentiality

Babbie and Mouton (2010) argue that the response may be considered anonymous when others cannot identify the respondent.

To ensure confidentiality, participants' identifiable private information was not revealed. Their records were kept secure through the use of password-protected files and encryption, and even old-fashioned locked doors and drawers.

3.6.4 Deceiving of participants

According to De Vos et al. (2011), deception is defined as intentionally deceiving participants, intentionally distorting facts, and withholding information from the participants. The researcher explained in detail to participants the background, purpose and expectations of the study.

3.7 Chapter summary

The research study's framework and methodology were covered in this chapter. Both the research design and methodology were thoroughly explained. It clarified the steps involved in conducting fieldwork to obtain pertinent data and facts about reality by outlining the research strategy and data collection techniques. It described the procedures used to gather the data. Furthermore, the chapter discussed how the Department of Public Works in the province of the North West implemented the SCM and the IDMS.

CHAPTER 4: FINDINGS, DISCUSSION AND ANALYSIS OF DATA

4.1 Introduction

The previous chapter discussed the methodology employed in this research study. Saunders et al. (2019) describe a research method as the theory that guides the researcher in conducting a study.

This chapter discusses and analyses the findings of the interviews conducted with staff of the Department of Public Works. The interviews were conducted in line with the four research questions of this research study:

1. To what extent does the Department of Public Works apply IDMS, Supply Chain Management systems when planning and implementing infrastructure projects?
2. What are the department constraints on the effective implementation of IDMS and SCM systems when planning and implementing infrastructure projects?
3. What are the benefits of effective implementation of IDMS and Supply Chain Management systems and processes when planning and implementing infrastructure projects?
4. How do leadership, organisational culture and skills affect infrastructure service delivery in the Department of Public Works?

The focus of this study is to answer the research questions and the interview sessions were conducted at the Department of Public Works in the North West Province. Participants were selected from the levels of middle and senior employees and project managers directly working on infrastructure and SCM.

4.2 Participants' demographic information

The study sample comprised 10 participants, listed in Table 6 below. All participants were professionals/graduates in built environment, or supply chain management and finance, who hold a position of middle, senior and project management within the Department of Public Works of the North West Province.

Table 6: Demographic information of participants

Programme in the Department	Participant no.	Position/ role/job title	Profession	Age Group (years)	Domain of the position	Work location
Supply Chain Management	1	Director – SCM	Accountant	50-55	Supply Chain Management	Mmabatho in Ngaka Modiri Molema District
Immovable Asset Management	2	Chief Director	Town Planer	35-40	Infrastructure management	Mmabatho in Ngaka Modiri Molema District
Building Infrastructure	3	Director	Architect	50-55	Infrastructure management	Mmabatho in Ngaka Modiri Molema District
Building Infrastructure	4	Architect	Architect	50-55	Infrastructure management	Mmabatho in Ngaka Modiri Molema District
Building Infrastructure	5	Chief Project Manager	Technologist in civil engineering	45-50	Infrastructure management	Mmabatho in Ngaka Modiri Molema District
Transport Infrastructure	6	Chief Director	Civil Engineer	40-45	Roads Infrastructure	Mmabatho in Ngaka Modiri Molema District
Transport Infrastructure	7	Project Manager	Civil Engineer	30-35	Roads Infrastructure	Mmabatho in Ngaka Modiri Molema District
Transport Infrastructure	8	Project Manager	Technician – Civil Engineering	30-35	Roads Infrastructure	Mmabatho in Ngaka Modiri Molema District

District Coordination	9	Director	Project Manager	45-50	Infrastructure maintenance	Mafikeng District Office
District Coordination	10	Director	Civil Engineer	40-45	Infrastructure maintenance	Bojanala District Office

However, due to saturation being reached, interviewing stopped at 8 participants (see Table 7).

Table 7: List of actual final participants

Programme in the Department	Number of Participants	Position/ role/ job title	Age Group (years)	Domain of the position
Supply Chain Management	1	Director – SCM	50-55	Supply Chain Management
Immovable Asset Management	2	Chief Director	35-40	Infrastructure Management
Building Infrastructure	3	Director	50-55	Infrastructure Management
Building Infrastructure	4	Architect	50-55	Infrastructure Management
Building Infrastructure	5	Chief Project Manager	45-50	Infrastructure Management
Transport Infrastructure	6	Chief Director	40-45	Roads Infrastructure
Transport Infrastructure	7	Project Manager	30-35	Roads Infrastructure
Transport Infrastructure	8	Project Manager	30-35	Roads Infrastructure

4.3 Empirical data analysis

The interviews were held at a central venue, the Department of Public Works, in Mafikeng. All interviews were recorded using a digital voice recorder and then transcribed by the researcher.

The transcripts were edited by the researcher, who also checked them against the voice recordings for accuracy. The data was analysed using content analysis, a way of systematically decoding and categorizing data so that inferences can be made. Any responses clearly linked to the objectives of the research questions were kept and considered, while irrelevant information was discarded. The useful data was kept and utilized for the progress of this research.

The findings in the interviews were structured according to the areas of interrogation as contained in the interview guide. The interview guide sought to obtain clarity on the infrastructure delivery management and supply chain management focusing on the research questions, objectives and the literature review that concentrated on the improvement of the IDMS and SCM in the Department of Public Works.

