

**CHALLENGES FACED BY RESEARCH COORDINATORS IN THE LIMPOPO
PROVINCIAL GOVERNMENT**

BY

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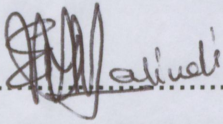
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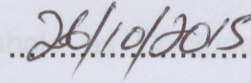
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DECLARATION

I, **Malindi Ndivhuwo Edward**, hereby declare that this mini-dissertation submitted to the University of Venda for the Degree of Masters in Public Management has never been submitted for any degree in any other university, that is my own work in design and executive and all citations, references and borrowed ideas have been duly acknowledged.





MALINDI NDIVHUWO EDWARD
STUDENT NO. 9809847

DATE

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I would like to acknowledge and express my sincere gratitude to God the Father, the Son and the Holy Ghost for having provided me with the required knowledge, skills and guidance when conducting this study. Further acknowledgement is extended to the Dean and Vice-Dean of the School of Management Sciences Prof. A Kadyamatimba and Prof. M.P Khwashaba respectively for encouraging and affording me the last opportunity for completing my Masters in Public Management (MPM).

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I further acknowledge my loving and caring wife Mukondeleli, my only daughter Ndivhuwo Diadem and only son Mutshutshu Sagacious for their support and encouragement they showed during my sleepless nights of the study.

Above all, my special thanks and acknowledgement go to the respondents of this study who sacrificed their time to honestly answer the questionnaire and respond to the interview questions.

With the power of God, everything is possible!

DEDICATION

This study is dedicated to my late father Mr. Mutshutshu Tshivhangavhurena Malindi Thangwana, my mother Mrs. Nyawasedza Mbangiseni Thangwana, my uncle Rev. O.T Malindi and above all to my family. May you allow the shining stars cover the walls and the roofs of Malindi Thangwana's family through education?

by the Limpopo Provincial Government Department officials. The democratic elected government inception in 1994 established three spheres of government, namely, the national, provincial and local spheres of government. Currently the Limpopo Provincial Government and Administration is composed of twelve government departments including the Office of the Premier. The study therefore facilitated an approach towards a coordinated research initiatives in the province to attain the objectives laid in the Limpopo Development Plan aligned to the National Development Plan (Vision 2030). Decision making, institutional arrangements and planning, policy analysis, policy implementation, policy evaluation, policy design, and policy change and programs improvement need to be evidence-based and that could only be achieved by scientific research conduction, interpretation and conclusion.

For the purpose of this study, the researcher used a triangulation approach where both qualitative as well as quantitative research methodologies were applied. The researcher used non-probability sampling and its subtype purposive sampling method to select the respondents. The researcher used both questionnaires and interviews as data collection instruments. Two data analysis methods were used, namely, statistical analysis (Statistical Package for Social Sciences) and thematic analysis. The following ethical aspects were considered and applied when conducting the study and they are: permission to conduct research; voluntary participation and informed consent; no harm to participants; anonymity; confidentiality; and, deceiving of subjects.

The major findings of the study are:

There are not enough research coordinators in Limpopo Provincial Government and that financial resources are not enough to conduct research.

ABSTRACT

The study was fundamentally based on the challenges faced by research coordinators in the Limpopo Provincial Government. The researcher attempted to describe the challenges; examine research capacity and develop the mechanisms to the extent to which the research is properly and well coordinated by the Limpopo Provincial Government Department officials. The democratic elected government incepted in 1994 established three spheres of government, namely, the national, provincial and local spheres of government. Currently the Limpopo Provincial Government and Administration is composed of twelve government departments including the Office of the Premier. The study therefore facilitated an approach towards a coordinated research initiatives in the province to attain the objectives laid in the Limpopo Development Plan aligned to the National Development Plan (Vision 2030). Decision making, institutional arrangements and planning, policy analysis, policy implementation, policy evaluation, policy design, and policy change and programs improvement need to be evidence-based and that could only be achieved by scientific research conduction, management and coordination.

For the purpose of this study, the researcher used a triangulation approach where both qualitative as well as quantitative research methodologies were applied. The researcher used non-probability sampling and its subtype purposive sampling method to select the respondents. The researcher used both questionnaires and interviews as data collection instruments. Two data analysis methods were used, namely, statistical analysis (Statistical Package for Social Sciences) and thematic analysis. The following ethical aspects were considered and applied when conducting the study and they are: permission to conduct research; voluntary participation and informed consent; no harm to participants; anonymity; confidentiality; and, deceiving of subjects.

The major findings of the study are:

- There are no enough research coordinators in Limpopo Provincial Government and that financial resources are not enough to conduct research;

- Most of the government officials are not sure if the provincial government of Limpopo encourages innovation by devoting scientific and technological research, development and biotechnology;
- Uncoordinated research results in the duplication of research and that research coordinators are not well trained in research methodology coupled by lack of qualified staff to conduct quality in-house research;
- Appropriate coordinated research can improve management and service delivery and that research coordinators, research managers and research practitioners are informed of the South Africa National Research and Development Strategy of 2002 and that it must align with any Integrated Provincial Research and Development Strategy developed or to be developed in future; and,
- That each provincial government department ensures that it has a full functional directorate that is well resourced in terms of personnel, financial and skills and promotes collaboration between government departments and research and academic institutions.

The recommendations of the study were:

- That there should be enough research coordinators in Limpopo Provincial Government and financial resources shall be made available to conduct research;
- That the Limpopo Provincial Government must ensure that government officials that are responsible for research do participate in innovation programmes;
- That the provincial research initiatives must be well coordinated to avoid duplication of research and research coordinators and research practitioners must be well trained in research methodologies to conduct quality in-house research;
- That research coordinators, research managers and research practitioners must always be well informed of all research and development strategies and the related policies developed or to be developed in future; and,
- That each provincial government department ensures that it has a full functional directorate that is well resourced in terms of personnel, financial and skills, and develop research collaboration policy with academic and research institutions.

TABLE OF CONTENTS

Declaration.....	ii
Acknowledgement	iii
Dedication.....	iv
Abstract.....	v
Table of Contents	vii
List of Figures	xi
List of Maps	xii
List of Tables	xiii
Abbreviations and Acronyms	xv

CHAPTER 1

ORIENTATION OF THE STUDY.....	1
1.1 Introduction	1
1.2 Background of the Study	1
1.3 Rationale of the Study	3
1.4 Statement of the Problem	3
1.5 Aim of the Study	5
1.6 Specific Objectives of the Study	5
1.7 Research Questions	5
1.8 Significance of the Study	6
1.9 Delimitation of the Study	6
1.10 Limitation of the Study	6
1.11 Definition of Operational Concepts	7
1.12 Organization of the Study	9

CHAPTER 2

LITERATURE REVIEW.....	11
2.1 Introduction.....	11
2.2 Legislative Framework on Government Research	11
2.2.1 Constitution of the Republic of South Africa, 1996.....	12

2.2.2	Limpopo Provincial Growth and Development Strategy, 2004 –2014	12
2.2.3	South African National Research and Development Strategy, 2002	13
2.2.4	Draft Limpopo Provincial Research and Development Framework, 2013	16
2.2.5	Limpopo Provincial Research Guidelines, 2012.....	17
2.2.6	Human Sciences and Research Act, 1968 (Act No.23 of 1968) as amended by Act No.99 of 1990	18
2.2.7	Human Sciences Research Council Act, 2008 (Act No. 17 of 2008).....	20
2.2.8	National Research Foundation Act, 1998 (Act No.23 of 1998).....	21
2.2.9	Technology Innovation Agency Act, 2008 (Act No. 26 of 2008)	22
2.2.10	National Development Plan, Vision 2030, 2011	23
2.2.11	National Infrastructure Plan, 2012.....	24
2.2.12	Primary Industries Research and Development Act, 1989 (Act No. 17 of 1990 as amended) Australia	24
2.3	Importance of Research for Government.....	26
2.4	Importance of Research Coordination	33
2.5	Challenges Facing Research Units.....	36
2.6	Government Interventions in Solving Poor Research Coordination	38
2.7	Conclusion	41
CHAPTER 3		
RESEARCH DESIGN AND METHODOLOGY		
3.1	Introduction	42
3.2	Research Design	42
3.3	Research Methodology	42
3.4	Study Area	43
3.5	Population of the Study	45
3.6	Sampling	45
3.6.1	Sampling Method	46
3.6.2	Sample Size	46
3.7	Data Collection	47
3.8	Pilot Study	48

3.9	Data Analysis.....	48
3.10	Ethical Consideration	52
3.10.1	Permission to Conduct Research	52
3.10.2	Voluntary Participation and Informed Consent.....	52
3.10.3	No Harm to the Participants.....	53
3.10.4	Anonymity	53
3.10.5	Confidentiality	53
3.10.6	Deceiving Subjects	53
3.11	Conclusion	54
5.3.2	The Research Capacity of the Limpopo Provincial Government Departments	81
CHAPTER 4		
DATA PRESENTATION, ANALYSIS AND INTERPRETATION.....55		
4.1	Introduction	55
4.2	Analysis of Data Collected through Questionnaire.....	55
4.2.1	Section A: Biographical Information	55
4.2.2	Section B: Challenges faced by research coordinators in Limpopo Provincial Government.....	58
4.2.2.1	Challenges Faced by Research Coordinators in Limpopo Provincial Government.....	58
4.2.2.2	Research Capacity of the Limpopo Provincial Government.....	63
4.2.2.3	Mechanisms for Proper Research Coordination within the Limpopo Provincial Government	68
4.3	Analysis of Data Collected through Interview.....	72
4.3.1	Question 1: What are the challenges faced by research coordinators within your Provincial Government Department?	73
4.3.2	Question 2: What is the research capacity of your Provincial Government Department?	74
4.3.3	Question 3: What are the mechanisms for proper research coordination within your Provincial Government Department?	76
4.4	Conclusion	77

LIST OF FIGURES

CHAPTER 5

Figure 2.1 Private Business is the Largest Source of R&D Investment	28
FINDINGS, RECOMMENDATIONS AND CONCLUSION	79
5.1 Introduction	79
5.2 Overview of the Study	79
5.3 Major Findings of the Study	80
5.3.1 Challenges faced by research coordinators in the Limpopo Provincial Government	80
5.3.2 The Research Capacity of the Limpopo Provincial Government Departments	81
5.3.3 Mechanisms for Proper Research Coordination within the Limpopo Provincial Government	81
5.4 Recommendations of the Study	82
5.5 Recommendations for Future Study	83
5.6 Conclusion	84
References	86
Appendix A: Request for permission to collect information Studies	92
Appendix B: Letter to Respondents	93
Appendix C: Questionnaire Instrument	94
Appendix D: Interview Schedule Instrument	97

LIST OF FIGURES

Figure 2.1	Private Business is the Largest Source of R&D Investment	28
Figure 2.2	U.S Federal Government Funds Over Half of All Basic Research	29
Figure 2.3	Only a Small Fraction of R&D Investment Supports Basic Research	30

LIST OF MAPS

Map 3.1 A Map of South Africa Showing the Location of Limpopo Province.....	44
Table 4.1 Gender of Respondents	56
Table 4.2 Age of Respondents	58
Table 4.3 Position of Respondents	57
Table 4.4 Working Experience of Respondents	57
Table 4.5 There are Enough Research Coordinators in the Provincial Government	59
Table 4.6 Financial Resources are available to conduct Research	59
Table 4.7 Research Outputs are always accessible to Research Managers and Coordinators	60
Table 4.8 Coordinated Research Supports the Achievement of the Provincial Government Strategies	61
Table 4.9 Provincial Government Encourages innovation by Devoting Scientific and Technological Research, Development and Biotechnology	62
Table 4.10 Uncoordinated Government Research Results in Duplication of Research	63
Table 4.11 Research Coordinators in Limpopo Provincial Government are well Trained in Research Methodology	64
Table 4.12 In-house Research Capacity has Enough Qualified Staff to Conduct Quality Research	64
Table 4.13 Appropriate Coordinated Research can Improve Management and Service Delivery	65
Table 4.14 Research Coordinators Developed Scientific Research to Improve Research Outcomes	66
Table 4.15 There is Enough Research Capacity in terms of Qualified Trained Researchers	66
Table 4.16 Development-Related is Adequately Supported by Enough Staff with Appropriate Knowledge	67
Table 4.17 The Provincial Government review Research Outputs Regularly	68

LIST OF TABLES

Table 3.1 Sampling Size	46
Table 4.1 Gender of Respondents	56
Table 4.2 Age of Respondents	56
Table 4.3 Position of Respondents	57
Table 4.4 Working Experience of Respondents	57
Table 4.5 There are Enough Research Coordinators in the Provincial Government	59
Table 4.6 Financial Resources are available to conduct Research	59
Table 4.7 Research Outputs are always accessible to Research Managers and Coordinators	60
Table 4.8 Coordinated Research Supports the Achievement of the Provincial Government Strategies	61
Table 4.9 Provincial Government Encourages Innovation by Devoting Scientific and Technological Research, Development and Biotechnology	62
Table 4.10 Uncoordinated Government Research Results in Duplication of Research	63
Table 4.11 Research Coordinators in Limpopo Provincial Government are well Trained in Research Methodology	64
Table 4.12 In-house Research Capacity has Enough Qualified Staff to Conduct Quality Research	64
Table 4.13 Appropriate Coordinated Research can Improve Management and Service Delivery	65
Table 4.14 Research Coordinators Developed Scientific Research to Improve Research Outcomes	66
Table 4.15 There is Enough Research Capacity in terms of Qualified Trained Researchers	66
Table 4.16 Development-Related is Adequately Supported by Enough Staff with Appropriate Knowledge	67
Table 4.17 The Provincial Government review Research Outputs Regularly.....	68

Table 4.18 Research Coordinators Receive Regular Training on Scientific Research	69
Table 4.19 The Integrated Provincial Research and Development Strategy is Aligned to the National R&D Strategy	70
Table 4.20 Provincial Government has Relationship with Academic Institutions to Enhance Research	70
Table 4.21 The Government has Policies that Promote Research ...	71
Table 4.22 All Provincial Government Departments have Research Directorates that Support research	72

GIS : Geographical Information Systems

HHS : Health and Human Services

IKS : Indigenous Knowledge Systems

LRF : Limpopo Research Forum

LRO : Limpopo Research Observatory

M&MTek: Materials and Manufacturing Technology

MTEF : Medium Term Expenditure Framework

NDP : National Development Plan

NSI : National Systems of Innovation

OECD : Organization for Economic Cooperation & Development

OPRS : Office of the Protection of Research Projects

PICC : Presidential Infrastructure Coordinating Commission

QIOs : Quality Improvement Organizations

RCC : Research Coordinating Council

R&D : Research and Development

SADC : Southern Africa Development Countries

SGDs : Sustainable Development Goals

ABBREVIATIONS AND ACRONYMS

AU	: African Union
CSIR	: Council of Scientific and Industrial Research
DTI	: Department of Trade and Industry
EU	: European Union
FDA	: Food and Drug Administration
GDP	: Growth Domestic Product
GIS	: Geographical Information Systems
HHS	: Health and Human Services
IKS	: Indigenous Knowledge Systems
LRF	: Limpopo Research Forum
LRO	: Limpopo Research Observatory
M&MTeK	: Materials and Manufacturing Technology
MTEF	: Medium Term Expenditure Framework
NDP	: National Development Plan
NSI	: National Systems of Innovation
OECD	: Organization for Economic Cooperation & Development
OPRS	: Office of the Protection of Research Projects
PICC	: Presidential Infrastructure Coordinating Commission.
QIOs	: Quality Improvement Organizations
RCC	: Research Coordinating Council
R&D	: Research and Development
SADC	: Southern Africa Development Countries
SGDs	: Sustainable Development Goals

- SIPs** : Strategic Integrated Projects
- SPSS** : Statistical Package for Social Sciences
- US** : United States
- USC** : University of Southern California
- USRCN** : Urban Sciences Research Coordination Foundation

CHAPTER 1

ORIENTATION OF THE STUDY

1.1 INTRODUCTION

The study is based on the challenges faced by research coordinators in the Limpopo Provincial Government. According to the South African National Research and Development Strategy (2002:3), the then state president, honourable Thabo Mbeki, on January 2002, indicated that the government has to devote the necessary resources to scientific and technological research and development including biotechnology. He also said that the government must further encourage innovation among the people and ensure that new developments are introduced into productive activities.

The chapter will present the introduction and the background of the study. The chapter will discuss the rationale and the problem statement of the study. The chapter will present the aims and objectives of the study in determining the challenges faced by research coordinators. Research questions and the significance of the study will be outlined, showing how important government planners and policy makers will benefit from the study. Delimitation and limitation of the study will indicate the boundaries and potential weaknesses that will be out of the researcher's control. To enhance understanding of the study, operational concepts will be defined and circumscribed to the study. The chapter will finally present the structure of the study.

1.2 BACKGROUND OF THE STUDY

The South African National Research and Development Strategy (2002:22), noted that a range of technology-intensive institutions and programmes are currently being driven by different government departments with very little co-ordination in strategy or sharing of learning. The Limpopo Provincial Growth and Development Strategy (2004-2014:55), proposed that the province must undertake Research and Development program that

shall establish Research and Development Framework for the encouragement of innovation and the development of research agenda. According to the Limpopo Provincial Growth and Development Strategy (2004-2014:55), the Executive Council of Limpopo Provincial Government decided in 2007 that Research and Development directorate within Policy Coordinating Unit (branch) now called Planning Branch in the Office of the Premier must be established.

