IDENTIFICATION OF CHALLENGES AFFECTING CONSTRUCTION PROJECT MANAGEMENT PRACTICE WITHIN THE SOUTH AFRICAN PUBLIC SECTOR – A CASE OF GAUTENG

by

Nkateko Echolls Mkhabele

MKHNKA004

A minor dissertation presented to the Department of Construction Economics and Management in partial fulfilment of the requirements for the degree MSc in Project Management

December 2022

University of Cape Town

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

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

University of Cape Town

UNIVERSITY OF CAPE TOWN

CONSTRUCTION ECONOMICS & MANAGEMENT

PLAGIARISM DECLARATION

Declaration

1. I know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.

2. I have used the Harvard convention for citation and referencing. Each contribution to and quotation in this report, from the work(s) of other people has been attributed and has been cited and referenced accordingly.

3. All the work in this report is my own.

4. I have not allowed and will not allow anyone to copy my work with the intention of passing it off as his or her own work.

5. This thesis/dissertation has been submitted to the Turnitin module (or equivalent similarity and originality checking software) and I confirm that my supervisor has seen my report and any concerns revealed by such have been resolved with my supervisor.

Signature: Signed by candidate

Date: 17-10-2023

DEDICATION

To my family, friends and colleagues who supported me throughout this project, this one is for all of you.

ACKNOWLEDGEMENTS

I thank the almighty lord for giving me strength throughout this project.

I would like to thank my supervisor Mr Mark Massyn for his guidance, patience and always requiring excellence throughout this research study.

I would like to extend my gratitude to the participants who took time from their busy schedules to participate by completing the questionnaires and sharing of knowledge during interviews, and believed in the value and benefit of this study, without you this study would not have been possible. To maintain anonymity, the names of the participants and their organisations have been withheld.

Finally, I would like to thank my family for their for their support, love and prayer, I would not have achieved this without your understanding and sacrifices.

Also, to all my close friends for their support and words of encouragement throughout the duration of this study.

ABSTRACT

Purpose – The construction sector plays a vital role to the South African economy and is amongst the key drivers to economic growth. However, several key challenges in the practice of construction project management have been recognised as affecting the projects delivery success within the sector. This study identifies the key challenges affecting the construction project management practice within the public sector, determine the impact of these key challenges on the implementation as well as recommend the measures for enhancing the implementation process.

Methodology – A comprehensive literature review on construction project management key challenges faced by developing countries within the construction sector abroad and South Africa, was conducted. The study employed qualitative research methodology to obtain primary data, through a questionnaire sent out to construction project management practitioners based in Gauteng and data extracted from the questionnaires guided the questions for the semi-structured one-on-one interviews conducted to confirm, complement or disconfirm perspectives obtained from questionnaires and secondary data information in relation to securing data saturation. Inductive content analysis was used to analyze all data collected, with the Atlas.ti™ latest version used as a qualitative data analysis software programme.

Findings – This study not only validated but also identified the top eight key challenges affecting construction project management practice which the practitioners within public sector in South Africa face. Further, the study demonstrated the impact of key challenges to implementing project management practice. From the secondary data review, the study highlighted the valuable lessons on construction project management practices from developing countries which include Malaysia and Brazil, that can enhance construction project management within the public sector in South Africa. Lastly, the study recommended measures that can be applied to improve project management practices.

Value – the research represents one of the few attempts to contribute to the subject of key challenges faced by the construction project management practitioners within public sector in South Africa and how they should be better managed to enhance successful projects delivery.

Keywords: Construction Project Management; Public Sector; Developing Countries

TABLE OF CONTENTS

PLAGIARISM DECLARATION 1
DEDICATION 2
ACKNOWLEDGEMENTS 3
ABSTRACT 4
TABLE OF CONTENTS 5
TABLE OF FIGURES 9
LIST OF TABLES 10
CHAPTER 1: INTRODUCTION TO THE RESEARCH REPORT 11
1.1 INTRODUCTION 11
1.2 BACKGROUND TO THE RESEARCH PROBLEM 11
1.2.1 Overview of Project Management 11
1.2.2 Project Management in the Emerging Market Economies Public Sector 12
1.2.3 Project Management in the Public Sector in South Africa 13
1.3 PROBLEM STATEMENT AND RESEARCH QUESTION 15
1.4 RESEARCH PROPOSITION 15
1.5 RESEARCH OBJECTIVES 15
1.6 PURPOSE OF THE STUDY 16
1.7 RESEARCH METHODOLOGY 16
1.7.1 Research Approach 16
1.7.2 Data Collecting Method 16
1.7.3 Data Gathering Process 17
1.8 EXPECTED CONTRIBUTION 17
1.9 SIGNIFICANCE TO THE STUDY 17
1.10 LIMITATIONS OF THE RESEARCH 18
1.11 ETHICAL CONSIDERATION 18
1.12 STRUCTURE OF THE RESEARCH REPORT 19
CHAPTER 2: LITERATURE REVIEW 20
2.1 INTRODUCTION 20
2.2 ORIGINS OF PROJECT MANAGEMENT 20
2.3 PROJECT AND PROJECT MANAGEMENT 21
2.4 CRITICAL SUCCESS FACTORS IN PROJECT MANAGEMENT 24
2.4.1 Project Management Success and Project Success 24