4.4 Discussion of the findings

The participants as listed in Table 6 were assured that their responses would remain confidential at all times. All responses were directly relevant to the areas where their offices were located.

4.4.1 Theme 1: Classical Organisational Theory

The participants in this regard have established that the infrastructure through the culture of the organisation was operating ineffectively and provided poor delivery to the clients and the citizens of the North West Province. Participant 4 and participant 6 indicated that the infrastructure delivery services and the SCM in the organisation were controlled by bureaucratic leaders and irresponsible officials and administrators.

Participant 4 stated:

> *The senior management does not provide us with sufficient tools to execute our functions and leadership discipline appropriately affecting the work moral.*

Participant 6 revealed:

> *The executive managers are irresponsible and do not prioritise acquiring innovative systems and technologies to improve institutional performance. When we ague the matter of systems and working tools, the executive management of the department always put budgetary constraints as the reason and further threatens us with labour relations disciplinary proceedings when criticising the status quo.*

In their interviews, they stated that favouritism was prevalent in the department. Outsourcing and tenders through the service providers were allocated to the political employees and families and friends. The funds were not allocated according to the required standard and compliance with the PFMA was not followed in the organisation.

This theory would assist in the organisation of the behaviour of the officials and administrators by following a cultural audit in terms of the organisation. The organisation will devise policies, procedures and processes to establish productivity in the organisation. The culture will have established a sense of ownership, transparency, responsibility and accountability (De Lange, 2011).

Participant 1 indicated that the workforce of the Department of Public Works in the North West do not care about their daily responsibilities. He was supported by Participant 8 stating that the only thing that is on their mind is to get month-end salaries, and allege political leaders are push their self-interest and corruption not focusing on systems and technology that can improve performance of the department.

Participant 8 reported:

> *I have studied with the intention to contribute to community development, however, the leadership does not prioritise systems and technology that can improve performance. We need systems and working tools, that will make us enjoy what we were appointed and qualified for.*

In the literature review, a gateway was established to support the improvement of the infrastructure delivery services. The participants voiced that the following perspectives were the fundamental phenomena which impacted negatively on the IDMS and SCM. The views

indicated were the findings in this regard and the study was going to attempt efforts to resolve the situation.

- Lack of training to be resolved by training and development in the organisation
- Insufficient technical capabilities
- Technological advancement refresher courses
- Lack of leadership to be resolved by different leadership courses
- Honesty and accountability were to be established through the culture of the organisation.

Ambe and Badenhorst-Weiss (2012) indicate that compliance is a fundamental issue that needs to be considered in the organisation when devising a culture. The legislation in place needs to be considered and a sense of ownership and patriotism can assist in resolving this issue of poor service delivery.

4.4.2 Theme 2: Customer Relationship Management Theory

Participants 2 and 8 indicated that the SCM and the IDMS were not operated in line with the customer service theory. Participant 2 stated:

> I am the manager responsible for the directorate or programme concern and you are the subordinate, need to listen to any order in this organization and avoid to question my approvals in any respect.

The officials, service providers and customers were not treated on the same merit. The SCM and IDMS were operated in a way that shows that there was less skill in the officials, leaders and personnel. The procedures and processes of the SCM and IDMS did not show any form of skill in customer relations. Patriotism was involved when the officials, leaders and personnel at North West executed and implemented their procurement activities daily in the office. The training and development were raised by participants in the human relations refresher courses and orientation from the North West public works executive officials to revive the policy and procedures governing the public works. De Lange (2011) states that customer relations is the most important issue that must be addressed when an organisation wants to be effective and profitable.

4.4.3 Theme 3: Resource Dependency Theory Systems

4.4.3.1 Section 38(1) of the Public Finance Management Act (PFMA).

The Public Finance Management Act, Act 1 of 1999 is a threshold for values for the procurement of goods and services through petty cash, written price quotations or competitive bids. Section 38(1) of the PFMA requires that the accounting officer maintains effective, efficient and transparent systems of financial and risk management and internal controls.

The focus of the study is interpreting the responses of the participants through the abuse of the system using the PFMA, which is impacting service delivery in the Province and competence in the workplace. De Lange (2011) argues that the resource theory dependency will be appropriate when the officials and leadership apply ownership and accountability in the organisation to achieve profitability and productivity. The organisation must at all times encourage innovation in the staff of the organisation.

4.4.3.2 Procurement delays

The responses from the participants indicated that their conduct in terms of daily procurement delays impacted service delivery in the province and is unacceptable according to the PFMA section 38(1).

The responses of participants also indicated that there was corruption of the management structure in the department.

4.4.4 Theme 4: Theory of Change

The participants emphasised the lack of compliance with the SCM system in the Department of Public Works in North West province. Ambe and Badenhorst-Weiss (2012) argue that in a healthy organisation, change is essential to innovation. The culture of the organisation needs to change in terms of policies, procedures, and processes and be linked with technology. Masilela (2013) believes that change is healthy in an organisation because it removes conflict of interest and eliminates fraud and corruption. The theory of change will establish efficient SCM and IDMS and new policies, and compliance with legislation is essential.