Having noted a number of challenges regarding research initiatives, the Provincial Research and Development Framework Limpopo Province 3rd Draft (July 2008:1-17) was developed. The Research and Development Framework (2008:8-9), revealed the lack of human capital, structural and functional arrangements and insufficient financial resources required to conduct quality research in the province. The Research and Development Framework (2008:8-9), further noted that the uncoordinated research across government departments which mostly result in duplication of research and poor dissemination of research findings need to be addressed. The two managers who were tasked with the responsibility of research coordination transversally, from the Office of the Premier, as provided for in the Research and Development Framework (2008:16) initiated Limpopo Research Forum (LRF) which is a multi-stakeholder forum comprised of representatives from provincial government departments, national departments in the province, institutions of higher learning, parastatals, district municipalities and research institutions as per invite, to regularly discuss, advise and assist the provincial government to develop relevant policies, procedures, structures and processes for Research, Development and Innovation.

The Limpopo Provincial Departments were encouraged to have research units in their institutional arrangements to ensure that departmental research agenda form part of the provincial research agenda. The Research and Development Framework (2008:16-19), further realized the need to establish and develop a databank for research, research guidelines, research units in provincial departments, provincial research and development strategy, collaboration policy, research fundings and mentoring. Currently, only the provincial department of agriculture has a fully dedicated staff responsible for

the management, conducting and coordination of research. It has two research stations, namely, Toowoomba and Mara research stations. Most of the departments have no budgets and staff dedicated for research. Research is seen as a supportive function and it always gets left-overs in terms of budget. The Provincial Research Guidelines (2013:3) indicate that there is unavailability and inaccessibility of research outputs / outcomes which attributed to uncoordinated research efforts and thus retards strategic planning of government. This is an indication that research coordinators are faced with multi-challenges in the Limpopo Provincial Government.

1.3 RATIONALE OF THE STUDY

Having noted the improper, poor and fragmented of research coordination, insufficient research capacity, departmental budget constraints for research, duplication and waste of resources in research, and unavailability of research systems and structures, the researcher decided to conduct a study on the challenges faced by research coordinators in Limpopo Provincial Government. The study therefore will strive to test the validity of the theoretical assumptions that there are challenges faced by research coordinators in Limpopo Provincial Government. Through interviews and questionnaires that will be directed to the research managers, research practitioners and research coordinators within provincial government departments and comparative studies from previous researches, challenges with possible solutions would be sought. This study will assist all the Provincial Government Departments in making sure that the decision makers use the outcomes of the study for proper planning. The study could reveal the model or strategy that can be used to address the identified challenges well and that better coordinated research could lead to policy formulation and strategic plans that are evidence-based and thus enhancing capacity building and research collaboration.

1.4 STATEMENT OF THE PROBLEM

The South African National Research and Development Strategy (2002:62), mandates and dictates that the Limpopo government needs to regularly review the research

landscape and institutions in terms of desired outputs, outcomes and impacts on research and development across government. According to the South African National Research and Development Strategy (2002:64) the government needs an integrated Research and Development (R&D) plan and consistent performance measurement in order to meet the requirements relating to the optimization of government investment in research and development.

In the context of the South African National Research and Development Strategy (2002:3), the then State President Thabo Mbeki, on January 2002, indicated that the government has to devote the necessary resources to scientific and technological research and development, including biotechnology. The then State President Thabo Mbeki, again said that the government must further encourage innovation among the people and ensure that new developments are introduced into productive activities. The South African National Research and Development Strategy (2002:07) pronounced that South Africa undertakes 0.5% of global research and thus requires strengthening the country connectedness to global research networks and centers of excellence in the Southern Africa Development Countries (SADC) and across the continent.

The Draft Research and Development Framework (2013:2), on poor coordination of research pointed out that in Limpopo research is largely uncoordinated across government departments and other research agencies. Many times these uncoordinated research efforts result in duplication of research and poor dissemination of research findings / outcomes / reports. The Draft Research and Development Framework (2013:2), further indicated that uncoordinated research efforts are also evident when researchers from several foreign countries and other external agencies frequently conduct research in the Province and such research processes are not monitored at a provincial level. According to the Draft Research and Development Framework (2013:2), the private initiated research processes are often conducted without permission and ethical clearance from Government and this puts the state security, natural resources and Indigenous Knowledge Systems (IKS) at jeopardy. Ethical clearance issues are legitimate matters which any government should consider

in this regard. Hence the study will recommend a way on how research is well coordinated in the Limpopo Provincial Government.

1.5 AIM OF THE STUDY

The main aim of the study is to determine the challenges faced by the research coordinators in Limpopo Provincial Government.

1.6 SPECIFIC OBJECTIVES OF THE STUDY

For the purpose of this study, the following are the specific research objectives:

- To describe the challenges faced by research coordinators in the Limpopo Provincial Government.
- To examine the research capacity of the Limpopo Provincial Government Departments.
- To develop mechanism for proper research coordination within the Limpopo Provincial Government.

1.7 RESEARCH QUESTIONS

The following are the research questions of the study:

- What are the challenges faced by research coordinators within the Limpopo Provincial Government?
- What is the research capacity of the Limpopo Provincial Government Departments?
- What are the mechanisms for proper research coordination within the Limpopo Provincial Government?

1.8 SIGNIFICANCE OF THE STUDY

The study is most significant and imperative to all spheres of government because they acknowledge the need to conduct and use research for planning, policy-making, intervention programmes and to evaluate their impact on the development and progress of the province. The study will describe the challenges faced by research coordinators or practitioners, the research capacity in the province, the management of the formulation and implementation of the provincial research agenda and the enhancement of the research collaboration with other stakeholders and research and academic institutions. This will assist research managers / officials, research practitioners, policy makers and policy analysts in the use of research as evidence-based for policies, strategies, frameworks, and planning development. South African Government in general, Limpopo Provincial Government and its Local sphere of Government will benefit from the outcomes and recommendations of the study.

1.9 DELIMITATION OF THE STUDY

Based on the challenges that are faced by research coordinators in the Limpopo Provincial Government, boundaries will be set in order to control the range of the study. The scope of the study will be the Limpopo Provincial Government departments which are Department of Transport, Safety, and Liaison; Department of Health; Department of Social Development; Department of Education; Department of Public Works, Roads and Infrastructure; Department of Sports, Arts and Culture; Department of Treasury; Department of Co-operative Governance, Human Settlements and Traditional Affairs; Limpopo Economic Development, Environment and Tourism; Department of Agriculture and the Office of the Premier.

1.10 LIMITATION OF THE STUDY

As the study is based on challenges faced by research coordinators in the Limpopo Provincial Government, there will be potential weakness (limiting factors) that will be out

of the researcher's control that may affect the outcomes of the study and they are classified or limited information by the departments and the respondents will be assured that the study is conducted for the benefit of the government and that the researcher is a government employee who works in schedule one department which is transversal, the Office of the Premier. In funding for stationary, travelling and editing the researcher will use own salary and where possible, friends and relatives will be requested to donate; and, on the sensitiveness of the topic, some of the officials that will be interviewed may feel that giving some information may compromise their future. The researcher will ensure that whatever information they give will be kept confidentially.

1.11 DEFINITION OF OPERATIONAL CONCEPTS

This section will define the operational concepts of the study and circumscribed them to the study.

- **Challenges:** Power (2014:1), defined challenges as uncertain consequences, coping with lack of human resources, deciding priorities and maintaining perspective on the needs of organizational changes. Such challenges may be technical, organizational or social / psychological. Power (2014:1), again proposed that organizationally, challenges may be due to insufficient data, poor data gathering processes, overlapping responsibilities, poorly managed information assets, poorly defined key performance indicators and performance expectations, poor systems, processes, policies and procedures, and inadequate employee training and development.
- **Research Coordinators:** According to the Research Coordinator Bulletin, from the Office for the Protection of Research Subjects (OPRS), University of Southern California (USC) 2004:1, research coordinators are defined as specialized research professionals who are responsible for conducting, managing and coordinating research. Research Coordinators are integral part of the research team responsible for day-to-day conduct of the study and ensure

that research is conducted in compliance with the study protocol as well as federal state and institutional guidelines and regulations. Research Coordinators need support and resources to network and provide a forum to share available resources.

- **Spheres of Government:** The Constitution of the Republic of South Africa 1996, Section 40 (1) provides that in the Republic, government is constituted as national, provincial and local spheres of government which are distinctive, interdependent and interrelated.
- **Coordination:** Draft Research and Development Framework Limpopo Province (2013:iv), defined coordination as the synchronization and integration of activities, responsibilities and command and control structures to ensure that the resources are used efficiently in pursuit of the specified objectives. Along with organizing, monitoring, and controlling, coordinating is one of the key functions of management.
- **Policy:** In Cloete and de Coning (2005:4), policy is defined as a statement of intent or an action plan to transform a perceived problem into a future solution. Cloete and de Coning (2011:6), define public policy as a series of patterns of related decisions to which many circumstances and personal, group and organizational influences have contributed.
- **Research:** De Vos (2001:20), defined research as a scientific enquiry into a relevant problem that provides an answer contributing to an increase in the body of generalizable knowledge about a particular profession. Research is a systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions. It is a careful or diligent search
- **Innovation:** Ulwick and Anthony (2005:180), defined innovation as the process of creating a product or service solution that delivers significant new customer

value. Innovation is the application of better solutions that meet new requirements, unarticulated needs or existing market needs, is the conversion of new knowledge into new products and services, is responding to change in a creative way; and is about generating new ideas, conducting R&D, improving processes or revamping products and services.

1.12 ORGANIZATION OF THE STUDY

This Study consists of five (5) chapters.

Chapter 1: Orientation of the Study

This chapter outlines the orientation of the study. It is the first chapter that encompasses the introduction, background and rationale of the study. The chapter covers statement of research problem, aim and specific objectives of the study, research questions, significance or importance of the study, delimitation and limitation of the study, operational definition of the key concepts, brief literature review, brief explanation of the research design and methodology that will be discussed in the studies. Ethical considerations and organization of the study were presented.

Chapter 2: Literature Review.

This chapter will present the literature review of the study. It will cover the legislative framework in government which includes acts, guidelines, strategies, plans, policies and frameworks. The chapter will also cover the significance and importance of research for government in formulation of policies guidelines, strategies and frameworks. The chapter will also discuss the challenges facing research units in government and proposes possible strategies for solving poor research coordination.

Chapter 3: Research Design and Methodologies

This chapter will cover research design and methodologies that will be used in an attempt to uncover the challenges that are faced by research coordinators in Limpopo Provincial Government. Research design that will be used is descriptive, while the research methodologies will be triangulation that uses both qualitative and quantitative approach. Detailed explanations of how ethical issues that will be adhered to during the course of the study will be infused in all relevant parts of the chapter.

Chapter 4: Data Presentation, Analysis and Interpretation.

This chapter focuses on the presentation, analysis and interpretation of data obtained from the research interviews and questionnaires. The collected data will be analyzed to form supportive statements for the conclusions of the research. Thematic Analysis and Statistical Package for Social Sciences (SPSS) tools will be used to analyse the data and for interpretation, the meaning will be attached to the collected data that has been presented and analyzed.

Chapter 5: Findings, Conclusions and Recommendations.

This chapter will present the major findings of the study. Conclusion will pull together the various results of the study and consider what they mean and suggest their importance with regard to the challenges faced research coordinators in Limpopo Provincial Government. Recommendations will urge specific actions in respect to policy, practice and, or theory. Recommendations for future researchers to conduct an independent and scientific research for further research and possible studies (or subsequent research) will conclude this chapter.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter dealt with the research proposal of the study. This chapter presents the literature review of the study in order to critically analyze the current knowledge, strengths and weaknesses regarding the challenges faced by research coordinators. The chapter covers the legislative framework in government which includes acts, guidelines, plans, strategies, policies and frameworks which will try to outline the legal imperatives that compel the government to invest in research for development and innovation. Such legal framework will cover mostly those from the Republic of South Africa and will also include the Primary Industries Research and Development Act, 1989 (Act No. 17 of 1990 as amended) from Australia just to get a global perspective on the study.

This chapter also covers the significance and importance of research for government in order to find why government should invest in research. The chapter outlines how research informs government policies, how government should allocate its resources to government priorities and programmes, how research is useful in the social welfare and progress of humanity in the society as a whole, and, how government can use research for accumulating and analyzing data on the economic and social structure of the country using literature from local to global level. The chapter again discusses the challenges facing research units in government and proposes possible strategies for solving poor research coordination.

2.2 LEGISLATIVE FRAMEWORK ON GOVERNMENT RESEARCH

This section deals with the legal framework which tries to indicate that government prioritizes and uses research in planning, policy formulation and in identifying its

priorities. The following are some of the legislative frameworks by the government that address research initiatives; hence the study deals with the challenges faced by research coordinators in the Limpopo Provincial Government.

2.2.1 Constitution of the Republic of South Africa, 1996

The most important legislation in South Africa is the Constitution of the Republic of South Africa, 1996 (Act 108 of 1996), which is the supreme law in the country and overrides all other laws that are not in agreement with the constitution. The three spheres of government (local, provincial and national), receive their power from the constitution and each sphere of government passes its own laws in the area under its jurisdiction.

Apart from the Constitution of the Republic of South Africa, 1996 (Act 108 of 1996), legislative framework include the following, namely, statues or acts; municipal by-laws; resolutions; standing orders and rules; policies; regulations; frameworks; guidelines; strategies; plans and the courts which decide how laws should be applied.

2.2.2 Limpopo Provincial Growth and Development Strategy, 2004 –2014

According to the Limpopo Provincial Growth and Development Strategy (2004-2014:55), a provision was made for the establishment of Research and Development Directorate within Policy Coordination Branch in the Office of the Premier. The Limpopo Provincial Growth and Development Strategy (2004-2014:55), seeks to promote economic growth and development, improve the quality of life of its citizen, raise the institutional efficiency of government, attain regional integration and enhance innovation. Limpopo Provincial Growth and Development Strategy (2004-2014:55), mandated Geographical Information Systems (GIS) and Research Unit within the Office of the Premier, to ensure that information management priorities pertaining to an integrated development information database across departments and municipalities are met. According to the Limpopo

Provincial Growth and Development Strategy (2004-2014:55), the objective of the Research Unit was to undertake research and development having a target of establishing Research and Development (R&D) framework that should develop research agenda for the province, encourage innovation and protect intellectual property rights for, especially, rural and indigenous knowledge systems and resources.

2.2.3 South African National Research and Development Strategy, 2002

In the context of the South African National Research and Development Strategy (2002:3), it was provided that the then State President Thabo Mbeki, indicated that government has to devote the necessary resources to scientific and technological research and development, including biotechnology. The South African National Research and Development Strategy (2002:3), again indicated that the government must further encourage innovation among the people and ensure that it introduce new developments into the government productive activities. According to the South African National Research and Development Strategy (2002:3), it was indicated that to ensure that government continues to develop a balanced economy, an emphasis should be put on the identification and development of the lead sectors that will help further to expand the base for creation of wealth and give the government the possibility to compete successfully within the dynamic world economy. The South African National Research and Development Strategy (2002:5), mentioned that the then Minister of the Department of Arts, Culture, Science and Technology indicated that science and technology is critical to the future of South Africa. The South African National Research and Development Strategy (2002:5), revealed that the government recognized the key role it played in providing an enabling environment for innovation and research and in building the human capital that is required for the future knowledge based economy.

According to the South African National Research and Development Strategy (2002:7), the then Deputy Minister of the Department of Arts, Culture, Science and Technology indicated that South Africa undertakes 0.5% of global research, which is much lesser, and further emphasized the requirement to strengthen the country connectedness to

global research networks and centers of excellence in the Southern Africa Development Countries (SADC) and across the continent. The South African National Research and Development Strategy (2002:62), further stated that although the details of scientific research programmes are best left to scientists and research managers themselves, government need to regularly review the research landscape and institutions in terms of desired outputs, outcomes and impacts. The South African National Research and Development Strategy (2002:62-63), indicated that new technologies may require new institutional arrangements to accommodate research units within sector departments.

According the South African National Research and Development Strategy, (2002:64), on Research and Development across government, it was stated that government needs an integrated research and development plan and a consistent performance measurement in order to meet the requirements relating to the optimization of government investment in research and development. The proposals given to this regard need to be taken into account in addressing the challenges faced by research coordinators in Limpopo Provincial Government. The South African National Research and Development Strategy (2002:64-65), suggested that to achieve the proposed initiatives, this should be made effective by, namely, Research and Development (R&D) plan that shall capture the programme of each department including the targets expected of parastatal institutions; production of an aggregate national research and development budget; a Standard Reporting Government Framework of all institutions with Research and Development mandate must be developed, and departmental R&D goals to form R&D plan that form part of the National R&D Plan.

Public research is funded by the Department of Science and Technology via the National Research Foundation and

The South African National Research and Development Strategy (2002:21-22) further identified the following key weaknesses that need to be addressed in the R&D strategy, and they are the following, namely, Appropriate funding of the National Systems of Innovation (NSI), this is because public and private sector expenditure on R&D amounted to 0,7% of the GDP, which is much lesser; Strategic considerations because government needs to commit itself in maintaining and developing competencies across universities, research councils and private sector; Human Resources because in science and technology are not being adequately developed and renewed; Fragmented

governance structures:- even when research institutions have been reviewed and key performance indicators put in place, the roles of different departments in governance and in setting output targets for government research institutions is not clear or synergistic; The fragmentation of government science and technology because fragmented management, frozen institutional arrangements and funding structures for government-led science and technology does not provide the right platform for leadership and strategic response in this domain. South African National Research and Development Strategy (2002:22), indicated that a range of technology-intensive institutions and programmes are currently being driven by different government departments with very little coordination in strategy or sharing of learning.