4.5 Chapter summary

Public infrastructure reform has a direct role to play in improving compliance with the IDMS, SCM and procurement processes in the Department of Public Works in the North West Province. Public infrastructure reforms have a direct role to play in improving

infrastructure service delivery. The government has been unable to make progress to date due to the following perspectives:

- The fundamental shift in the public sector caused by the IDMS in terms of policies designed, implemented and evaluated is gradually losing momentum and becoming obsolete in the eyes of the citizens who are the beneficiaries of democracy.
- The IDMS was designed initially to promote a standardised approach to infrastructure service delivery but limited knowledge and bureaucracy in the leadership made the system fail and the citizens as beneficiaries of the Public Works continued to suffer with poor basic services that the Department is constitutionally mandated to uphold.

The second phase of this study explored the themes analyzing the best way to resolve the ongoing challenges in the SCM and IDMS in the Department of Public Services in the North West Province. The first four determine the way SCM is abused in the Department of Public Services and the reasons were highlighted and supported by various scholars.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The previous chapter presented the results of the study, including the analysis and interpretation of the data.

This chapter concludes the study and makes recommendations for future research, considering the IDMS and SCM.

Table 8 below shows the problem areas identified by the study.

Table 8: Problems identified by the study

IDMS and Supply Chain Management Process	Challenges
IDMS and Supply Chain Management System	Lack of capacity and skills shortage Rigid supply chain management Lack of knowledge concerning latest regulations of the IDMS and supply chain management.
Tenders	Weak internal controls Unfair and irregular practices. Late submissions of tenders and submission of incomplete documents. Awarding of tenders to the companies whose directors are in the employment of the state.
Outsourcing	Lack of integrated planning Lack of capacity

5.2 The findings of the study

The purpose of this study was to explore how IDMS and SCM systems and processes were applied in the Department of Public Works in the North West Province. The study found the Department was significantly lacking in service delivery.

5.2.1 The role of planning using the IDMS and SCM system

The findings indicate that the poor planning and ineffective implementation of IDMS and SCM processes might be associated with the lack of capacity and adequate training of staff as well as insufficient coordination by their superiors, resulting in potential manipulation of the systems within the organisation. The respondents highlighted in the interviews that planning plays a significant role in ensuring effective service delivery by the Infrastructure department. They indicated that planning, procurement, execution and implementation of projects of infrastructure delivery were conducted irresponsibly. Some senior and executive personnel underwent disciplinary procedures for corruption and bureaucracy allegations when making decisions. There were delays in the payment of service providers due to a lack of effective systems and innovations. The study revealed that the Department of Public Works lacks capacity at different levels, starting from the bottom to the top, and indicated that effective and adequate training was essential.

The study found that organising and planning skills were critically needed from top to bottom and that accountability, compliance, honesty and trustworthiness must be encouraged. Efficiency in the execution of IDMS and SCM systems and processes must be a priority for all personnel across the Department.

5.2.2 The role of reporting, budgeting and adherence to the IDMS and SCM

The literature review supported the above. Executive and senior management were familiar with the policies and procedures of the Department and legislation governing the supply chain but were irresponsible and inefficient, and displayed inadequate capacity and a lack of compliance with systems. The reporting and budgeting in the Department were executed in a manner that was unacceptable and impacted service delivery and ultimately affected all citizens in the infrastructure programmes. Masilela (2013) avers that total compliance with the PFMA and other SCM regulations should be enforced in the culture to change the unproductive attitude within the organisation.

5.2.3 The role of compliance with legislation

The literature review revealed that the Public Works personnel, from bottom to top, were ignoring the existence of primary legislation like the PFMA, which promotes efficiency in the implementation of the SCM system and processes in the public sector. The only remedy to resolve this problem was to comply with legislation, be transparent and be accountable (Masilela, 2013). The author further maintains that technology is essential and refresher

training linking technology and the processes and procedures is essential for a healthy organisation.

5.3 Conclusions

This chapter presented the conclusions and recommendations of the study regarding IDMS and SCM in the Department of Public Works in the North West Province. The findings were derived from the literature review, the theoretical framework and the interview responses of the participants. The study identified serious shortcomings and inefficiency in planning, organising, controlling and compliance and that these areas must be addressed in the Department of Public Works.

The problems listed in Table 8 were identified during the data collection phase of this study. All of the employees of the Department of Public Works who participated in the study referred to these problems during their interviews. Possible solutions to these challenges were to capacitate the department with skilled and knowledgeable staff, and effective implementation of IDMS and SCM systems and processes.

5.4 Recommendations

5.4.1 IDMS implementation and evaluation

The study revealed that compliance with the IDMS is necessary to improve and correct the following areas within the Department of Public Works for improved efficiency:

1) Initiation
2) Concept
3) Design development
4) Works
5) Handover
6) Close-out

The study indicated that effective IDMS needs to be applied with accurate planning, budgeting, procurement, delivery, maintenance, operation, monitoring and evaluation. All these areas of concern in the IDMS need to be urgently corrected and conducted with less dishonesty to the system, cohesiveness, pro-activeness, and ethical and servant leadership must be in place

5.4.2 Supply Chain Management

Procurement in the public sector is governed by legislative bodies, laws and regulations (Larson, 2009). The Constitution stipulates that there should be a procurement policy that provides for categories of preference in the allocation of contracts for the citizens and users of the system, and service providers (South Africa, 1996).