The South African National Research and Development Strategy (2002:64) proposed that government will publish and annually update a three-year Research and Development (R&D) Plan in sync with the Multi Term Expenditure Framework (MTEF), capturing its R&D vision as well as key targets and investments. According to the South African National Research and Development Strategy (2002:65), an indication was made that that to meet the requirements relating to the division of responsibilities for administering government's investment in research and development, attention needs to be given to the relationships between institutions and departments within the system. The South African National Research and Development Strategy (2002:65), noted the following responsibilities in accordance to the government funding functions of the National Systems of Innovation (NSI), namely, basic and thematic research is funded by the Department of Science and Technology via the National Research Foundation and by the Department of Education in terms of formula-based research funding to higher education institutions; and, Innovation and technology development and diffusion funding is widely spread across government, with the Department of Trade and Industry, the Department of Science and Technology, and several other departments all playing a role.

According to the South Africa National Research and Development Strategy (2002:66), a recommendation was made that all sector-specific institutions regarding research are

best placed in close proximity to line departments with the primary responsibility for the relevant sector. The South Africa National Research and Development strategy (2002:67) again indicated that it is particularly evident given that only one division of the Council of Scientific and Industrial Research (CSIR), Materials and Manufacturing Technology M&MTek, aligns uniquely with the core business of the Department of Trade and Industry (DTI). The South African National Research and Development Strategy (2002:67) therefore proposed that all multi-sectoral institutions report to the Department of Science and Technology and that sector-specific institutions currently reporting to the Department of Science and Technology be transferred to appropriate line departments.

2.2.4 Draft Limpopo Provincial Research and Development Framework, 2013

According to the Draft Limpopo Provincial Research and Development Framework (2013:1-3), a provision is made that the Provincial Government acknowledges and understands the importance of research and development and that the Limpopo Provincial Government is faced with a number of challenges such as the following, namely, insufficient research capacity; budget constraints; duplication and waste of resources; research systems and structures; and, poor coordination of research. The Draft Limpopo Provincial Research and Development Framework (2013:1), further proposed that Research and Development has been a strong driver of the new global economy, wealth creation and development. According to the draft Limpopo Provincial Research and Development Framework (2013:6), an indication has further been made that the Provincial Government acknowledges the need to conduct research and use research for planning, policy planning, intervention programmes and to evaluate the impact of these on the development and progress of the province.

According to the Draft Limpopo Research and Development Framework (2013:11-16), the following key determinants for the successful take off of the framework and the sustainability of research services and the efforts of the Limpopo Province were mentioned, namely, establishment of research and development directorate; provincial

research agenda; establishment of the Limpopo Research Forum (LRF); establishment of a research databank; development of the provincial research guidelines; establishment of research units in provincial departments and municipalities; development of provincial research and development strategy; facilitate research collaboration in the province; ensuring research fundings; and research capacity enhancement. Draft Limpopo Provincial Research and Development Framework (2013:1-2), further provided that government's own in-house research capacity is constraint in terms of appropriately qualified human capital to conduct quality research and that piecemeal in-house research is often supplemented by costly research conducted by consultants who are often contracted from outside the Province. The Draft Limpopo Provincial Research and Development Framework (2013:7), indicated that these consultant's reports are often written in technical jargon that is difficult to understand and comprehend by government officials who are tasked to use the findings of such research, and hence renders the research useless and a waste of money and time.

According to the Draft Research and Development Framework (2013:2), an indication was made that in Limpopo Province, research is largely uncoordinated across government departments and other research agencies, and many times these uncoordinated research efforts result in duplication of research and poor dissemination of research findings. The Draft Research and Development Framework (2013:2) further indicated that the uncoordinated research efforts are also evident when researchers from several foreign countries and other external agencies frequently conduct research in the Province and such research processes are not monitored at a provincial level.

2.2.5 Limpopo Provincial Research Guidelines, 2012

The Limpopo Provincial Research Guidelines (2012:1) pointed out that research evidence informs policy formulation, strategic planning and monitoring and evaluation to meet the needs of the province. In addition, the Limpopo Provincial Research Guidelines (2012:2) further indicated that the Provincial and Local Government are

faced with a challenge of interventions that are not responding to the provincial mandate and the needs of the people. The guidelines proposed that the Limpopo Provincial and Local Spheres of Government should put in place strategies and systems to ensure proper mechanisms to conduct research and utilization of research to inform decision making, policy making and strategic and integrated planning. According to the Limpopo Provincial Research Guidelines (2012:2-3), the following are the key challenges faced by Limpopo Provincial Government, namely, insufficient research capacity that has led to inadequate management and coordination of research projects and efforts in the province; private initiated research without due permission and ethical clearance from the departments; budget constraints; and, unavailability and inaccessibility of research outputs and outcomes.

2.2.6 Human Sciences and Research Act, 1968 (Act No.23 of 1968) as amended by Act No.99 of 1990

Human Sciences and Research Act, 1968 (Act No.23 of 1968) as amended by Act No. 99 of 1990, provided for the promotion of research and extension of knowledge in the field of human sciences and for that purpose made provision for the establishment of a Human Sciences Research Council. According to Human Sciences and Research Act, 1968 (No. 23 of 1968), (Section 2 [2]), the council was made responsible for the matters in regard to research and development in the field of the human sciences. The Human Sciences and Research Act, 1968 (No. 23 of 1968), (Section 2a), proposed the following objectives of the Human Sciences Research Council, namely, to promote, support and co-ordinate research; to advise the Minister on research priorities; to distribute the results of research; to facilitate and evaluate the implementation of results of research; to stimulate the training of research manpower; and, to place the full spectrum of disciplines in the human sciences at the disposal of all the inhabitants of the Republic.

The Human Sciences and Research Act, 1968 (Act No.23 of 1968) as amended by Act No. 99 of 1990, (Section 3[1a-c]), further stipulated the following functions of the Human

Sciences Research Council, namely, to undertake, cause to be undertaken or aid financially research on behalf of the State or any person or authority; to advise the Minister with respect to the research which should be undertaken in the interests of the country, the manner in which research may be promoted, the promotion of other matters incidental to the human sciences, the manner in which the potentialities of the inhabitants of the country may best be developed and utilized, and, the utilization of the results of research for the benefit of the country; to effect co-ordination of research, and in such a manner as to ensure thereby the economical use of money and manpower in research; to co-operate with departments of State, universities, technikons, colleges of education, training colleges, schools and other persons and authorities for the promotion and conduct of research; to obtain the voluntary co-operation of persons who conduct research at their own expense or support it financially, and to eliminate overlapping in the field of research; to co-operate with persons and authorities in other countries conducting or promoting research, and to act as liaison between the Republic and other countries in connection with research; to make grants for research to universities and other persons and authorities; to establish or cause to be established facilities for the collection and dissemination of information concerning the human sciences; to publish or cause to be published in whatever form or support financially the publication of the results of research; to foster the training of persons for the doing of research, and to establish and award bursaries for such training; to devise, standardize, determine the validity of and make available psychological and scholastic tests and other aids; to undertake psychological testing and examination of and guidance to persons, and the evaluation of educational qualifications; to collect, process, interpret and in whatever form publish educational statistics; and, to take such other measures as the council may deem necessary for the effective achievement of the objects of the Human Sciences and Research Act, 1968 (Act No.23 of 1968) as amended by Act No. 99 of 1990.

2.2.7 Human Sciences Research Council Act, 2008 (Act No. 17 of 2008)

The Human Sciences Research Council was established by Section 2 of the Human Sciences Research Act, 2008 (Act No. 23 of 1968). According to the Human Sciences Research Council Act, 2008 (Act No. 17 of 2008), (Section 3), the following objectives were mentioned, namely, to initiate, undertake and foster strategic basic research and applied research in human sciences, and to gather, analyze and publish data relevant to developmental challenges in the Republic, elsewhere in Africa and in the rest of the world, especially by means of projects linked to public sector oriented collaborative programmes; to inform the effective formulation and monitoring of policy and to evaluate the implementation of policy; to stimulate public debate through the effective dissemination of fact-based results of research; to help build research capacity and infrastructure for the human sciences in the Republic and elsewhere in Africa; to foster and support research collaboration, networks and institutional linkages within the human sciences research community; to respond to the needs of vulnerable and marginalized groups in society by researching and analyzing developmental problems, thereby contributing to the improvement of the quality of their lives; and to develop and make publicly available new data sets to underpin research, policy development and public discussion of the key issues of development, and to develop new and improved methodologies for use in their development.

The Human Sciences Research Council Act, 2008 (Act No. 17 of 2008), (Section 4), mentioned the following functions of Human Sciences Research Council, namely, to undertake or procure the undertaking of such investigation and research relating to its objects as the Minister may assign to it; and to advise the Minister in respect of the following, namely, research relating to its objects which should be undertaken; the utilization of the results of such research; the manner in which such research may be promoted; or the development and utilization of human resources in research; and, the promotion of any other matter incidental to human sciences.

2.2.8 National Research Foundation Act, 1998 (Act No.23 of 1998)

National Research Foundation Act, 1998 (Act No. 23 of 1998) as amended by Science and Technology Laws Amendment Act, 2011 (Act No. 16 of 2011), provided for the promotion of research, both basic and applied, and the extension and transfer of knowledge in the various fields of science and technology and indigenous knowledge, and for this purpose to provide for the establishment of a National Research Foundation, and to provide for incidental matters. According to the National Research Foundation Act, 1998 (Act No. 23 of 1998) as amended by Science and Technology Laws Amendment Act, 2011 (Act No. 16 of 2011), (Section 3), the objectives of the foundation are to support and promote research through funding, human resource development and the provision of the necessary research facilities in order to facilitate the creation of knowledge, innovation and development in all fields of science and technology, including indigenous knowledge and thereby to contribute to the improvement of the quality of life of all the people of the Republic.

National Research Foundation Act, 1998 (Act No. 23 of 1998) as amended by Science and Technology Laws Amendment Act, 2011 (Act No. 16 of 2011), (Section 4), made provision of the following functions of the Foundation, namely, to promote the development of appropriate human resources and research capacity in the areas of science and technology; to stimulate, promote, support and protect research in the field of indigenous technology; to obtain funds for research, both locally and abroad; to allocate funds for research and promote multi-disciplinary collaboration through the divisions; to promote and support research by the awarding of contracts, grants, scholarships or bursaries to persons or research institutions; to evaluate the status and needs of research; to provide financial support for the acquisition or establishment of research facilities by research institutions; to review research proposals and results promoted by the foundation; to promote the transfer of technology and the implementation of research results and findings; to facilitate and promote nationally and internationally liaison between researchers and research institutions; to promote participation in international scientific activities through maintaining membership of appropriate international science organizations; to make available scientific knowledge or technology through any medium; to administer, support and monitor the operation of

national facilities; to promote the provision of an information infrastructure linking research institutions to facilitate co-operation and sharing of research information and knowledge; to compile and maintain a national registry of research funded by the foundation; and to initiate liaison with structures involved in the protection of intellectual property rights.

2.2.9 Technology Innovation Agency Act, 2008 (Act No. 26 of 2008)

According to the Technology Innovation Agency Act, 2008 (Act No. 26 of 2008), a provision was made for the promotion of the development and exploitation in the public interest of discoveries, inventions, innovations and improvements, and for that purpose to establish the Technology Innovation Agency; to provide for its powers and duties and for the manner in which it must be managed and controlled; and to repeal an Act; and to provide for matters connected therewith.

According to the Technology Innovation Agency Act, 2008 (Act No. 26 of 2008), (Section 3), a provision was made for the objectives of the agency, which is to support the state in stimulating and intensifying technological innovation in order to improve economic growth and the quality of life of all South Africans by developing and exploiting technological innovation. Technology Innovation Agency Act, 2008 (Act No. 26 of 2008), (Section 4), made provision for the powers and duties of Agency which are the following, namely, to provide financial and any other assistance to any person, for the purpose of enabling that person to develop any technological innovation; to establish a company contemplated in the Companies Act, 1973 (Act No. 61 of 1973). or in collaboration with any person, establish such a company for the purpose of developing or exploiting any technological innovation; to acquire any interest in any person undertaking the development or exploitation of any technological innovation supported by the Agency; to draw together and integrate the management of different technological innovations, incubation and diffusion initiatives in South Africa; to develop the national capacity and infrastructure to protect and exploit intellectual property derived from research financed by the Agency; and to acquire rights in or to any

technological innovation supported by the Agency from any person, or assign any person any right in or to such technological innovation.

2.2.10 National Development Plan, Vision 2030, 2011

The National Development Plan (NDP) Vision 2030 is a plan that aims at shaping South Africa's development needs and priorities. Furthermore, the National Development Plan (NDP) Vision 2030 (2011:2) provides a detailed outline of how poverty and inequality could be reduced and ultimately be eradicated by year 2030 and also emphasize that South Africa needs to sharpen its innovative edge and continue contributing to global scientific and technological advancement. This requires greater investment in research and development, better use of resources, and more nimble institutions that facilitate innovation and enhanced cooperation between public service and technology institutions and private sector. Research and development should be seen as the key drivers towards the implementation of the NDP in the province. The National Development Plan (NDP) Vision 2030, mentioned that successes of the implementation of the NDP lies in solid research, sound evidence and clear and implementable recommendations hence research should be put at the centre. Research advises the planners and policy makers in the province on issues such as poverty, inequality, unemployment and other cross-cutting issues that need interventions. Therefore, the Limpopo Government needs to work with broader communities such as private sectors, non-government organization, and community based organizations to draw best practices and to understand developmental challenges of the province. The National Development Plan (NDP) Vision 2030, indicated that there is also a need to collaborate and consult with academic and research institutions to address the targets and objectives of the NDP such as job creation; infrastructure expansion; transition to low-carbon economy; transforming urban and rural spaces; education and training; provision of quality health care; building a capable state; fight corruption and transformation and unity.

2.2.11 National Infrastructure Plan, 2012

The South African Government adopted a National Infrastructure Plan (2012:1), intends to transform our economic landscape while simultaneously creating significant numbers of new jobs, and to strengthen the delivery of basic services. The National Infrastructure Plan (2012:1), also supports the integration of African economies. This requires greater investment in research coordination for better use of available and minimal resources

The National Infrastructure Plan (2012:6), provides the background to Cabinet's decision to establish a body to integrate and coordinate the long-term infrastructure build called the Presidential Infrastructure Coordinating Commission (PICC), with its supporting management structures. The National Infrastructure Plan (2012:6), presents the PICC's spatial mapping of infrastructure gaps which analyses future population growth, projected economic growth and areas of the country which are not served with water, electricity, roads, sanitation and communication. Based on this work, eighteen Strategic Integrated Projects (SIPs) have been developed and approved to support economic development and address service delivery in the poorest provinces. Each SIP comprises a large number of specific infrastructure components and programmes. The National Infrastructure Plan (2012:6), sketches the integrated approach embarked upon to create an enabling environment and contains key elements of the Implementation Plan. Hence this could not happen outside the scope of research coordination across all spheres of government, academic and research institutions.

2.2.12 Primary Industries Research and Development Act, 1989 (Act No. 17 of 1990 as amended) Australia

The Primary Industries Research and Development Act, 1989 (Act No. 17 of 1990 as amended) in Australia came to force on December 2013 and aims to provide for the undertaking of research and development relating to primary industries and natural resources, and for related purposes. According to the Primary Industries Research and Development Act, 1989 (Act No. 17 of 1990 as amended) in Australia (Section 3), the following objective was provided to make provision for the funding and administration of

research and development relating to primary industries with a view of increasing the economic, environmental and social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries; of achieving the sustainable use and sustainable management of natural resources; of making more effective use of the resources and skills of the community in general and the scientific community in particular; of supporting the development of scientific and technical capacity; of developing the adoptive capacity of primary producers; of improving accountability for expenditure on research and development activities in relation to primary industries; and, to make provision for the funding and administration of marketing relating to products of primary industries.

Primary Industries Research and Development Act, 1989 (Act No. 17 of 1990 as amended) in Australia (Section 11), provided the following functions of an Research and Development Corporation and they are to investigate and evaluate the requirements for research and development in relation to the primary industry or class of primary industries in respect of which it was established and, on the basis of such investigation and evaluation, to prepare research and development plan under Section 19, and, to review and revise the plan; to prepare an annual operational plan under Section 25 for each financial year; to co-ordinate or fund the carrying out of R&D activities that are consistent with the annual operational plan prepared by the Corporation and in force at the time; to monitor; and evaluate; and report to the Parliament, the Minister and its representative organizations on R&D activities that are coordinated or funded, wholly or partly, by the Corporation, to assess, and report to the Parliament, the Minister and its representative organizations on the impact, on the primary industry or class of primary industries in respect of which the Corporation was established, of R&D activities that are coordinated or funded, wholly or partly, by the Corporation, to disseminate and commercialize, and facilitate the dissemination, adoption and commercialization of, the results of research and development in relation to the primary industry or class of primary industries in respect of which the Corporation was established; and, to carry out marketing activities for the benefit of the primary

industry or class of primary industries in respect of which the Corporation was established, if a levy attached to the Corporation has a marketing component.

2.3 IMPORTANCE OF RESEARCH FOR GOVERNMENT

This section intends to indicate how important could government use research in planning and development. Both basic and applied research will be considered. Through research, government finds itself in a position to solve problems it is facing, maybe, exploring the universe. May (2010:2), provided that government should continue funding basic research and this research should be done at universities which have the faculty with proper credentials and an environment conducive to scientific progress. May (2010:2) again indicated that government should fund R&D that solves government problems. May (2010:2), proposed that the purpose of research is to inform action and the outcomes of the research should have implications for policy and project implementation. May (2010:2), showed that research in government form the foundation of program development, planning and policies and it can give policymakers hard data on which they can base their decisions. The results or outcomes of the research can ideally lead to changes in methods or practice. Research determines success or failure of change in any process or work flow, in other words, the success of any project / endeavor greatly lies on a good extensive research.

According to Sargent (2011:i), President Obama requested \$147.696 billion for research and development (R&D) in Financial Year 2011, a \$343 million (0.2%) increase from the estimated Financial Year 2010 R&D funding level of \$147.353 billion. Sargent (2011:i), further indicated that congress played a central role in defining the nation's R&D priorities, especially with respect to two overarching issues, namely, the extent to which the federal R&D investment can grow in the context of increased pressure on discretionary spending and how available funding will be prioritized and allocated. Low or negative growth in the overall R&D investment may require movement of resources across disciplines, programs, or agencies to address priorities. According to Sargent

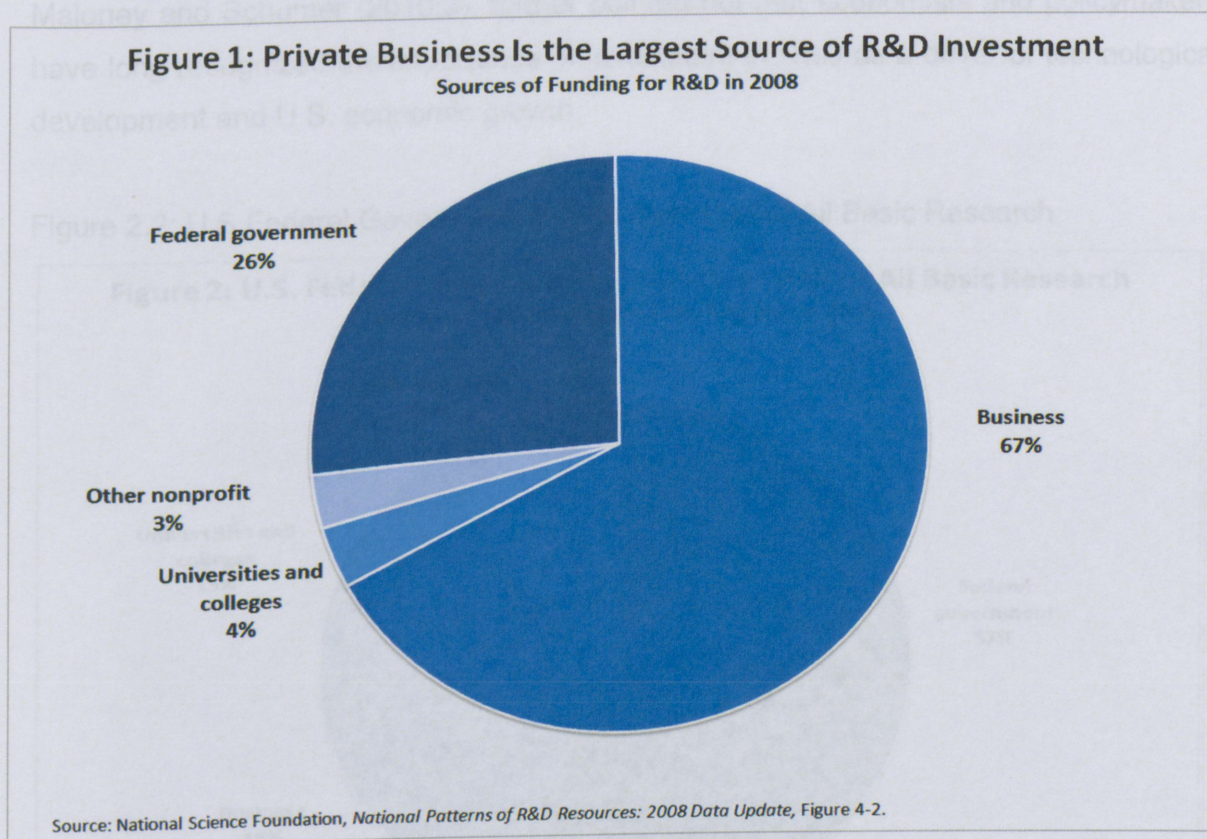
(2011:i), much of this spending was devoted to basic research on the mechanism of disease.

According to Altbach (2003:1), it was provided that Italian government, through Guido Possa, the Deputy Minister of Education, Universities and Research, affirms the importance of research, when responding to a statement from the elected representatives of Florence's scientific research institutions, which argued that the Italian political class remains totally blind to the research world. Altbach (2003:1) indicated that the Italian government has already announced its intention to promote an increase in research spending, in line with the Commission's goal of increasing research to three per cent of Growth Domestic Product (GDP). Altbach (2003:1), further indicated that government has already approved an increase in research spending from 2001 to 2003 and has committed to restructure and promote collaboration between the public and private sectors in research matters. Altbach (2003:2), alluded to his own country's difficulty in increasing its number of researchers, which is necessary in order to increase research investment so significantly. The Commission has estimated that the EU needs to produce an extra 100,000 researchers per year over the next seven years in addition to those needed to replace those researchers who are now retiring. According to Altbach (2003:2), Italian government approved an increase in public research investment by June 2003.

Maloney and Schumer (2010:1), provided that the innovations that have improved the country's productivity and quality of life are ultimately grounded in the results of basic research. Maloney and Schumer (2010:1), again indicated that basic research is the part of the research and development (R&D) that contributes to the fundamental stock of knowledge. The report by Maloney and Schumer (2010:1-4), further indicated that despite its value to society as a whole, basic research is underfunded by private firms precisely because it is performed with no specific commercial applications in mind. Instead, businesses have an incentive to concentrate their R&D spending on the development of products or processes with direct commercial value. According to Maloney and Schumer (2010:4), the congress report stated that if society were to rely

on the private sector alone to fund R&D, many socially beneficial research projects would not be undertaken. Maloney and Schurer (2010:2), reported that federal government has a critical role in funding R&D. Maloney and Schurer (2010:2), used the pie-graph in figure 2.1 to indicate that private businesses is the largest source of R&D investment having 67% when compared with federal government, universities and colleges and other nonprofit organizations having 26%, 4% and 3% respectively and suggested that government should spend more in research and development. The pie-graphical representation in the next page (Figure 2.1) shows that private business is the largest source of R&D investment.

Figure 2.1 Private Business is the Largest Source of R&D Investment

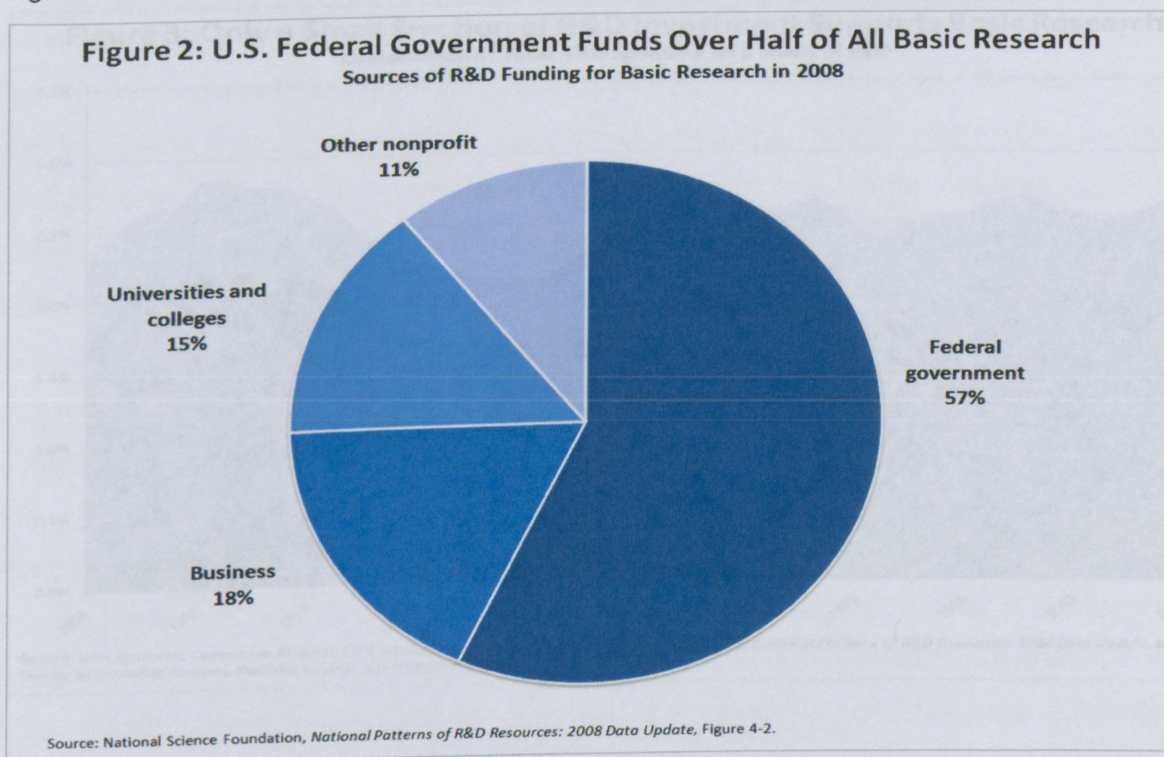


Source: Maloney and Schurer (2010:2)

Maloney and Schumer (2010:3) used the pie-graph on figure 2.2 to indicate that the Federal government funds 57% of all basic research when compared with the business; universities and colleges and other nonprofit organizations that use 18%, 15% and 11% respectively in basic research. Charles (2002:220-239), pointed out that one study that had attempted to quantify the impact of R&D on economic growth found increases in the level of research intensity in the United States and four other developed countries may have encountered for close to 50 percent of United States economic growth between 1950 and 1993 and thus suggests that investment in R&D generated significant economic benefits. According to Maloney and Schumer (2010:3), the Federal government has stepped in to make up for the private sector's underinvestment in R&D and thus suggests increased federal funding for basic research may be warranted. Maloney and Schumer (2010:3), further pointed out that economists and policymakers have long recognized the importance of investment in R&D as a driver of technological development and U.S. economic growth.

Figure 2.2: Only a Small Fraction of R&D Investment Supports Basic Research

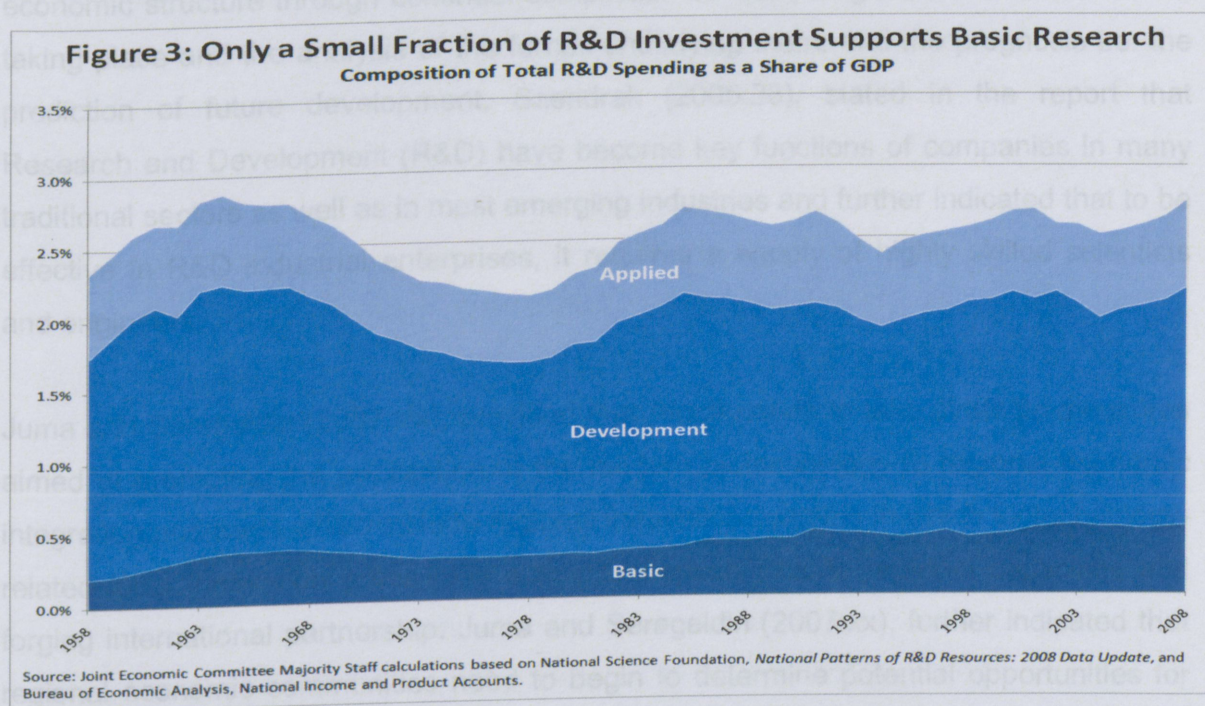
Figure 2.2: U.S Federal Government Funds Over Half of All Basic Research



Source: Maloney and Schumer (2010:3) ,

According to Maloney and Schumer (2010:4), the report indicates that underinvestment in basic research is too low. From 1958 to 2008, total expenditures on R&D as a share of gross domestic product (GDP) have generally hovered around 2.5 percent. Funding for development accounted for approximately 60 percent of overall R&D expenditures in 2008. The report shows that the federal government is best positioned to take on the risks of funding basic research projects, which suggests that it may be prudent for the government to increase its expenditures on basic research significantly. Maloney and Schumer (2010:4), indicated that as the economy recovers from the worst recession since the Great Depression, the United States needs to look under every stone to identify and support the next generation of innovations that will create new industries, spur job creation, and fuel economic growth. Basic research plays a critical role in sparking innovation. Currently, the report says, more than ever, basic research is needed to chart the course forward. This is depicted by Figure 2.3 below.

Figure 2.3: Only a Small Fraction of R&D Investment Supports Basic Research



Source: Maloney and Schumer (2010:4)

that many of the economic problems in developing countries stem

Sivasubramaniyan (2012:5), provided that the increasingly complex nature of business and government has focused attention on the use of research in solving operational problems. As an aid to economic policy, research has gained an added importance, both for government and business. Sivasubramaniyan (2012:5-6), further mentioned the following importance of research, namely, provide the basis for nearly all government policies in the economic system; research has its special significance in solving various operational and planning problems for business and industry. Sivasubramaniyan (2012:6), indicated that research facilitates the decisions of the policy makers and is thus considered necessary with regard to the allocation of nation's resources. Sivasubramaniyan (2012:6), indicated another area in government, where research is necessary, is collecting information on the economic and social structure of the nation that indicate what is happening in the economy and what changes are taking place. Sivasubramaniyan (2012:6), indicated that in the context of government, research as a tool to economic policy has three distinct phases of operations, namely, investigation of economic structure through continual compilation of facts; diagnosis of events that are taking place and the analysis of the forces underlying them; and the prognosis i.e. the prediction of future development. Szendrak (2005:28), stated in the report that Research and Development (R&D) have become key functions of companies in many traditional sectors as well as in most emerging industries and further indicated that to be effective in R&D industrial enterprises, it requires a supply of highly skilled scientists and engineers.

whether the benefit is tangible for the country or whether they benefit

Juma and Serageldin (2007:xix), provided that Africa needs to take strategic measures aimed at promoting the application of the modern biotechnology to regional economic integration and trade which include regional innovation systems in which biotechnology-related local innovation areas play a key role which include regional capacities and forging international partnership. Juma and Serageldin (2007:xx), further indicated that regional economic communities need to begin to determine potential opportunities for biotechnology specialization and to foster regional networking of biotechnology centers for R&D related to the regional specialization. Juma and Serageldin (2007:10), noted

that many of the economic advances in developed and industrializing countries stem from innovation which might be technological innovation, innovation in organization, processes, and management focusing in improving skills. For the commitment in research, Juma and Serageldin (2007:10), mentioned that 29 Organization for Economic Cooperation & Development (OECD) member-countries have chosen to reinvest an ever-larger percentage of Growth Domestic Product (GDP) in further research and together spend about 1.5 times more on research and development than the entire economic output of sub-Saharan Africa. Again Juma and Serageldin (2007:11), mentioned that knowledge creation through research and innovation is one component of development followed by translating research into products and processes and modifying and adjusting them to respond to socioeconomic conditions. Swedish Government (2010:5), indicated that the overall objective of Swedish research support is to strengthen and develop scientific research of relevance in the fight against poverty in developing countries. Swedish Government (2010:7), mentioned that countries are discovering the need for research as a resource for development and global positioning. Again, the Swedish Government (2010:18), showed that Swedish research policy made provision that research results are to influence how society develops, ongoing dialogue between research producers and the potential clients in research.

Schulz-Baldes, Vayena and Biller-Andorno (2007:3), provided that research benefits can be differentiated by several characteristics such as direct or indirect, that is, whether the benefit is integral for the conduct of research or whether they benefit individuals or the collective, whether they affect basic or non-basic goods, and whether they are potential or guaranteed. Gbadegesin and Wendler (2006:248-253), indicated that indirect collective benefits are not controversial if they are provided in addition to direct individual or collective benefits, or if they balance collective burdens; for example, by committing scarce resources such as trained health personnel. Sitthi-Amorn & Somrongthong (2000:813-817), indicated that if a scientific career remains an unattractive option for many young people in resource-poor countries, owing to a lack of scientific tradition and institutional support, low wages, insufficient funding for research

projects and non-transparent recruitment of research workers, research cannot be implemented efficiently. Therefore, considering the significant individual and collective effects of research, it is also important that research-capacity building promotes staff development and improves working conditions on both an institutional and a political level. Harris (2004:7-11), provided that research-capacity building should include training about the ethical aspects of research, assistance in the establishment of review boards, and programmes for continued education of board members and scientists.