This study indicated that what hinders service delivery through unethical leadership, dishonesty and corruption is bureaucracy and political deployment. Training and development was regarded as an essential element in this category. Adequate and sufficient skills are essential in the employment of relevant personnel to produce quality and compliance.

5.4.3 Public sector governance

Based on the background, there are various elements in the legislative framework such as the Constitution (Act No.108 of 1996) and the Public Finance Management Act (PFMA) (Act No. 1 of 1999), which promote accountability, transparency and good governance in the public sector (National Treasury, 2011). The Public Protector established that good governance should be investigated if there is any suspicion of fraud, maladministration and incompetence in any government institution for fairness and reliability (Law No. 190, 2012). The Office of the Public Protector regards the action as a remedial factor to resolve all problems in any public sector department. The literature indicated that incompetence in public work can be removed from office through the empowerment of personnel. Human resources management should have a good fit in their selection of employees employed for various jobs in the office (Larson, 2009).

5.5 Areas for future research

The study indicated that there was a necessity for further research in the Department. The study has established that leadership, quality and performance were lacking in regard to service delivery. There is a need to consider the plight of the citizens and service providers in the public sector and provide adequate services and delivery. The leadership should comply with the PFMA, be accountable and deliver quality services at all times. The Department did not meet the Batho Pele principles.

The Principles of Batho Pele are:

- Consultation - determine the needs of the people.
- Service standards - quality of services citizens should be receiving.
- Access - easy access to services.
- Courtesy - a polite and friendly disposition.
- Information - people should be given accurate information.
- Openness and transparency.
- Dealing with complaints.
- Giving best value.

However, no accountability, or any of the above principles, were observed by the Department of Public Works in the North West Province.

The Department of Public Works in the North West province should not allow political interference to impact administration activities because this culture has the potential to destroy the efficiency and good service delivery of the department. It is crucial that the principles of Ubuntu must be upheld in the province. Public officials must develop a culture of commitment, responsibility, ownership and comply with the Constitution of the country and the PFMAA at all times.

Further research is recommended to all infrastructure departments in the North West Province, as well as the macro environment. Such studies could also be done nationally to improve the economy across the country. A sustainable economy is essential in the macro environment in the public sector.

5.6 Limitations of the study

Certain avenues were not considered in the study and these are limitations. The study focused on only one department, Public Works, and excluded the local government. Based on these aspects, there is a need for future research so that all the facts and data pertaining to the public sector are obtained.

REFERENCE LIST

Alford, J. L., & O'Flynn, J. (2012). *Rethinking public service delivery: managing with external providers*. Palgrave Macmillan. ISBN 978-0-230-23795-7

Ambe, I. M.& Badenhorst-Weiss, J. (2012). An exploration of public sector supply chains with specific reference to the South African situation. *Journal of Public Administration, 46*(3), 1100-1115.

Arimah, B. (2016). Infrastructure as a Catalyst for the Prosperity of African Cities. *Procedia Engineering, 198*, 245-266. https://doi.org/10.1016/j.proeng.2017.07.159

Auditor General (AGSA). (2021). Intensify the role of coordinating and oversight structures to improve the lived experiences of people in the province. https://www.agsa.co.za/Portals/0/Reports/PFMA/202122/2022%20PFMA%20Media%20Release%20FINAL%20(interactive).pdf?ver=2022-12-01-105048-470

Babbie, E., & Mouton, J. (2010). *The practice of social research.* 10th ed. Oxford University Press.

Becker, J., Knackstedt, R., & Pöppelbuß, J. (2009). Developing maturity models for IT management. Business & Information Systems Engineering 1(3):213-222. http://dx.doi.org/10.1007/s12599-009-0044-5

Blamey, A., & Mackenzie, M. (2007). Theories of change and realistic evaluation: peas in a pod or apples and oranges? *Evaluation*, *13*(4), 439-455. https://doi.org/10.1177/1356389007082129

Boateng, D. (2008). Government service delivery lies in supply chain management, not centralised procurement. *Smart Procurement.* https://smartprocurement.co.za/government-service-delivery-lies-in-supply-chain-management-not-centralised-procurement/

Bogdan, R., & Biklen, S. K. (1998). *Qualitative research for education: an introduction to theories and methods.* Allyn and Bacon, Inc. https://math.buffalostate.edu/dwilson/MED595/Qualitative_intro.pdf

Bolton, P. (2015). Government procurement as a policy tool in South Africa. *Journal of Public Procurement, 6*(3), 193-217. http://dx.doi.org/10.1108/JOPP-06-03-2006-B001

Bordens, M. & Abbott, B. (2008). Research design and methods: a process approach. McGraw-Hill.

Brynard, P. A. (2005). Policy implementation: lessons for service delivery. *Journal of Public Administration, 40*(4), 649-664.