2.4 IMPORTANCE OF RESEARCH COORDINATION

According to Pillay and Maassen (2010:2), it was indicated that there should be evidence based information for a strategy and pilot study for the purpose of networking and coordinating. Wagner (2008:7), provided the following importance of research coordination in maintaining strong research programmes, namely, supply and demand of research resources; the size of research effort; conditions of access to research infrastructure; workforce issues; and links to industry and competitiveness. Wagner (2008:7), further indicated that the implementation of new research infrastructure involve significant technological challenges that could in turn involve potential industrial partners in the road mapping process. Seventh Framework Programme (2014:2), provided that after the reform of the research advisory system, Denmark research advisory and funding system was coordinated by the coordination committee which had the responsibility of promoting coordination and cooperation between research councils and between research councils and the rest of the research and innovation system. Seventh Framework Programme (2014:2), provided that to improve research coordination further, and to assist in implementing the legislation of the various current reforms, the Council for Technology and Innovation has been established.

According to Abernethy (2005:i), a provision was made that appropriately funded, coordinated and disseminated research can improve health care management, financing and delivery by informing health policy making and clinical practice. Abernethy (2005:6), made of recommendation of the study that strengthen the coordination of

health services research both within the department of Health and Human Services (HHS). Abernethy (2005:i), further recommended coordination within the federal government with an emphasis on improved linkages between the HHS health statistical and survey units, Quality Improvement Organizations (QIOs) administered by Centers for Medicare and Medicaid Services (CMS), the Food and Drug Administration (FDA), and the lead agency for health services research. Abernethy (2005:6), mentioned that in 2001, the Secretary of HHS established the Research Coordinating Council (RCC) for the purpose to coordinate all non-investigator-initiated research within HHS, with the focus being primarily on health services research. Abernethy (2005:6-7), has given the importance of research coordination across federal agencies stating that coordination of findings and some direction regarding research needs will help increase the efficiency with which research improves the clinical and economic outcomes of the health care system, but however, the coordination function would in no way mean control of how research projects are selected or how research is conducted. Abernethy (2005:14), in his report analysis on research coordination, provided that linkages between the lead agency for health services research and the comparative effectiveness research allow for continuing scientific partnership thus requires that new mechanisms be established to maintain the desired linkage with federal agencies.

According to Loytokorpi and Rosenstrom (2014:1), the Finland Government constituted a working group for the coordination of research from the 23rd May 2014 until further notice that serves as an interministerial cooperation body and a forum for the exchange of information. Loytokorpi and Rosenstrom (2014:1), provided that the working group's objective is to strengthen the horizontal guidance of research in order to improve the knowledge base for decision making and develop practices for providing research information to decision makers and the society. Loytokorpi and Rosenstrom (2014:1), indicated that coordinated research supports the achievement of government strategies and objectives. Loytokorpi and Rosenstrom (2014:1), further provided that the working group for the coordination of research will also be used to investigate social needs and future challenges and how they reflect in the activities and objectives of each administrative sector. Loytokorpi and Rosenstrom (2014:1), mentioned that the working

group for the coordinated research will be used to create the preconditions for proactive and timely decision making and to improve the quality, effectiveness and productivity of decision making.

2.5 CHALLENGES FACED BY RESEARCH COORDINATION

According to Habermann (2011:4) research coordination is brought about by research coordinators, which according to the report on opportunities, challenges and good practice in international research cooperation between developed and developing countries, Habermann (2011:4), stated that it brings balance in research cooperation in three areas, namely, scientific achievement and development impact, inputs and contribution from other research partners, and top-down and bottom-up approaches. Habermann (2011:5), stated that cooperation between researchers and institutions should be a true partnership with a balanced bi-directional flow of resources, effects and benefits resulting in lasting positive outcomes. Habermann (2011:10), mentioned that research coordinators hold a unique position in the research team and are often the ones who identify breaches of scientific integrity. Habermann (2011:2), defined research integrity as a commitment to intellectual honesty and personal responsibility for one's actions and to a range of practices that characterize responsible research conduct. Therefore, proper research coordination could assist researchers in eliminating scientific misconduct in their clinical environment.

Slack (2014:175), pointed out that sustainable development goals (SDGs), could be implemented effectively in future by paying special attention to the following, namely, localization of the sustainable development goals (SDGs), helping to strengthen capacities and institutions, participatory monitoring for accountability, partnership with civil society and other actors, partnership with other private sector, and culture and development, with the aim of localizing the post 2015 Agenda and this can only be done through proper coordination and empirically informed through research. Kovacs (2013:55), mentioned that the Hungarian government introduced Government Windows which is a one-stop-shop initiative that operate as a particular form of coordination within public administration. Kovacs (2013:56), again indicated that coordination has

been seen as a central effort within current reforms in the public sector in most of the developing and developed countries.

2.5 CHALLENGES FACING RESEARCH UNITS

Based on the legislative documents from government and other researchers, it is evident that research units within the Limpopo Provincial Government departments are faced with numerous challenges in ensuring that research is well and properly coordinated. This section presents the challenges that hamper research coordination.

According to Woodiwiss (2012:1), in an attempt to encourage and enhance research productivity in higher educational institutions, highlighted the challenges and dilemmas faced by South African researchers and higher education institutions. Woodiwiss (2012:1), tries to find ways to increase research outputs while simultaneously sustaining or enhancing the quality and impact of research outputs, in order to maintain and/or gain national and international recognition. Woodiwiss (2012:2), mentioned challenges and dilemmas facing South African Researchers such as, declining percentage of public expenditure on higher education as a percentage of the gross domestic product (GDP) in South Africa versus other countries in Africa, as well as worldwide; and the differential distribution of the funds both between and within the different South African higher educational institutions. Woodiwiss (2012:9) concluded his report by proposing that as government policies on research funding of institutions have a direct impact on the behaviour of academics with regard to research outputs, there is a need to refine the policies in order to produce the desired academic behaviours.

Webster (2002:1-12), provided a framework for discussing the strategic challenges facing research libraries based on two premises, namely, that traditional mission of the research library is in jeopardy and the current scholarly communication system is unsustainable. Jain (2009:1), on problems encountered by researchers in India and abroad mentioned the following challenges, namely, lack of scientific training in methodology of research; insufficient interaction between university departments on one

side and business establishments, government departments and research institutions on the other side; research studies overlapping one another are undertaken quite often for want of adequate information resulting in duplication fritter away resources; many researchers face the difficulty of adequate and timely secretarial assistance including computerial assistance; and, many of the libraries are not able to get copies of old and new acts / rules, reports and other government publications in time.

South Africa National Research and Development strategy (2002:21-22), provided the following challenges, namely, fragmented governance structures due to the lack of collaboration and networking systems; inadequate intellectual property legislation and infrastructure; declining Research and Development in the private sector; and, the fragmentation of government science and technology driven by different government departments with very little coordination in strategy or sharing of learning. According to the Draft Limpopo Provincial Research and Development Framework (2013:1-3), the following challenges to research units were mentioned, and they are, insufficient research capacity; budget constraints; duplication and waste of resources; research systems and structures; and, poor coordination of research. According to Limpopo Provincial Research Guidelines (2012:2-3), the following challenges were mentioned, namely private initiated research without due permission and ethical clearance from the departments; unavailability and inaccessibility of research outputs / outcomes; and time available for research meaning that obtaining information is often time consuming and mired by bureaucracy.

Lamphier and Driessen (2003:14-18), mentioned the following problems faced by forest service coordinators, namely, production versus social and educational goals; problems with gender, work culture and generation gaps; and coordinators problems with different types of workgroups. Szendrak (2005:25-33), mentioned the following research challenges, namely, reinforcing excellence, especially in new fast growing sciences; staying ahead of other parts of the world; linking science and technological innovation; competing for talent as the fast growing knowledge-based society demand for highly skilled scientific labour; and encouraging greater investment.

2.6 GOVERNMENT INTERVENTIONS IN SOLVING POOR RESEARCH

COORDINATION

According to the Draft Research and Development Framework (2013:11-16) the following key determinants for the successful take off of proper research coordination and the sustainability of research services and the efforts of the Limpopo Province were mentioned to solve the problem of poor research coordination, namely, establishment of research and development directorate; provincial research agenda; establishment of the Limpopo Research Forum (LRF); establishment of a research databank (repository); development of the provincial research guidelines; establishment of research units in provincial departments and municipalities; development of provincial research and development strategy; facilitate research collaboration in the province; made available research fundings; and research capacity enhancement.

According to Urban Sciences Research Coordination Framework (USRCN) (2013:1), from the University of Chicago, challenges and opportunities related to density and scale in areas including transportation, food production and distribution, human health and wellbeing, education, social policy and services, and management of water and energy were identified. The Urban Sciences Research Coordination Framework (USRCN) (2013:1), noted that if policies that underpin the development and implementation of all these identified programmes, lack evidence-based through the coordination and conduction of research, there would be an impact on both local and regional environment and inhabitants. Urban Sciences Research Coordination Framework (USRCN) group (2013:2), came up with methods that allow researchers to develop calibrated, validated computational models to explore the potential impact of new policies, investments, and accelerating expansion of urban built infrastructure.

According to Juma and Serageldin (2007:85-86), a proposal was made that strategic consideration in science, technology and innovation in Africa include taking a strategic look at the role of international partners, and providing more opportunities to enable collaboration with African R&D institutions. This suggests that collaboration could be

used as one of the tools to solve poor research coordination. Juma and Serageldin (2007:92), in their study concluded and recommended that identifying critical capabilities needed for the development and safe use of biotechnology like infrastructure development, reinventing the African university, developing human capacities and engaging the public.

According to Swedish Government (2016:27), the education was made with research

According to Juma and Serageldin (2007:92), the following recommendations on science, technology and innovation were cited, namely, strengthen science and technology advice; build science and technology diplomacy; commit to long-term technology goals and missions; build critical capabilities; leverage financial resources; and establish follow-up mechanisms. Finally, Juma and Serageldin (2007:96), recommended that African Union (AU) leaders, at the local, national, regional and continental levels, must significantly increase public investments in biotechnology and R&D in which failure to do so will impair the commitment's capacity to stay connected to global advances in biotechnology and to transfer, adapt, and exploit life sciences knowledge for the benefit of all citizens.

and scientific partnerships to enhance the quality of research and to promote networking

According to Juma and Yee-Cheong (2005:140-141), on advising government on science, technology and innovation, it was proposed that the scientific advisory group should create a coordination function across government following a number of models like the corporate non-profit model, the independent advisory model, and the embedded advisory model. Juma and Yee-Cheong (2005:142), indicated that the science advisor should work with those in power to establish a national vision through advising some statutory, legislative and jurisdictional mandate to provide advice to the highest level of government.

governmental organizations and to provide a strong leadership. This suggests

Juma and Yee-Cheong (2005:146-147), mentioned that providing advice is among the most important functions of professional academies and made an example that the government of Malaysia relies on its Academy of Sciences for scientific advises. On financial assistance, Juma and Yee-Cheong (2005:147), provided that national academies differ in their degree of financial reliance on government citing the Science

Council of Japan and the Chinese Academy of Science are fully funded by government and thus recommended that it is vital for young academies in developing countries with small scientific, technological, engineering communities should get an ongoing financial support from government.

According to Swedish Government (2010:27), an indication was made that research cooperation is to be guided by national and intergovernmental research strategies. Swedish Government (2010:28), provided that channeling support internationally, regionally and nationally, researchers are to be given partner countries the opportunity to take part in the international research networks. Swedish Government (2010:30), proposed that another strategy is to organize an international research conference that bring together international researchers and practitioners.

Schulz-Baldes, Vayena and Biller-Andorno (2007:7), provided that the successful conduction and implementation of research requires input from various scientific disciplines, the community, and the political and private sectors to promote networking and scientific partnerships at national and international levels as well as intersectoral partnerships between researchers and the community, civil organizations and the private sector. Healy and Nakabugo (2010:2-3), noted that the quality of much international development research is poor, its linkages to policy weak and its impacts on poverty reduction are currently minimal and therefore proposed capacity building and development in individual, institutional and inter-institutional which lead to higher level of skills and greater ability to perform useful research. Healy and Nakabugo (2010:10), indicated the need for university researchers everywhere to engage more effectively and systematically with the public policy domain, with civil society including non-governmental organizations and with other development stakeholders. This suggests that working in partnership and collaboration with research and academic institutions and other researchers from sector departments could solve problems faced by research coordinators.

2.7 CONCLUSION

The aforementioned pronouncements, legislative prescripts and various research outcomes from other researchers dictate the enhancement and coordination of research, hence, the challenges faced by the research coordinators in Limpopo Provincial Government need to be addressed. The final agreed sustainable development goals post 2015, proposed goal two stated that by 2030 there should be end hunger, achieve food security and improved nutrition, and promote sustainable agriculture. The enhancement of investment in international cooperation, rural infrastructure, agricultural research and extension services and technology development need extensive research for the realization of this goal. This compels the government to address all the challenges faced by research coordinators in ensuring that a conducive environment is created for the conduction of research. The legal framework and the work from other researchers provided that research is important as it links the experience and evidence base. Once the research is well coordinated, the outcomes and findings enhance expertise. Better coordination of research by government informs the well coordinated and implementable provincial government research agenda. Strategic priorities of government and research units inclusive of those from research and academic institutions need to be reflected in developing a research culture.

Provincial coordinated research should be structured to most effectively move forward in the future, and, thus proposed proper coordination of research. The research sources consulted for the purpose of this study suggested coordination and collaboration between research funding bodies to optimize the use of limited resources; to better support policy makers through better access to data, strategic targeted research and better consultation; increase linkages and potential research coordination. This could reverse the erosion of scientific base and underpin the development and implementation of research policy hence the study focuses on challenges faced by research coordinators in the Limpopo provincial government.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

In this chapter, the researcher will discuss research design and methodologies that will be followed when conducting the study. The section will also discuss the study area, population of the study, sampling method and size, data collection, pilot study, data analysis and ethical considerations as well as organization of the study.

3.2 RESEARCH DESIGN

According to Kothari (2004:7), a research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure and it provides an outline of what the researcher is going to do in terms of framing hypothesis, its operational implications, and the final data analysis. De Vos (2001:123), views a research design as a blueprint or detailed plan of how a research study is to be conducted. The researcher used descriptive design because it gives the ability to collect accurate data and provides a clear picture of the phenomenon under investigation.

3.3 RESEARCH METHODOLOGY

Rajasekar (2013:2), defined research methodology as a systematic way to solve a problem and as a logical and systematic search for new and useful information on a particular topic. According to Kothari (2004:8), research methodology is a way to systematically and scientifically solve the research problem by studying the various steps that are generally adopted a researcher in studying his research problem along with the logic behind them. The study used a triangulation approach where both quantitative as well as the qualitative research methods will be used.

- **Quantitative Research Method**

According to Kothari (2004:3), quantitative research methods relate to aspects that can be quantified or can be expressed in terms of quantity involving various available statistical and econometric methods for analysis like correlation, regressions and time series analysis. Burns and Grove (2005:23), describe quantitative research method as a formal, objective, systematic process in which numerical data are used to obtain information about the world and the method is used to describe variables; to examine relationships among variables; and to determine cause-and – effect interactions between variables. The researcher used quantitative research method because it can generalize research findings and that it provides precise, quantitative, numerical data, and data collection is relatively quick.

- **Qualitative Research Method**

Kothari (2004:3) proposed that qualitative research is concerned with quality phenomenon, or more specifically, the aspects relating to or involving quality or kind with an aim of discovering the underlying motives and desires of human beings, using in-depth interviews. According to De Vos (2001:240), qualitative research is defined as a multiperspective approach, utilizing different qualitative techniques and data collection methods, to social interaction, aimed at describing, making sense of, interpreting or reconstructing this interaction in terms of the meanings that the subjects attach to it. The researcher used qualitative research method because it provides understanding and descriptions of people personal experiences of phenomenon.

3.4 STUDY AREA

According to Czazasty (2013:2), a study area is clearly described in terms of geographic location(s), cultural resources, and site numbers within the provision of maps and or geographic coordinates as appropriate selected area of study. According to Elwood and Martin (2000:649-657), a study area is defined as a site in which to conduct interview

and analyse data. The study area is Limpopo Provincial Government which is one of the South Africa nine provinces. It covers 125,755 km² and its capital city is Polokwane. It is in the northernmost part of South Africa, bordering the countries of Botswana to the west, Zimbabwe to the north and Mozambique to the east.

Map 3.1: Map of South Africa showing the location of Limpopo Province



Source: 2009 Encyclopedia Britannica, Inc - online

3.5 POPULATION OF THE STUDY

According to Babbie and Mouton (2001:174), population of the study is described as that aggregation of elements from which the sample is actually selected. Bless; Higson-Smith and Kagee (2006:184), stated that population refers to a complete set of events, people or things to which the researcher findings are to be applied. For the purpose of this study, the population of the study were government officials such as general managers; senior managers; managers; deputy managers and research practitioners responsible for conducting, managing and coordination of research from the research units of the following Limpopo Provincial Government Departments: Department of Transport, Safety, Security and Liaison; Department of Health; Department of Social Development; Department of Education; Department of Public Works, Roads and Infrastructure; Department of Sports, Arts and Culture; Department of Treasury; Department of Co-operative Governance, Human Settlements and Traditional Affairs; Limpopo Economic Development, Environment and Tourism; Department of Agriculture and Office of the Premier. The estimated number of the population will be 68.

3.5.2 Sample Size

3.6 SAMPLING

Mugo (2002:1), defined sampling as the act, process, or technique of selecting a suitable sample; specifically the art, process or technique of selecting a representative part of a population for the purpose of determining parameters or characteristics of the whole population. According to De Vos (2001:190), sampling means taking any portion of a population or universe as representations of that population or universe. The sample group of this study will thus consist of General Managers, Senior Managers, Managers, the Deputy Managers and Research Practitioners in case they are responsible for research initiatives within their respective departments from all Limpopo Provincial Departments.

General Managers	03
Senior Managers	04
Total	29

3.6.1 Sampling Method

From all the Limpopo Provincial Government departments, the researcher used non-probability sampling. Van der Walddt, Niekerk, Doyle, Knipe and du Toit (2002: 192), provided that non-probability sampling is when certain members of the population are chosen because of a judgement on the characteristics of the population and the needs of the survey. William (2014:395), defined non-probability sampling as a sampling technique in which units of the samples are selected on the basis of personal judgement and the probability of any particular member of the population being chosen is unknown. The researcher used non-probability sampling and its subtype purposive sampling method because it enables the researcher to obtain data from a sample of specific individuals with knowledge of setting and experience of the phenomenon under investigation and that the researcher will be in the position to interact with the possible respondents. The researcher chose the respondents with a purpose that are knowledgeable about the research topic.

3.6.2 Sample Size

The total sample size of the study is 29. The sampled population consists of 01 General Manager, 06 Senior Managers, 15 Managers, 03 Deputy Managers and 04 Research Practitioners.

Table 3.1 Sampling Size

Respondents	No. of Population	No. of Sampled Population
General Managers	02	01
Senior Managers	10	06
Managers	20	15
Deputy Managers	5	03
Research Practitioners	31	04
Total	68	29

3.7 DATA COLLECTION

According to De Vos (2001:82), data collection methods are the ways in which the data are actually obtained both qualitatively and quantitatively. Denis (2008:8-15), argued that the collected data should be complete and contemporary, accurate, legible, original and attributable to the person who generated the data and collect only data that will be used for analysis and avoid collecting redundant data. Because the researcher used both qualitative and quantitative research methodologies, two instruments were used to collect data and they are interview schedule and a survey questionnaire.

Mellenberg (2008:211) defines a questionnaire as a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. According to Kothari (2004:33), a questionnaire is a list of questions sent to a number of persons for their answers and which obtain standardized results that can be tabulated and treated statistically. As a data collecting instrument, the researcher used structured questionnaires because questionnaire is most frequently a very concise, preplanned set of questions designed to yield specific information to meet a particular need for research information about a pertinent topic. Questionnaires will be distributed to the respondents and collected by the second day for data analysis.

De Vos (2001:297) defined interview as the way or pipeline of extracting and transmitting information from the interviewee. Gall, Gall, and Borg (2003:239), provided that interviews include the construction of research questions as well as the analysis of interview data from personal experiences with interviewing as well as the recommendations from the literature to assist novice. The researcher used open-ended interview with the respondents of this study. The researcher visited all the provincial departments and two agricultural research stations and interviewed the sampled respondents.

3.8 PILOT STUDY

According to De Vos (2001:179), pilot study is defined as the process whereby the research design for a prospective survey is tested to improve the success and effectiveness of the investigation and to give direction to the main investigation. According to Teijlingen and Hundley (2002:40), a pilot study is a mini-version of a full-scale study and sometimes called a feasibility studies as well as specific pre-testing of a particular research instruments such as questionnaires or interview schedule. In this study, a questionnaire will be compiled and distributed to a sampled group of respondents who will be requested to complete it. This will test if the language used is understandable to the respondents and in ensuring that questions are not unnecessary repeated. Two people will also be interviewed.

3.9 DATA ANALYSIS

According to Hatch (2002:148), data analysis is described as a systematic search for meaning and as a way to process qualitative data so that what has been learned can be communicated to others. Boeijie (2010:76), further indicated that the selected and arranged interviewed transcripts, field notes and other materials accumulated increased the researcher understanding and enable the researcher to present the newly discovered data to others. Analysis therefore means organizing and interrogating data in ways that allow researchers to see patterns, identify themes, discover relationships, develop explanations, make interpretations, mount critiques, or generate theories and it involves synthesis, evaluation, interpretation, categorization, hypothesizing, comparison, and pattern finding. According to De Vos (2001:203), data analysis means the categorizing, ordering, manipulating and summarizing of data to obtain answers to research questions. For the purpose of this study, two tools of data analysis will be used, namely, thematic analysis tool and Statistical Package for Social Sciences (SPSS) tool. Data collected through questionnaire will be analyzed by Statistical Package for Social Sciences (SPSS) tool and the type will be 22.0 version. Singh (2012:2), on Research Methods and Data Analysis using SPSS, defined SPSS as a

data analysis software package of choice for applied researchers for making inferences, used to perform analysis to check for statistical significance and interpret the data output in a manner relevant to the researchers. SPSS is capable of handling large amounts of data and can perform all of the analyses covered in the text and much more. For the purpose of this study, the data will be presented in a graphical tabular form, frequencies and percentages.

Data collected through interview will be analyzed by thematic analysis tool. Braun and Clarke (2006:79), define thematic analysis as a qualitative analytic method for identifying, analyzing and reporting patterns (themes) within data and it minimally organizes and describes the set data in rich or detail and it frequently goes further and interprets various aspects of the research topic. Maree (2007:121), defined narrative analysis as a variety of procedures for interpreting to give meaning of the narratives generated in the research. For the purpose of this study, the data will be presented in a narrative format. The researcher adopted the following steps of data analysis by Creswell (1994:143) to critically analyse data since the researcher used a qualitative study:

- **Planning for recording data**

The researcher planned how the collected information will be recorded before collecting commences. The researcher should show awareness techniques for recording, observing, interaction and interviews should not intrude excessively into the on-going of daily events.

- **Data collection and preliminary analysis**

The researcher analysed data and make sure that the information being collected is rich information that will generate alternative hypothesis and provide basics for shared construction of reality.

- **Managing or organizing the data**

The researcher put all copies of compiled information during data collection for further advices and someone secure for safe keeping. The data gathered from the interviews will be in the form of field notes organized in order to see the trends from respondents and patterns of the data gathered from the respondents.

- **Reading and writing memos**

The researcher read the transcripts in their entirety and become familiar with the information, often several times to get unversed in the details, and trying to get sense of the interview as a whole before breaking it into parts. The data will be read several times for the purpose of giving the researcher an understanding of the data.

- **Generating categories, themes and patterns**

The researcher classified information into categories in order to reduce it to a small management set of themes to write into the final narrative. This means dimensions of information. The data will then be given names A, B and C, each presenting a respondent in order to give a detailed description of the respondent and will maintain confidentiality.

- **Coding the data**

Coding of data is a formal representation of analytic thinking. The researcher applied some coding scheme to those categories and themes, and diligently and thoroughly marks passages in the data using the code. Code may take several forms of observation of the key words.

- **Testing the data emergent understanding**

The researcher test to establish information is relevant to the study. The researcher began the process of evaluating the plausibility of her developing understanding and explores them through the data. Part of this phase is evaluating for their usefulness and centrality.

- **Search for alternative explanations**

The researcher found a way to explain to the respondents again only if the respondents have missed something during the interview.

- **Writing the report**

The researcher wrote a formal report as a proof that the researcher has analysed the data and the report must be kept in a safe place. Data is then written in narrative form on the themes and also stated whether the findings confirmed or contracted the literature of previous authors.

In analyzing data the researcher based his or her own emphasis in five steps. In step one the researcher organized and prepared the data for analysis in order to collect the data from the respondents and then analysed the data in order to see trends on patterns of the as to understand which direction of information provided by the respondents was going. The researcher also applied detailed analysis with coding process and name all the prospective respondents and the data was also analysed according to the key findings of the major research questions, then the data will be interpreted in order to see if the literature confirms or contradicts with what other researchers found, hence the researcher will not implement some of the steps because they are not applicable in the study.

3.10 ETHICAL CONSIDERATION

According to De Vos (2001:24), ethics is described as a set of normal principles which is suggested by an individual or group and is subsequently widely accepted, and which offers rules and behavioural expectations about the most correct conduct towards experimental subjects and respondents, employers, sponsors, other researchers, assistants and students. Bless, Higson-Smith and Kagee (2006:140), provided that ethics in research are concerned with whether the behaviour conforms to a code or a set of principles. For the purpose of this study, the following ethical aspects of research will be taken into account:

3.10.1 Permission to Conduct Research

Once the researcher is given a letter for permission to conduct research by the University of Venda, the same letter will accompany the request to interview the respondents and completion of questionnaire to the Limpopo Provincial Government Departments. All letters for permission will be attached as annexures.

3.10.2 Voluntary Participation and Informed Consent

De Vos (2001:25-26), indicated that obtaining informed consent implies that possible or adequate information on the goal of the investigation, the procedures followed during the investigation, the possible advantages, disadvantages and dangers to which respondents may be exposed, and the credibility of the researcher be rendered to potential subjects or their legal representatives. For the purpose of this study, all officials to be involved will be informed that they are not forced to participate. They will also be informed of all the consequences of the study and give consent to participate in the study.

3.10.3 No Harm to the Participants

De Vos (2001:25), claims that an ethical obligation rests with the researcher to protect subjects against any form of physical discomfort which may emerge, within reasonable limits, from the researcher project. The officials that will be involved in the investigation will be guaranteed that any information that they give will not risk or danger their work.

3.10.4 Anonymity

According to Machanavajhala (2007:1), anonymity is described as an avoidance of the identification of records in microdata, uniquely identifying information like names and social security numbers are removed from the table which result to every record in the table to be indistinguishable from the rest and such privacy is said to be K-anonymity. In this case where both interviews and questionnaires will be used, an assurance will be given to the officials involved that they will remain anonymous throughout the whole study or investigation.

3.10.5 Confidentiality

According to Saxon (2001:1), an indication was made that common definition of confidentiality stated that information is confidential if it is communicated by one person to another in confidence, that is, with the expectation that the individual to whom the information is entrusted will not disclose it to others. To ensure that confidentiality is maintained in the study, the researcher is able to identify a given person's responses, but promises not to reveal it to the public. In this study, all names and addresses will be removed from the questionnaire.

3.10.6 Deceiving Subjects

According to Massif, Garrison and Herero (2004:20) deception is defined as the deliberate attempt, whether successful or not, to fabricate, and/or manipulate in any

other way, factual and/or emotional information, by verbal and/or nonverbal means, in order to create or maintain in another or others a belief that the communicator himself or she considers false. According to Miller and Kaptchuk (2008:1), deception of subjects occurs only if the investigator has determined that withholding complete accurate information about the nature of the study is necessary to ensure valid results. They further contended that in an experiment deception occurs when the experimenter uses intended and explicit misrepresentation of the purpose of investigation and the identity of the researcher and confederate. As a result, in this study the researcher shall identify self to the participants.

3.11 CONCLUSION

This chapter dealt with the manner in which data was collected and the triangulation approach where both quantitative as well as qualitative research methods were used. The chapter also outlined the study area which is Limpopo focusing on provincial government departments. The population of the study targeted government officials responsible for research. Non-probability sampling and its subtype purposive sampling method was used. The sampled population was 29 out of 68 estimated total number of population. Collected data collected through questionnaire to be analysed using Statistical Package for Social Sciences (SPSS) version 22.0 and data collected through interview to be analysed using thematic analysis. Ethical aspects also needed consideration when collecting data from the respondents. The next chapter presents analyses and interprets data collected through questionnaire and interview schedule.

CHAPTER 4

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

The previous chapter presented the research design and the subsequent methodologies that the researcher intends to follow and which indicate the structure and the procedures that were followed to answer the researcher's study questions. It has been revealed that the was conducted in mixed methodologies and in this chapter, data for the study is presented, analysed and interpreted. The following sections focus on reporting the empirical investigation by providing answers to the perceptions and understanding of the challenges faced by research coordinators in the Limpopo Provincial Government.

4.2 ANALYSIS OF DATA COLLECTED THROUGH QUESTIONNAIRE

In this section the researcher analyses the responses collected by the questionnaires and data will be presented in a graphical tabular form and are followed by a brief synthesis of the findings for the item

4.2.1 Section A: Biographical Information

In this section the researcher presents the biographical details of the respondents in this study. The information are presented in graphical tabular forms and followed by a synthesis of the findings and the detailed findings are discussed in chapter 5.

Table 4.1 Gender of respondents

	Response	Frequencies	Percentage
1	Male	17	58.6%
2	Female	12	41.4%
	TOTAL	29	100%

Table 4.1 presents the biographical details of the respondents in terms of gender. A total of 29 respondents took part in this study, and out of the 29 respondents, 17 (58.6%) were males, whereas 12 (41.4%) were females. All targeted 29 respondents managed to return the questionnaires, and all the questionnaires were analysed.

Table 4.2 Age of respondents

	Response	Frequencies	Percentage
1	Less than 21 years	0	0.0%
2	22 – 30 years	01	3.4%
3	31 – 40 years	08	27.6%
4	41 to 50 years	13	44.8%
5	51 years and older	07	24.1%
	TOTAL	29	100%

Most of the respondents, 13 (44.8%) who took part in this study were aged between 41 – 50 years. Eight (27.6%) of the respondents were aged between 31 and 40, and 07 (24.1%) were 51 years and older. Only 01 (3.4%) was between 22 – 30 years and there was no respondents who was less than 21 years who took part in the study. It can therefore be concluded that majority of the respondents who took part in the study were between 41 to 50 years.

Table 4.3 Position of respondents

	Response	Frequencies	Percentage
1	General Manger	01	3.4%
2	Senior Manager	06	20.7%
3	Manager	15	51.7%
4	Deputy Manager	03	10.3%
5	Research Practitioner	04	13.8%
	TOTAL	29	100%

Table 4.3 indicates that majority of the respondents at 15 (51.7%) who took part in this study were managers. Six, 06 (20.7%) of the respondents were senior managers, and 04 (13.8%) were research practitioners. Three, 03 (10.3%) of the respondents were deputy managers while few respondent at 01 (3.4%) was a general manager. It can therefore be concluded that majority of the respondents who took part in the study were the managers.

Table 4.4 Working Experience of Respondents

	Response	Frequencies	Percentage
1	1 to 5 years	02	6.9%
2	6 to 10 years	08	27.6%
3	11 to 15 years	04	13.8%
4	16 to 20 years	09	31.0%
5	21 years and above	06	20.7%
	TOTAL	29	100%

Majority of the respondents at 09 (31.0%) who took part in this study were having 16 to 20 years working experience. 08 (27.6%) of the respondents were having 6 to 10 years of working experience, and 06 (20.7%) were having 21 years and above. Few

respondent at 04 (13.8%) were having 11 to 15 years working experience whereas only 02 (6.9%) of the respondents were having 1 to 05 years working experience. It can therefore be concluded that in this study, majority of the respondents were having 16 to 20 years working experience.

4.2.2 Section B: Challenges faced by research coordinators in Limpopo Provincial Government

In this sub-section, data is analysed using graphical statistics which is further divided into three themes which arose from the survey questionnaire respondents. The three themes are; challenges faced by research coordinators in Limpopo Provincial Government; research capacity of the Limpopo Provincial Government Departments; and mechanisms for proper research coordination within the Limpopo Provincial Government.

4.2.2.1 Challenges faced by research coordinators in Limpopo Provincial Government

This sub-section presents data regarding the challenges faced by research coordinators in Limpopo Provincial Government. The data is presented in the form of tables followed by brief interpretation.

1	Strongly agree	22.7%
2	Agree	20.7%
3	Not Sure	27.6%
4	Disagree	27.6%
5	Strongly disagree	11.3%
	TOTAL	100%

Table 4.5 There are enough research coordinators in the Provincial Government

	Response	Frequencies	Percentage
1	Strongly agree	01	3.4%
2	Agree	06	20.7%
3	Not sure	04	13.8%
4	Disagree	08	27.6%
5	Strongly disagree	10	34.5%
	TOTAL	29	100%

Ten (34.5%) of the respondents strongly disagreed with the idea that there are enough research coordinators in the Provincial Government and 08 (27.6%) respondents disagreed with the statement. On the other hand, 01 (3.4%) strongly agreed and there was 06 (20.7%) respondents who agreed that there are enough research coordinators in the Provincial Government. 04 (13.8%) respondents were not sure whether there are enough research coordinators in the Provincial Government or not. The statistics above shows that the majority of the respondents disagreed that there are enough research coordinators in the Provincial Government.

Table 4.6 Financial resources are available to conduct research

	Response	Frequencies	Percentage
1	Strongly agree	02	6.9%
2	Agree	07	24.1%
3	Not Sure	04	13.8%
4	Disagree	12	41.4%
5	Strongly disagree	04	13.8%
	TOTAL	29	100%

Table 4.6 Coordinated research supports the achievement of the Provincial

Table 4.6 indicates that majority of the respondents at 12 (41.4%) disagreed with the statement that financial resources are available to conduct research, and 04 (13.8%) strongly disagreed with the idea. 07 (24.1%) of the respondents agreed that financial resources are available to conduct research, while 02 (6.9%) strongly agreed with the statement. 04 (13.8%) of the respondents were not sure whether financial resources are available to conduct research or not. From the above statistics, a conclusion can be drawn that majority of the respondents at 16 (55.2%) disagreed with the statement that there is financial resources to conduct research

Table 4.7 Research outputs are always accessible to research managers and coordinators

	Response	Frequencies	Percentage
1	Strongly agree	02	6.9%
2	Agree	15	51.7%
3	Not Sure	05	17.2%
4	Disagree	05	17.2%
5	Strongly disagree	02	6.9%
	TOTAL	29	100%

Table 4.7 indicates that the majority of the respondents at 15 (51.7%) agree with the statement that research outputs are always accessible to research managers and coordinators, and 02 (6.9%) strongly agreed with the statement. 05 (17.2%) of the respondents were not sure whether research outputs are always accessible to research managers and coordinators or not. 05 (17.2%) of the respondents disagreed with the statement while only 02 (6.9%) strongly disagreed. From the above statistics, a conclusion can be drawn that the majority are at 17 (58.6%) agreed with the statement that research outputs are always accessible to research managers and coordinators in Limpopo Provincial Government.