Chigangacha, P., Haupi, T., & Awuzie, B. (2021). Examining the maturity of South African government departments to implement the Infrastructure Delivery Management System (IDMS). *Acta Structilia, 28*(2), 108-142. https://doi.org/10.18820/24150487/as28i2.5

Construction Industry Development Board (CIDB). (2010).. *CIBD Infrastructure Gateway System - an overview: Inform Practice Note #22a.* http://www.cidb.org.za/Documents/KC/cidb_Publications/Prac_Notes/Practice-Notes-22av1.pdf

De Lange, S. (2011). *Irregular State Expenditure Jumps 62%.* https://smartprocurement.co.za/irregular-state-expenditure-jumps-62/

De Vos, A. S., Strydom, H., Fouche, C. B., & Delport, C. S. L. (2005). *Research at grassroots. for the social science and human service professions*. 3rd ed. Van Schaik.

De Wet, H. C. (2021). *Exploring occupational-related fatigue strategies as perceived by middle managers in Gauteng*. Published mini-dissertation for Masters in Business Administration. North West University. https://repository.nwu.ac.za/handle/10394/37343?show=full

Dyah, P. D., Arismunandar, M., Rizal, F., Achmad, S., & Yuni, R. F. (2021). The Influence of Organizational Culture and Organizational Commitment on Employee Performance Organizational Citizenship Behavior: A Study at the Public Relations and Protocol Bureau of the Regional Secretary of East Java Province, Indonesia. *Russian Journal of Agricultural and Socio-Economic Sciences, 5*(113), 145–152. https://doi.org/10.18551/rjoas.2021-05.17

Enwereji, P. C., & Uwizeyimana, D. E. (2021). Gender perspectives of measures to improve water and sanitation delivery in South Africa Local Municipalities. *Journal of Business Economics, 19*, 17490-17506. https://www.ajol.info/index.php/gab/article/view/210399

Hofstetter, M., Bolding, A., & van Koppen, B. (2020). Addressing failed water infrastructure delivery through increased accountability and end-user agency: The case of the Sekhukhune district, South Africa. *Water Alternatives*, *13*(3),843-863.

Iyanda, A. O. (2021). *Funding strategies for small business sustanability.* Doctoral thesis. Walden Dissertation and Doctoral Studies. Walden University. https://scholarworks.waldenu.edu/dissertations/10240/

Jonker, J., & Pennink, B. J. W. (2009). *The essence of research methodology: a concise guide for Master and PhD students in Management Science*, http://dx.doi.org/10.1007/978-3-540-71659-4

Keller, G. (2012). *Managerial statistics*. 8th ed. South-Western, Cengage Learning.

Khumalo, M. J., Choga, I., & Munapo, E. (2017). Challenges associated with infrastructure delivery. *Public and Municipal Finance Journal, 6*(2), 35-45. http://dx.doi.org/10.21511/pmf.06(2).2017.04

Khumalo, M., & Scheepers, C.B. (2021). Leadership of change in South Africa public sector turnarounds. *Journal of Organizational Change Management* ahead-of-print(11). http://dx.doi.org/10.1108/JOCM-04-2017-0142

Krugel, W., Otto, H., & van der Merwe, J. (2010). Local Municipalities and progress with the delivery of basic services in South Africa. *South African Journal of Economics, 78*(3), 307-323. http://dx.doi.org/10.1111/j.1813-6982.2010.01249.x

Larson, L (2009). Reader response meets new literacies: empowering readers in online learning communities. *The Reading Teacher, 62*(8), 638-648. http://dx.doi.org/10.1598/RT.62.8.2

LAW No. 190. (2012). Rules for the prevention and repression of corruption and unlawfulness in public administration. (12G0213), Italy. https://www.anticorruzione.it/portal/rest/jcr/repository/collaboration/Digital%20Assets/anacdocs/MenuServizio/English%20section/LEGGE_190_%206%20novembre%202012_EN-final_sito%20(1).pdf

Lemanski, C. (2019). *Infrastructural citizenship: The everyday citizenships of adapting and/or destroying public infrastructure in Cape Town, South Africa*. Environmental Management and Energy Studies, University of Johannesburg. https://doi.org/10.1111/tran.12370

Lugada, E., Komakech, H., Ochola, I. et al. (2022). Health supply chain system in Uganda: current issues, structure, performance, and implications for systems strengthening. *Journal of Pharmaceutical Policy and Practice, 15*, 14. https://doi.org/10.1186/s40545-022-00412-4

Luyt, D. (2008). *Governance, accountability and poverty alleviation in South Africa.* Paper delivered by Mr D. Luyt, Media and Advocacy Head of the Public Service Accountability Monitor (PSAM), at the United Nations Social Forum on 2 September 2008 in Geneva, Switzerland. Governance, Accountability and Poverty Alleviation. https://psam.org.za/research/1221225273.pdf

Manzini, D. P., Lubbe, S., Klopper, R., & Meyer, J. (2018). Improvement of infrastructure delivery through effective supply chain management at North West provincial Department of Public Works and Roads. *Journal of Public Administration, 14*, 37-33. https://jopa.wemasoft.co.za/public/portal/articles/published-article/id/1256

Maree, K. (2017). *First steps in research*. 2nd ed. Van Schaik Publishers.

Masilela, S. (2013). Nxesi joins treasury to clean up public sector. *The New Age.*

Mhlongo, N. F. (2014). *Transparency in supply chain management: A South African local government case analysis*. Unpublished Master's thesis. Faculty of Management Science, Stellenbosch University, Western Cape, South Africa. http://scholar.sun.ac.za/bitstream/handle/10019.1/86626/mhlongo_transparency_2014.pdf

Mouton, J. (2011). *How to succeed in your Masters & Doctoral Studies. A South African guide and resource Book.* Van Schaik Publishers.