Table 4.8 Coordinated research supports the achievement of the Provincial government strategies

	Response	Frequencies	Percentage
1	Strongly agree	04	13.8%
2	Agree	18	62.1%
3	Not Sure	03	10.3%
4	Disagree	03	10.3%
5	Strongly disagree	01	3.4%
	TOTAL	29	100%

Table 4.8 indicates that the majority of the respondents at 18 (62.1%) agree with the statement that coordinated research supports the achievement of the provincial government strategies and 04 (13.8%) strongly agreed with the statement. 3 (10.3%) of the respondents were not sure whether coordinated research supports the achievement of the provincial government strategies. 03 (10.3%) of the respondents disagreed with the statement while only 01 (3.4%) strongly disagreed. From the above statistics, a conclusion can be drawn that the majority are at 22 (75.9%) agreed with the statement that coordinated research supports the achievement of the provincial government strategies in Limpopo.

Table 4.9 Provincial government encourages innovation by devoting scientific and technological research, development and biotechnology

	Response	Frequencies	Percentage
1	Strongly agree	02	6.9%
2	Agree	09	31.0%
3	Not Sure	12	41.4%
4	Disagree	05	17.2%
5	Strongly disagree	01	3.4%
	TOTAL	29	100%

Table 4.9 indicates that the majority of the respondents at 12 (41.4%) are not sure with the statement that the Limpopo Provincial Government encourages innovation by devoting scientific and technological research, development and biotechnology. 09 (31.0%) agreed with the statement while only 02 (6.9%) of the respondents strongly agreed. 05 (17.2%) of the respondents disagreed with the statement and only 01 (3.4%) strongly disagreed. From the above statistics, a conclusion can be drawn that the majority are at 12 (41.4%) who are not sure that the Limpopo Provincial Government encourages innovation by devoting scientific and technological research, development and biotechnology.

4.2.2.2 Research capacity of the Limpopo Provincial Government's Departments

This portion presents research capacity of the Limpopo Provincial Government Departments. The information in this section are presented in graphical and tabular forms and followed by a discussion of the findings.

Table 4.10 Uncoordinated government research results in duplication of research

	Response	Frequencies	Percentage
1	Strongly agree	15	51.7%
2	Agree	10	34.5%
3	Not Sure	0	0.0%
4	Disagree	04	13.8%
5	Strongly disagree	0	0.0%
	TOTAL	29	100%

Table 4.10 indicates that the majority of the respondents at 15 (51.7%) strongly agree with the statement that uncoordinated government research results in duplication of research. 10 (34.5%) agreed with the statement while only 04 (13.8%) of the respondents disagreed. None of the respondents are not sure or strongly disagreed with the statement. From the above statistics, a conclusion can be drawn that the majority are at 25 (86.2%) with the statement that uncoordinated government research results in duplication of research.

4.2.2.2 Research capacity of the Limpopo Provincial Government Departments

This portion presents research capacity of the Limpopo Provincial Government Departments. The information in this section are presented in graphical and tabular forms and followed by a discussion of the findings.

		17.2%
3	Not Sure	3.8%
4	Disagree	51.7%
5	Strongly disagree	20.7%
	TOTAL	100%

Table 4.11 Research coordinators in Provincial government are well trained in research methodology

	Response	Frequencies	Percentage
1	Strongly agree	0	0.0%
2	Agree	04	13.8%
3	Not Sure	09	31.0%
4	Disagree	10	34.5%
5	Strongly disagree	06	20.7%
	TOTAL	29	100%

Table 4.11 indicates that the majority of the respondents at 10 (34.5%) disagree with the statement that research coordinators in Limpopo Provincial Government are well trained in research methodology while 06 (20.7%) strongly disagree. 09 (31.4%) are not sure with the statement. Only 04 (13.8%) of the respondents agreed with the statement. From the above statistics, a conclusion can be drawn that the majority are at 16 (55.2%) disagree with the statement that research coordinators in Limpopo Provincial Government are well trained in research methodology.

Table 4.12 In-house research capacity has enough qualified staff to conduct quality research

	Response	Frequencies	Percentage
1	Strongly agree	01	3.4%
2	Agree	05	17.2%
3	Not Sure	02	6.9%
4	Disagree	15	51.7%
5	Strongly disagree	06	20.7%
	TOTAL	29	100%

Table 4.12 indicates that the majority of the respondents at 15 (51.7%) disagree with the statement that in-house research capacity has enough qualified staff to conduct quality research and 06 (20.7%) strongly disagree. 05 (17.2%) agree with the statement and only 01 (3.4%) strongly agree. Only 02 (6.9%) were not sure. From the above statistics, a conclusion can be drawn that the majority are at 21 (72.4%) agree with the statement that in-house research capacity has enough qualified staff to conduct quality research.

Table 4.13 Appropriate coordinated research can improve management and service delivery

	Response	Frequencies	Percentage
1	Strongly agree	17	58.6%
2	Agree	11	37.9%
3	Not Sure	01	3.4%
4	Disagree	0	0.0%
5	Strongly disagree	0	0.0%
	TOTAL	29	100%

Table 4.13 indicates that the majority of the respondents at 17 (58.6%) strongly agree with the statement that appropriate coordinated research can improve management and service delivery and 11 (37.9%) agree. Only 01 (3.4%) is not sure. From the above statistics, a conclusion can be drawn that the majority are at 28 (96.6%) agree with the statement that appropriate coordinated research can improve management and service delivery.

Table 4.14 Research coordinators developed scientific research to improve research outcomes.

	Response	Frequencies	Percentage
1	Strongly agree	02	6.9%
2	Agree	13	44.8%
3	Not Sure	10	34.5%
4	Disagree	04	13.8%
5	Strongly disagree	0	0.0%
	TOTAL	29	100%

Table 4.14 indicates that the majority of the respondents at 13 (44.8%) agree with the statement that research coordinators developed scientific research to improve research outcomes and 02 (6.9%) strongly agree. While 04 (13.8%) disagree, 10 (34.5%) were not sure if research coordinators developed scientific research to improve research outcomes. From the above statistics, a conclusion can be drawn that the majority are at 15 (51.7%) agree with the statement that research coordinators developed scientific research to improve research outcomes.

Table 4.15 There is enough research capacity in terms of quality trained researchers

	Response	Frequencies	Percentage
1	Strongly agree	01	3.4%
2	Agree	04	13.8%
3	Not Sure	07	24.1%
4	Disagree	12	41.4%
5	Strongly disagree	05	17.2%
	TOTAL	29	100%

Table 4.15 indicates that the majority of the respondents at 12 (41.4%) disagree with the statement that there is enough research capacity in terms of quality trained researchers and 05 (17.2%) strongly disagree. While 04 (13.8%) agree, only 01 (3.4%) strongly agree. 7 (24.1%) were not sure if there is enough research capacity in terms of quality trained researchers. From the above statistics, a conclusion can be drawn that the majority are at 17 (58.6%) disagree with the statement that there is enough research capacity in terms of quality trained researchers.

Table 4.16 Development-related research is adequately supported by enough staff with appropriate knowledge.

	Response	Frequencies	Percentage
1	Strongly agree	0	0.0%
2	Agree	05	17.2%
3	Not Sure	07	24.1%
4	Disagree	14	48.3%
5	Strongly disagree	03	10.3%
	TOTAL	29	100%

Table 04.16 indicates that the majority of the respondents at 14 (48.3%) disagree with the statement that development-related research is adequately supported by enough staff with appropriate knowledge and 03 (10.3%) strongly disagree. Only 05 (17.2%) agree and 07 (24.1%) were not sure if development-related research is adequately supported by enough staff with appropriate knowledge. From the above statistics, a conclusion can be drawn that the majority are at 17 (58.6%) disagree with the statement that development-related research is adequately supported by enough staff with appropriate knowledge.

4.2.2.3 Mechanisms for proper research coordination within the Limpopo Provincial Government

This section provides a description of the mechanisms for proper research coordination within the Limpopo Provincial Government, and the information in this section are presented in graphical and tabular forms and followed by discussions.

Table 4.17 The provincial government review the research outputs regularly

	Response	Frequencies	Percentage
1	Strongly agree	0	0.0%
2	Agree	07	24.1%
3	Not Sure	14	48.3%
4	Disagree	07	24.1%
5	Strongly disagree	01	3.4%
	TOTAL	29	100%

Table 4.17 indicates that the majority of the respondents at 14 (48.3%) were not sure if the Limpopo Provincial Government review the research outputs regularly and 7 (24.1%) disagree and only 01 (3.4%) strongly disagree. Only 07 (24.1%) agree with the statement that the Limpopo Provincial Government review the research outputs regularly. From the above statistics, a conclusion can be drawn that the majority at 14 were not sure if the Limpopo Provincial Government review the research outputs regularly.

Table 4.18 Research coordinators receive regularly training on scientific research

	Response	Frequencies	Percentage
1	Strongly agree	01	3.4%
2	Agree	04	13.8%
3	Not Sure	03	10.3%
4	Disagree	19	65.5%
5	Strongly disagree	02	6.9%
	TOTAL	29	100%

Table 4.18 indicates that the majority of the respondents at 19 (65.5%) disagree that research coordinators in Limpopo Provincial Government receive regular training on scientific research and 02 (6.9%) strongly disagree. Only 04 (13.8%) and 01 (3.4%) agreed and strongly agreed respectively. 03 (10.3%) of the respondents were not sure if research coordinators in Limpopo Provincial Government receive regular training on scientific research. From the above statistics, a conclusion can be drawn that the majority at 21 (72.4%) disagree that research coordinators in Limpopo Provincial Government receive regular training on scientific research.

Table 4.20 Provincial governments has relationship with academic institutions to enhance research

	Response	Frequencies	Percentage
1	Strongly agree	01	3.4%
2	Agree	04	13.8%
3	Not Sure	03	10.3%
4	Disagree	19	65.5%
5	Strongly disagree	02	6.9%
	TOTAL	29	100%

Table 4.19 The Integrated Provincial Research and Development Strategy is aligned to the National R&D Strategy

	Response	Frequencies	Percentage
1	Strongly agree	03	10.3%
2	Agree	11	37.9%
3	Not Sure	12	41.4%
4	Disagree	03	10.3%
5	Strongly disagree	0	0.0%
	TOTAL	29	100%

Table 4.19 indicates that the majority of the respondents at 12 (41.4%) were not sure if the integrated provincial research and development strategy is aligned to the national research and development strategy. While 11 (37.9%) and 03 (10.3%) agreed and strongly agreed respectively, only 03 (10.3%) disagreed with the statement. From the above statistics, a conclusion can be drawn that the majority at 14 (48.2%) agree that integrated provincial research and development strategy is aligned to the national research and development strategy.

Table 4.20 Provincial government has relationship with academic institutions to enhance research

	Response	Frequencies	Percentage
1	Strongly agree	07	24.1%
2	Agree	19	65.5%
3	Not Sure	02	6.9%
4	Disagree	01	3.4%
5	Strongly disagree	0	0.0%
	TOTAL	29	100%

Table 4.20 indicates that the majority of the respondents at 19 (65.5%) agreed with the statement that provincial government has relationship with academic institutions to enhance research and 07 (24.1%) strongly agreed. While 02 (6.9%) were not sure, only 01 (3.4%) disagreed. From the above statistics, a conclusion can be drawn that the majority at 26 (89.6%) agree with the statement that provincial government has relationship with academic institutions to enhance research.

Table 4.21 The government has policies that promote research

	Response	Frequencies	Percentage
1	Strongly agree	04	13.8
2	Agree	20	68.9%
3	Not Sure	02	6.9%
4	Disagree	03	10.3%
5	Strongly disagree	0	0.0%
	TOTAL	29	100%

Table 4.21 indicates that the majority of the respondents at 20 (68.9%) agreed with the statement the government has policies that promote research and 04 (13.8%) strongly agreed. While 03 (10.3%) disagreed only 02 (6.9%) were not sure. From the above statistics, a conclusion can be drawn that the majority at 24 (82.7%) agree with the statement that the government has policies that promote research.

Table 4.22 All provincial government departments have research directorates that support research

	Response	Frequencies	Percentage
1	Strongly agree	01	3.4%
2	Agree	07	24.1%
3	Not Sure	09	31.0%
4	Disagree	10	34.5%
5	Strongly disagree	02	6.9%
	TOTAL	29	100%

Table 4.22 indicates that the majority of the respondents at 10 (34.5%) disagreed and 02 (6.9%) strongly disagreed with the statement all provincial government departments have research directorates that support research. While 09 (31.0%) were not sure of the statement, 07(24.1%) and 01 (3.4%) agreed and strongly disagreed respectively. From the above statistics, a conclusion can be drawn that the majority at 12 (41.4%) disagreed with the statement that all provincial government departments have research directorates that support research.

4.3 ANALYSIS OF DATA COLLECTED THROUGH INTERVIEW

In this section, the responses collected by the interview schedule are presented in a narrative form and the detailed findings are discussed in chapter 5.

4.3.1 Question 1: What are the challenges faced by research coordinators within your Provincial Government Department?

Respondent A:

On this question, the first respondent replied that the research coordinators are faced with the challenge of insufficient research management skills.

Respondent B:

On this question, the second respondent replied that research coordinators are faced with the challenge of unavailability of funds in government departments.

Respondent C:

On this question, the third respondent replied that research coordinators are faced with the challenges of lack of budget dedicated for research development; lack of knowledge and commitment by the majority of senior managers in accommodating research projects in their strategic plans; and further delays by departmental research officials in meeting time frames of completion of research projects requested by research coordinators.

Respondent D:

On this question, the fourth respondent replied that research coordinators are faced with the challenges that there are few researchers to cover the problem faced by farmers in the province hence few farmers are assisted; financial resource is available but is not enough; there is duplication of research work because collaboration between government and universities is limited; and that private companies go directly to districts and municipalities and work with extension officers.

Respondent E:

On this question, the fifth respondent replied that research coordinators are faced with the challenges of budget and support from other department sections such as extension and advisory services.

Respondent D:

Respondent F:

On this question, the sixth respondent replied that research coordinators are faced with the challenges of lack of proper structured communication channels; existence of many committees that duplicate work; lack of attendance and consistency on attendance; and lack of prescribed operational research coordination strategy.

4.3.2 Question 2: What is the research capacity of your Provincial Government Department?

Respondent A:

On this question, the first respondent replied that research capacity of the particular provincial government department consists of three officials responsible for research and development, though there is capacity amongst the officials, it is not sufficient to coordinate twelve departments of the entire provincial administration.

Respondent B:

On this question, the second respondent replied that research capacity of the particular provincial government department is limited because there are not enough personnel.

Respondent C: 3: What are the mechanisms for proper research coordination within your Provincial Government Department?

On this question, the third respondent replied that research capacity of the particular provincial government department is limited.

Respondent D: in a particular provincial government department is that at least each cluster in the provincial government and administration should be allocated one

On this question, the fourth respondent replied that the particular provincial government department has researchers for different directorates, but they are not enough to fulfill the mandate, but however, the available staff is well trained in research methodology and that the development research conducted currently is well supported by personnel with appropriate knowledge.

Respondent E: within a particular provincial government department is that there should be training on research, have computers in all departments and research

On this question, the fifth respondent replied that the particular provincial government department has research coordinators that are well advanced in training and research methodologies and still needed skills in developing the research innovation.

Respondent F: the third respondent replied that the mechanisms for proper research

On this question, the sixth respondent replied that research capacity of the particular provincial government department is excellent with high qualified personnel.

Respondent D:

On this question, the fourth respondent replied that the mechanisms for proper research coordination within a particular provincial government department is that the research service in has a research committee whereby all research to be conducted in the

4.3.3 Question 3: What are the mechanisms for proper research coordination within your Provincial Government Department?

Respondent A:

On this question, the first respondent replied that the mechanisms for proper research coordination within a particular provincial government department is that at least each cluster in the provincial government and administration should be allocated one manager for proper research coordination, one manager for research collaboration and one manager for research information management.

Respondent B:

On this question, the second respondent replied that the mechanisms for proper research coordination within a particular provincial government department is that there should be training on research, have committees in all departments and research forums where meetings are held for information sharing and addressing challenges.

Respondent C:

On this question, the third respondent replied that the mechanisms for proper research coordination within a particular provincial government department is that there should be continuous holding of quarterly research forums meetings; regular tracking of quarterly reports of research projects by coordinators; and ongoing yearly seminars with academic institutions to educate research coordinators on new methods of conducting scientific research.

Respondent D:

On this question, the fourth respondent replied that the mechanisms for proper research coordination within a particular provincial government department is that the research service in has a research committee whereby all research to be conducted in the

province have to be presented and approved only and only if it is aligned to the provincial and national departmental strategy; extension officers have to work with researchers; and external research organizations have to work with head office (province) researchers before they cascade the research work to district offices to avoid duplication.

Respondent E:

On this question, the fifth respondent replied that the mechanisms for proper research coordination within a particular provincial government department is that there should be training on research methodology; presentation of developed research proposals to the internal research committees; and communication of results through attendance of conferences and research forums as well as implementing results with other academic stakeholders and successful universities and departments dealing with research.