National Treasury. (2011). *Standard for an Infrastructure Delivery Management System*. South Africa. https://www.treasury.gov.za/public%20comments/draft%20treasury%20regulations/standard%20for%20infrastructure%20delivery%20management%20system%20-%20nov%20draft.pdf

Neuman, W. L. (2006). *Social research methods. qualitative and quantitative approaches.* 6th ed. University of Wisconsin. Pearson International.

Ngumbela, X. (2021). *Is South Africa building a capable state through developmental local government?* School of Public Management, Governance and Public Policy, University of Johannesburg. https://doi.org/10.35293/srsa.v43i2.872

Ntibana, B .J. (2018). *Supply chain management in the department of Public Works-Pietermaritzburg: challenges and prospects*. Master's degree in Public Administration, University of kwaZulu-Natal. https://researchspace.ukzn.ac.za/handle/10413/17283

Nyanga, R. (2015). Assessment of Employee Turnover on Organizational Efficiency: A Case Study of International Livestock Research Institute. URL:https://api.semanticscholar.org/CorpusID:169210576

Okwata, P. A., Wasike, S., & Andemariam, K. (2022). Effect of organizational culture change on organizational performance of Kenya Wildlife Service, Nairobi National Park. *Administrative Sciences, 12*, 139. https://doi.org/10.3390/admsci12040139

Palmatier, R. W., Dant, R. P., Grewal, D., & Evans, K. R. (2006). Factors Influencing the Effectiveness of Relationship Marketing: A Meta-Analysis. *Journal of Marketing, 70*, 136-153. http://dx.doi.org/10.1509/jmkg.70.4.136

PFMA (Public Finance Management Act). 1999. Act no. 1 of 1999. Republic of South Africa.

https://www.agsa.co.za/Portals/0/Legislation/Public_Finance_Management_Act%2C_No__1_of_1999.pdf

Ritchie, J., & Lewis, J. (2003). *Qualitative research practice—a guide for social science students and researchers.* Sage Publications Ltd.

Robichaud, F., Richelieu, A., & Kozak, R. (2011). Branding as a communications strategy. *Journal of Brand Management*, 19(8), 712-734.

Robson, C. (2002). *Real world research: a resource for social scientists and practitioner-researchers*. 2nd ed. Blackwell Publishers Ltd. https://www.scirp.org/reference/referencespapers?referenceid=1599482

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). *Research methods for business students*. 8th ed. Pearson.

Sheoraj, P. (2013). *The state of readiness of in the South Africa public sector.* Unpublished Master's dissertation. University of Pretoria, Pretoria. https://repository.up.ac.za/handle/2263/26350?show=full

South Africa. (1996). *The Constitution of the Republic of South Africa*. Act no. 108 of 1996. Government Printer. https://www.gov.za/sites/default/files/images/a108-96.pdf

South Africa. (2015). *National Treasury. Public sector infrastructure update.* Government Printer.

Statistics South Africa (Stats SA). (2022). *Inflation.* https://www.statssa.gov.za/?cat=33

Steinberg, R. (2004). *Strategies for successful Government E-Procurement.* https://unctad.org/system/files/official-document/ecdr2004ch5_en.pdf

Turley, L., & Perera, O. (2014). *Implementing sustainable Public Procurement in South Africa: Where to start.* https://www.iisd.org/system/files/publications/implementing_spp_south_africa.pdf

Vaishnavi, V., & Suresh, M. (2019). Assessment of readiness level of implementing lean six sigma in healthcare organisation using fuzzy logic approach. *International Journal of Lean Six Sigma, 12*(2), 175-209. http://dx.doi.org/10.1108/IJLSS-07-2019-0081

Van de Sande, A., & Schwartz, K. (2011). *Research for social justice: A community-based approach.* Fernwood Publishing. https://fernwoodpublishing.ca/book/research-for-social-justice697

Van der Riet,. M, & Boettiger, M. (2009). Shifting research dynamics: addressing power and maximising participation through participatory research techniques in

participatory research. *South African Journal of Psychology*, *39*(1), 1-18. http://dx.doi.org/10.1177/008124630903900101

Van Zyl, D. C. (2015). *Strategic supply chain management by Matatiele Municipality.* Master's Thesis, University of Stellenbosch. https://www.researchgate.net/publication/44139590_Strategic_supply-chain_management_by_Matatiele_Municipality

Welman, C., Kruger, F., & Mitchell, B. (2010). *Research methodology*. 3rd ed. Oxford University Press Southern Africa (Pty) Ltd

Zhu, Q., Sarkis, J., & Lai, K-H. (2011). "Regulatory Policy Awareness and Environmental Supply Chain Cooperation in China: A Regulatory-Exchange-Theoretic Perspective. *IEEE Transactions on Engineering Management*, *65(*1), 46-58. https://doi.org/10.1109/TEM.2017.2734940

APPENDICES

APPENDIX A: REQUEST FOR PERMISSION TO CONDUCT RESEARCH



Faculty of Commerce, Law and Management - Wits Business School

Mr. M.I Kgantsi (Head of Department)

Department of Public Works and Roads

Private Bag X 2080

MMABATHO

2735 28 May 2023

Dear Sir/Madam,

Re: Permission to conduct research at Department of Public Works

My name is Sifiso Isaac Diko

I would like to conduct the study that seek to understand deficiencies that your department might have on infrastructure service delivery by assess effectiveness on use of IDMS, SCM systems and technologies as well as any challenges related to leadership, organisational culture and skills. This research is conducted in order to understand challenges that your institution faces and seek to come up with recommendation that will assist the institution to improve on infrastructure delivery as mandated by the Constitution. The topic of my study is "**Improved infrastructure delivery through effective implementation of IDMS and SCM systems and processes**"

I am studying for Master Degree Business Administration in the Wits School of Business at the University of the Witwatersrand. I am seeking permission to do research at Department of Public Works.

The study conducted is about improvement of infrastructure delivery with an aim to come with recommendation that will assist your department to improve on infrastructure delivery that the Constitution promised people of the Republic of South Africa.

The research will entail collecting data from Technical Senior employees on Infrastructure Directorate, Senior SCM employees work in on Infrastructure Procurement and Senor/ executive Manager of the Department.

Participants will be asked to give their written or verbal consent before the research begins. Their responses will be treated confidentially, and identities (their names and the name of the organisation) will be anonymous unless otherwise expressly indicated. Individual privacy will be maintained in all published and written data resulting from the study. The results will be communicated in the dissertation at the completion of the study.

The research participants will not be advantaged or disadvantaged in any way. They will be reassured that they can withdraw their permission at any time during this project without any penalty. There are no foreseeable risks in participating in this study.

All research data will be stored in a computer with password for period of 5 years and/or deleted after 5 years. Only the researcher will have access to the data.

I therefore request permission in writing to conduct my research at your organisation. The permission letter should be on your organisation's headed paper, signed and dated, and specifically referring to myself by name and the title of my study.

Please let me know if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

Researcher: Sifiso Isaac Diko - **870399@students.wits.ac.za**

Cell: 076 471 7682

Supervisor: Prof. Thomas Dorson Anning - **thomas.dorson.anning@wits.ac.za**

APPENDIX B: ETHICAL CLEARANCE

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

Wits Business School

Wits Business School Ethics Committee
Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics Clearance Certificate

Ethics protocol number: WBS/BA870399/521
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below)

This certificate is only valid if accompanied by formal permission from the relevant stakeholder(s).

Project title	Improved infrastructure delivery through effective implementation of infrastructure delivery management system and supply chain management processes in the Department of Public Works, North West
Investigator / Researcher	Mr Sifiso Isaac Diko
Nature of Project	MBA (Research Article)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentialty.
Issue Date of Certificate	2023/10/10
Expiry date	Date of submission of the project / research report
Chairperson	Dr Pius Oba ☎ +27 11 717 3976 +27 82 733 6587 pius.oba@wits.ac.za

Declaration by Researcher

One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.

I fully understand the conditions under which I am authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I undertake to resubmit the protocol to the Committee.

Signature

10/10/2023
Date:

APPENDIX C: LETTER OF INVITATION TO PARTICIPATE

Dear Sir / Madam

My name is Sifiso Isaac Diko. I am a Masters student at the University of the Witwatersrand, Johannesburg. My supervisor is Prof. Thomas Dorson Anning. I am conducting a research study about Infrastructure Delivery Improvement. The study title is **"Improved infrastructure delivery through effective implementation of IDMS and SCM systems and processes in the Department of Public Works – North West Province".**

I am inviting you to take part in a research interview with semi structured questionnaire. If you decide to take part, your participation in this research study will last about 30 minutes. The interview will take place at Department of Old Parliament Complex in Department of Public Works - North West Province 12:00pm.

With your permission, I would like to audio/video record the interview. This data will be stored in a computer with password for period of 5 years and/or deleted after 5 years. Only the researcher will have access to the data.

During the research activity, I will need to ask for some personal information about you, including (1) Job title, (2) Experience (3) qualification.

The interview will be confidential and anonymous. When I share the results of the research study, I will not include your name or anything else that could identify you. With your permission, other researchers may use the data collected from this research study, but your name and any personal information will not be used or passed on.

If you decide to take part in the research study, it should be because you want to volunteer. You do not have to take part. You can stop being in the study at any time. You do not have to answer any questions if you do not want to. You will not get any direct benefits if you choose to join the research study. You will not lose any services; benefits or rights you would normally have if you decide not to join. Taking part in the research study will not cost you anything.

The risks for this research study are no more than what happens in everyday life / some of the questions asked may make you feel sad or upset. If this happens, I will stop the interview and continue another time.

This research study will be written up as a research report. The report will be available on the university library website. If you would like to receive a summary of this report, I will be happy to send it to you.

If you have any questions during or afterwards about this research study, feel free to contact me or my supervisor on the details listed below. If you have any concerns or complaints about the ethical procedures of this research study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,

Researcher: Sifiso Isaac Diko

870399@students.wits.ac.za

Cell: 076 471 7682

Supervisor: Thomas Dorson Anning

Thomas.dorson.anning@wits.ac.za

APPENDIX D: INFORMED CONSENT FORM

INFORMED CONSENT FORM

Improved infrastructure delivery through effective implementation of IDMS and SCM systems and processes in the Department of Public Works – North West Province

Name of researcher: Sifiso Isaac Diko

I, ……., agree to participate in this research project.