Respondent F:

On this question, the sixth respondent replied that the mechanisms for proper research coordination within a particular provincial government department is that there should be proper communication channels; stakeholder participation; and minimization of many existing committees.

4.4 CONCLUSION

In this chapter, the collected data from the respondents was presented, analysed and interpreted in a tabular form and thematic-narrative form on the challenges faced by research coordinators in the Limpopo Provincial Government. The data obtained revealed that the Limpopo Provincial Government Departments have no enough research coordinators and that financial resources are not enough to conduct research; most of the government officials are not sure if the provincial government of Limpopo encourages innovation by devoting scientific and technological research, development

and biotechnology; uncoordinated research results in the duplication of research and that research coordinators are not well trained in research methodology coupled by lack of qualified staff to conduct quality in-house research. The data obtained further proposed that at each provincial government department there should be a full functional directorate that is well resourced in terms of personnel, financial and skills and promotes collaboration between government departments and research and academic institutions. The next chapter presents the discussions of the findings and recommendations for further research based on municipalities.

5.2 OVERVIEW OF THE STUDY

The study was about the challenges faced by research coordinators in the Limpopo Provincial Government. This study was conducted in order to answer the research questions that were the challenges faced by research coordinators in Limpopo Provincial Government, the research capacity of the Limpopo Provincial Government, and the mechanisms for proper research coordination within the Limpopo Provincial Government.

The study used a triangulation approach where both qualitative as well as quantitative research methodologies were applied and the aim of the study was to determine the challenges faced by research coordinators in Limpopo Provincial government. The researcher used non-probability sampling and its sub-type purposive sampling method. The researcher used both questionnaire and interviews as data collection instruments. The responses collected through questionnaire was presented in graphical tabular

CHAPTER 5

FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 INTRODUCTION

This chapter will present the major findings of the study. Conclusion will pull together the various results of the study and consider what they mean and suggest their importance with regard to the challenges faced research coordinators in Limpopo Provincial Government. Recommendations will urge specific actions in respect to policy, practice and, or theory. Recommendations for future researchers to conduct an independent and scientific research for further research and possible studies or subsequent research will conclude this chapter.

5.2 OVERVIEW OF THE STUDY

The study was about the challenges faced by research coordinators in the Limpopo Provincial Government. This study was conducted in order to answer the research questions that were the challenges faced by research coordinators in Limpopo Provincial Government; the research capacity of the Limpopo Provincial Government; and the mechanisms for proper research coordination within the Limpopo Provincial Government.

The study used a triangulation approach where both qualitative as well as quantitative research methodologies were applied and the aim of the study was to determine the challenges faced by research coordinators in Limpopo Provincial government. The researcher used non-probability sampling and its subtype purposive sampling method. The researcher used both questionnaires and interviews as data collection instruments. The responses collected through questionnaire was presented in graphical tabular

forms and the responses collected through interview schedule was presented in a narrative form. The objectives of the study were:

- To describe the challenges faced by research coordinators in the Limpopo Provincial Government.
- To examine the research capacity of the Limpopo Provincial Government Departments.
- To develop mechanisms for proper research coordination within the Limpopo Provincial Government.

5.3 MAJOR FINDINGS OF THE STUDY

In this section the researcher will present the major findings of the study based on research objectives. The three specific objectives of the study were, namely, to describe the challenges faced by research coordinators in the Limpopo Provincial Government; to examine the research capacity of the Limpopo Provincial Government Departments; and, to develop mechanisms for proper research coordination within the Limpopo Provincial Government.

5.3.1 Challenges faced by research coordinators in the Limpopo Provincial Government.

The first objective of the study sought to describe the challenges faced by research coordinators in the Limpopo Provincial Government. The findings of the study were that, namely:

there are no enough research coordinators; insufficient research management skills; financial resources not available and where they are available are very limited to conduct research; research projects are mostly not accommodated in departmental strategic plans; uncoordinated research results in duplication of research; lack of collaboration policy in departments with academic and research institutions, and where collaboration exists, it is minimal and limited; lack of operational research coordination strategy; and that most of the researchers are not sure if the government has something

in place that encourages or even trains researchers on innovation in scientific, technological and biotechnology.

5.3.2 The research capacity of the Limpopo Provincial Government Departments.

The second objective of the study was to examine the research capacity of the Limpopo Provincial Government departments. The findings of the study revealed that research coordinators are not well trained in research methodologies; there is no enough qualified staff to conduct quality in-house research; there is no enough research capacity in terms of quality trained researchers who are knowledgeable to support developmental research; while some departments have excellent capacity having highly qualified personnel, other researchers in some departments still need to be trained and skilled in research and innovation; and that there is a need for appropriate coordinated research that can improve management and service delivery.

5.4 RECOMMENDATIONS OF THE STUDY

5.3.3 Mechanisms for proper research coordination within the Limpopo provincial Government.

The third and last objective of the study was to develop mechanisms for proper research coordination within the Limpopo Provincial Government. The study revealed that research coordinators must receive regular training on scientific research; the provincial government must ensure that all provincial government departments have full functional and operational research and development directorates that are well resourced in terms of personnel, financial and skills; the provincial government must ensure that research coordinators, research managers and research practitioners are well informed on how research reports are regularly reviewed and informed on the South Africa National Research and Development Strategy of 2002 and that it must align with any Integrated Provincial Research and Development Strategy developed or to be developed in future; the provincial government must ensure that there is good and sound relationship between government and academic and research institutions, thus encouraging collaboration; the provincial government continue to ensure that policies that enhance research are promoted; each cluster within the provincial government and

administration should be allocated one manager and that research collaboration and research information management should be allocated one manager each; need for training in research methodologies; each provincial government department to constitute research committee; there be a provincial structured research forum; regular tracking of quarterly reports of the research projects; there should be yearly seminars with academic institutions for induction on new methods to conduct scientific research; extension officers at district level to work with researchers; external research organizations should consult with head office of the provincial department before going to the district offices to avoid duplication of research; establishment of departmental research committees where research proposals are presented; there should be proper communication channels; stakeholder participation and minimization of many existing committees.

5.4 RECOMMENDATIONS OF THE STUDY

From the findings of the study on challenges faced by research coordinators in the Limpopo Provincial Government, the following can be recommended by the researcher, namely, that there should be a collaboration policy that ensures partnerships between government, institutions of high learning, academic and research institutions to solve the problem of insufficient research capacity; lack of research coordinators; insufficient research management skills; duplication of research conducted in the province; and, lack of qualified staff to conduct quality in-house research by the provision of regular training in scientific research and research methodologies by research and academic institutions.

The collaboration policy should further ensure that the two resident universities in Limpopo Province, namely, the University of Venda and the University of Limpopo work together with the provincial government through the establishment of Limpopo Research Observatory (LRO) where all partners shall make resources such as human, financial and in kind available for the enhancement of research. To further enhance collaboration, the provincial government in working together with business sector,

should ensure that the budget constraints that exists is resolved, i.e. allocating enough budget for research and maintenance of research directorates across all sector departments; that government assists the universities with adequate financial resources for scientific training in methodology of research.

From the findings, the researcher further recommends that there is a need for new institutional arrangements to accommodate the establishment of research, development and innovation directorates within sector departments of the provincial government coordinated from the Office of the Premier. The government should ensure that, being guided by the National and Provincial Development Plan, Vision 2030, the provincial sector departmental research agenda are aligned to inform the provincial research agenda that is adequately budgeted for. It must be ensured that the provincial research agenda is made available to the resident universities for research purposes; that whatever research is conducted commissioned by Limpopo Provincial Government, is conducted by Limpopo researchers, but when there is skill shortage, such studies can be outsourced with an agreement that there should be skills transfer to the relevant people; and, lastly to ensure that government libraries have copies of old and new acts/ rules/ policies/ strategies/ plans/ frameworks/ reports and other government publications both in soft and hard copies and make them accessible to the general public;

5.5 RECOMMENDATIONS FOR FUTURE STUDY

From the literature review, findings and recommendations of the study, the researcher proposes that for the alignment of the local and provincial research agenda that supports the implementation of the National Development Plan (2030 Vision), there should be further research on the establishment, management, coordination and operations of the Local and District municipalities research and development directorates.

5.6 CONCLUSION

The main aim of this study was to determine the challenges faced by research coordinators in Limpopo Provincial Government. The specific objectives of the study were to describe the challenges faced by research coordinators in the Limpopo Provincial Government; to examine the research capacity of the Limpopo Provincial Government Departments; and, to develop mechanisms for proper research coordination within the Limpopo Provincial government.

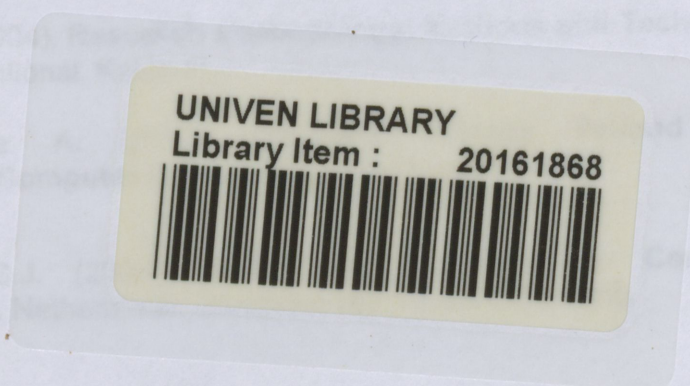
The researcher reviewed the literature that covered the legislative framework in government which include acts, guidelines, plans, strategies and policies which are legal imperatives that compel government to invest in research for development and innovation. The legislative framework covered are Limpopo Provincial Growth and Development Strategy (2004-2014); South Africa National Research and Development Strategy (2002); Draft Limpopo Provincial Research and Development Framework (2013); Limpopo Provincial Research Guidelines (2012); Human Sciences Research Act, 1968 (Act No. 23 of 1968) as amended by Act 99 of 1990; Human Sciences Research Council Act, 2008 (Act No. 17 of 2008); National Research Foundation Act, 1998 (Act No.23 of 1998); Technology innovation Agency Act, 2008 (Act No. 26 of 2008); National Development Plan (Vision 2030); National Infrastructure Plan (2012); and Primary Industries Research and Development Act, of 1989 as amended by (Act No.17 of 1990) in Australia. The reviewed literature further covered the importance of research in government; importance of research coordination; challenges facing research units; and strategies for solving poor research coordination.

For the nature of this study, the researcher used a triangulation approach where both qualitative as well as quantitative research methodologies were applied. The researcher used non-probability sampling and its subtype purposive sampling method. The researcher used both questionnaires and interviews schedule as data collection instruments. Two data analysis methods were used, namely, statistical analysis (Statistical Package for Social Sciences) and thematic analysis. The following ethical

aspects were considered and applied when conducting the study and they are: permission to conduct research; voluntary participation and informed consent; no harm to participants; anonymity; confidentiality; and, deceiving of subjects.

From the findings of the study, it can be concluded that there are not enough research coordinators in Limpopo Provincial Government and that financial resources are not enough to conduct research and where they are available, they are very limited; uncoordinated research results in the duplication of research and that research coordinators are not well trained in research methodology coupled by lack of qualified staff to conduct quality in-house research; limited or even lack of research collaboration policy with academic and research institutions; lack of operational research coordination strategy; and most of the government officials are not sure if the provincial government of Limpopo encourages innovation by devoting scientific and technological research, development and biotechnology.

From the study, the researcher recommended amongst other things that research coordinators must receive regular training on scientific research and that the government should ensure that there should be new institutional arrangements that dictate that all provincial government departments establish full functional and operational research, development and innovation directorates that are well resourced in terms of personnel, financial and skills.



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We hereby wish to inform that Mr. Mphahlele M.P. (Student No. 9809347), a registered Member of Public Management studies at the University of Venda is researching on the following topic: "Challenges faced by Researchers in Language Provisional Government". In order for him to complete his studies, we request your Department to provide him with the information that he might require for his study report. As an institution of higher learning, we believe that the research in a university will yield its results that might also benefit your Department. We therefore encourage your Department to assist him with the necessary information that will be collected through questionnaires and interviews. We understand that the information that will be provided to him will be used only for his studies.

We hope that you find this request to be reasonable. We thank you for your assistance. Yours faithfully,
Prof. M.P. Mphahlele

Prof. M.P. Mphahlele
Professor, Department of O.R. Tambo Institute of Governance and Policy Studies

Prof. A. Mphahlele
Dean, School of Management Studies

Request for permission to collect information Studies:

Appendix A

SCHOOL OF MANAGEMENT SCIENCES
OFFICE OF THE DEAN

To: Head of Department

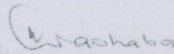
01.10.2014

REQUEST FOR PERMISSION TO COLLECT INFORMATION FOR STUDIES OF MR. MALINDI N.E - STUDENT NO: 9809847.

The above matter refers.

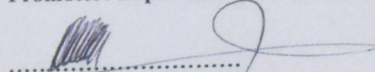
We hereby wish to confirm that Mr. Malindi N.E (Student No.: 9809847), a registered Master of Public Management student at the University of Venda is researching on the following topic: **“Challenges faced by Research Coordinators in Limpopo Provincial Government”**. In order for him to complete his studies, we request your Department to provide him with the information that he might need for his study project. As an institution of higher learning, we believe that the research he is undertaking will yield the results that might also assist your Department. We therefore encourage your Department to assist him with the necessary information that will be collected through questionnaires and interviews. We undertake that the information that will be provided to him will be solely used for this studies.

We hope that you find this to be in order and therefore, anticipate your assistance. If any queries, please feel free to contact me at Cell: 079 422 7369 or Email: Matodzi.Khwashaba@univen.ac.za



Prof. M.P Khwashaba

Promoter: Department of O.R Tambo Institute of Governance and Policy Studies



Prof. A Kadyamatimba
Dean: School of Management Sciences



University of Venda

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Letter to Respondents

Enquiries: Malindi N.E

Cell: 076 910 1358

Email: malindiedward@gmail.com

01 October 2014

P.O. Box 470

Vhufuli

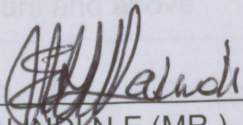
0971

Dear Sir / Madam

I, Malindi Ndivhuwo Edward, a student at the University of Venda, registered for Master of Public Management (MPM) in the Department of O.R Tambo Institute of Governance and Policy Studies. I am conducting a study on the topic "**Challenges Faced by Research Coordinators in Limpopo Provincial Government**".

I am requesting you to be part of my study by answering the research questions. Your participation and support in this important study will be highly appreciated.

Yours Faithfully



MALINDI N.E (MR.)

STUDENT NUMBER: 9809847

Senior Manager

Manager

Deputy Manager

Research Practitioner

4. Working Experience

1 to 5 Years

6 to 10 Years

11 to 15 Years

16 to 20 years

INSTRUMENT

QUESTIONNAIRE

CHALLENGES FACED BY RESEARCH COORDINATORS IN THE LIMPOPO PROVINCIAL GOVERNMENT

This study is based on the challenges faced by research coordinators in Limpopo Provincial Government. I am requesting you to be part of my study by putting a cross (X) in the appropriate answer. There is no right or wrong answer.

SECTION A: BIOGRAPHICAL INFORMATION

1. Gender

Male

Female

2. Age

Less than 21 Years

22 to 30 Years

31 to 40 Years

41 to 50 Years

51 years and above

3. Position of Respondents

General Manager

Senior Manager

Manager

Deputy Manager

Research Practitioner

4. Working Experience

1 to 5 Years	
6 to 10 Years	
11 to 15 Years	
16 to 20 years	
21 Years and above	

SECTION B: CHALLENGES FACED BY RESEARCH COORDINATORS IN LIMPOPO PROVINCIAL GOVERNMENT

	Challenges Faced by Research Coordinators in Limpopo Provincial Government.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5.	There are enough research coordinators in the Provincial Government.					
6.	Financial resources are available to conduct research.					
7.	Research outputs are always accessible to research managers and coordinators.					
8.	Coordinated research supports the achievement of the Provincial Government strategies.					
9.	Provincial government encourages innovation by devoting scientific and technological research, development and biotechnology.					
10.	Uncoordinated government research results in duplication of research.					

THANK YOU FOR YOUR PARTICIPATION

Research Capacity of the Limpopo Provincial Government Departments.		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
11.	Research coordinators in Provincial Government are well trained in research methodology.					
12.	In-house research capacity has enough qualified human capital to conduct quality research.					
13.	Appropriate coordinated research can improve management and service delivery.					
14.	Research coordinators developed scientific research to improve research outcomes.					
15.	There is enough research capacity in terms of quality trained researchers.					
16.	Development-related research is adequately supported by enough personnel with appropriate knowledge.					

Mechanisms for Proper Research Coordination within the Limpopo Provincial Government.		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
17.	The Provincial Government regularly does review on research outputs.					
18.	Research coordinators receive regular training on scientific research.					
19.	The integrated provincial Research and Development Strategy is aligned to the national R&D Strategy.					
20.	Provincial Government has relationship with academic institutions to enhance research.					
21.	The Government has policies that promote research.					
22.	All Provincial Government Departments have research directorates that support research.					

“THANK YOU FOR YOUR PARTICIPATION”

“THANK YOU FOR YOUR PARTICIPATION”

INSTRUMENT
INTERVIEW SCHEDULE

CHALLENGES FACED BY RESEARCH COORDINATORS IN THE LIMPOPO PROVINCIAL GOVERNMENT

1. What are the challenges faced by research coordinators within your Provincial Government Department?

2. What is the research capacity of your Provincial Government Department?

3. What are the mechanisms for proper research coordination within your Provincial Government Department?

“THANK YOU FOR YOUR PARTICIPATION”