I agree to the following:

(Please circle the relevant options below)

The research study was explained to me. I understand what this study is about. YES NO

I understand that I can volunteer to take part in the study YES NO

I agree that the interview/focus group/other activity may be audio recorded YES NO

I agree that direct quotations from my interview/focus group/other

activity may be used by the researcher in their research report/ manuscript/

book chapter.

YES NO

I agree that my participation will remain anonymous (my name or other identifying data will not be used by the researcher in their research report/ manuscript/book chapter) YES NO

I agree that other researchers may use the information I provide in my interview/focus group/other activity (depending on their own ethics clearance being obtained) but my name and any personal information will not be used or passed on YES NO

…… (signature)

…… (name of participant)

…… (date)

…… (signature)

…… Sifiso Isaac Diko

…… (date)

APPENDIX E: INTERVIEW QUESTIONNAIRE

DATA COLLECTION TOOL: INTERVIEW QUESTIONNAIRE

1 **BIOGRAPHICAL** (Please indicate by making an **X** in the relevant column. This is an optional question.)

1.1	**Age Group**	*Prefer not to say*		*Younger than 20*		*20 – 29*	
		30 – 39		*40 – 49*		*50 - 59*	
		60 or older					
1.2	**Highest Qualification**						

2 **POSITION / ROLE / JOB TITLE** (Please indicate by making an **X** in the relevant column)

2.1	Assistant Project Manager	
2.2	Project Coordinator	
2.3	Project Manager	
2.4	Senior Project manager	
2.5	Director - Infrastructure	
2.6	Program Manager/ Executive Manager	
2.7	Accounting Officer	
2.8	SCM Director	
2.9	SCM Practitioner	
2.10	IT Practitioner	
2.11	IT manager	
2.12	Other (Please specify)	

3 **IN WHICH DOMAIN IS YOUR POSITION?** (Please indicate by making an **X** in the relevant column)

3.1	General Management	
3.2	Supply Chain Management	
3.3	Financial Management	
3.4	IT Management	
3.5	Project, Programme or Portfolio Management	
3.9	Other	

4.0 Infrastructure Delivery Management System (IDMS)

Question		**Answers**
4.1	To what extent does the Department of Public Work apply IDMS when planning and implementing infrastructure projects?	
4.2	What are the department constraints on effective implementation of IDMS when planning and implementing infrastructure projects?	

4.3	What are the benefits of effective implementation of IDMS and Supply Chain Management systems and processes?	

5.0 Supply Chain Management System and Processes

Question		Answers
5.1	To what extent does the Department of Public Work apply Supply Chain Management systems and processes when planning and implementing infrastructure projects?	
5.2	What are the department constraints on effective implementation of Supply Chain Management systems and processes when planning and implementing infrastructure projects?	
5.3	What are the benefits of effective implementation of Supply Chain Management systems and processes when planning and implementing infrastructure projects?	

6.0 Technology

Question		Answers
6.1	To what extent does the Department of Public Work use technology when planning and implementing infrastructure projects?	
6.2	What technological systems and innovations does the department use to plan and implement infrastructure projects?	
6.3	Does the department have digital record and project management system?	
6.4	What are the benefits of using technology and innovation when planning and implementing infrastructure projects?	

7.0 Leadership

Question		Answers
7.1	How does leadership style affect infrastructure service delivery in the Department of Public Work?	
7.2	How does lack leadership affect performance of Department of Public Works - North West?	
7.3	What kind of leadership does the department have or experience? And what is your opinion about it?	
7.4	What are the benefits of servant leadership in the infrastructure department	
7.5	When have you had the natural desire to want to serve, to serve people first in this department	

8.0 Skills

Question		Answers
8.1	How does lack of relevant skills affect infrastructure service delivery in the Department of Public Work?	
8.2	Does the Department have technical capacity to plan and implement infrastructure projects?	
8.3	How does the department attract technical skill personnel?	
8.4	Does the department have critical skill retention strategy and policy?	

9.0 Organisational Culture

Question		Answers
9.1	How does the department organisational culture affect infrastructure service delivery?	
9.2	What can be done to improve organisational culture as to the benefit of the department?	
9.3	Do staff members understand their role in the decision making process?	
9.4	Does current structure have a positive or negative impact on decision quality and speed?	

APPENDIX F: GRAMMARIAN LETTER

22 Krag Street

Napier

7270

Western Cape

25 February 2024

WITS Business School

University of the Witwatersrand

JOHANNESBURG

LANGUAGE & TECHNICAL EDITING

Cheryl M. Thomson

Improved infrastructure delivery through effective implementation of IDMS and SCM systems and processes in the Department of Public Works, North West Province

Supervisor: Prof Thomas Anning Dorson

This is to confirm that I, Cheryl Thomson, executed the language and technical editing of the above-titled Masters dissertation of SIFISIO ISAAC DIKO, student number 870399, at the WITS BUSINESS SCHOOL, in preparation for submission of this document for assessment.

Yours faithfully



CHERYL M. THOMSON

Email: cherylthomson2@gmail.com

Cell: 0826859545