2.5 ROLE OF THE PROJECT MANAGER 25
2.6 PROJECT MANAGEMENT IN EMERGING ECONOMIES PUBLIC SECTOR 26
2.7 MALAYSIA 28
2.7.1 Background 28
2.7.2 Overview of the Public Sector Project Management in Malaysia 28
2.7.3 Attributes of the Project Management in Malaysia 29
2.7.4 Project Management Contribution to Malaysian Economic Development 30
2.7.5 Key Challenges to Project Management in Malaysia 31
2.7.6 Malaysia Literature Review: Key Findings 33
2.8 BRAZIL 34
2.8.1 Background 34
2.8.2 Overview of the Public Sector Project Management in Brazil 35
2.8.3 Project Management Contribution to Brazilian Economic Development 36
2.8.4 Key Challenges to Project Management in Brazil 36
2.8.5 Brazil Literature Review: Key Findings 38
2.9 SOUTH AFRICA 39
2.9.1 Background 39
2.9.2 Overview of the Project Management in South Africa 40
2.9.3 Development of the Project Management in South Africa 40
2.9.4 Attributes of the Public Sector Project Management in South Africa 41
2.9.5 Project Management Contribution to South African Economic Development 43
2.9.6 Key Challenges Project Management in South Africa 44
2.9.7 South Africa Literature Review: Key Findings 46
2.10 KEY FINDINGS ON MALAYSIA, BRAZIL AND SOUTH AFRICA 47
2.11 SUMMARY 51
CHAPTER 3: RESEARCH METHODOLOGY 52
3.1 INTRODUCTION 52
3.2 RESEARCH APPROACH AND STRATEGY 52
3.2.1 Case Study 53
3.2.2 Small Samples in Qualitative Research 53
3.3 UNIT OF ANALYSIS 54
3.4 RESEARCH SAMPLE SELECTION 54
3.5 DATA COLLECTION METHOD 55
3.5.1 Secondary Data 55

3.5.2 Primary Data 55
3.6 DATA ANALYSIS METHOD 56
3.6.1 Preparing the Data for Analysis 57
3.6.2 Exploring the Data 57
3.6.3 Validating the Data and Results 57
3.7 LIMITATIONS OF THIS RESEARCH STUDY 58
3.8 ETHICAL CONSIDERATION 59
3.9 SUMMARY 60
CHAPTER 4: RESEARCH FINDINGS AND DISCUSSIONS 61
4.1 INTRODUCTION 61
4.2 DEMOGRAPHIC INFORMATION 61
4.3 PRIMARY RESEARCH FINDINGS 64
4.3.1 PARTICIPANT 1 64
4.3.2 PARTICIPANT 2 68
4.3.3 PARTICIPANT 3 72
4.3.4 PARTICIPANT 4 76
4.3.5 PARTICIPANT 5 79
4.3.6 PARTICIPANT 6 84
4.3.7 PARTICIPANT 7 88
4.4 DISCUSSION OF FINDINGS 92
4.4.1 RESEARCH THEME 1: Key Challenges Affecting Construction Project Management Practice Within South African Public Sector 92
4.4.2 RESEARCH THEME 2: Factors Impacting the Implementation of Project Management Practice Within the South African Public Sector 95
4.4.3 RESEARCH THEME 3: Measures that can be Applied to Improve Construction Project Management Practice in the Public Sector in South Africa 100
4.5 SUMMARY 107
CHAPTER 5: CONCLUSSION AND RECOMMENDATIONS 108
5.1 VALIDATION OF THE PROBLEM STATEMENT 108
5.2 VALIDATION OF THE RESEARCH QUESTION 109
5.3 ACHIEVEMENT OF THE RESEARCH OBJECTIVES 109
5.3.1 RESEARCH OBJECTIVE 1 109
5.3.2 RESEARCH OBJECTIVE 2 110
5.3.3 RESEARCH OBJECTIVE 3 111
5.4 CONCLUSSION 112

5.5 RECOMMENDATIONS 113
5.6 RECOMMENDATIONS FOR FURTHER STUDIES 114
REFERENCES 115
APPENDICES 125
APPENDIX 1 126
QUESTIONNAIRE 126

TABLE OF FIGURES

Figure 2.1: Project Management Process Group and Knowledge Area Mapping (PMI, 2017) 22

Figure 2.2: Critical Success Factors (Liu and Walker, 1998) 24

Figure 3.1: Triangulation Principle 58

Figure 4.1: Participants Job Titles in Percentages 61

Figure 4.2: Type of Projects you have been Involved In, In Percentages 62

Figure 4.3: Total Value of Projects Executed in the Last Five Years, in Percentages 63

Figure 4.4: Factors Inhibiting Delivery of Projects Successfully 97

Figure 4.5: Recommendations Tree Diagram 103.

LIST OF TABLES

Table 2.1: Project Management Challenges in South African Public sector 44

Table 2.2: Key Findings on Malaysia, Brazil and South Africa 48

Table 4.1: Participants Job Titles and Years of Experience 61

Table 4.2: Projects you have been Involved In 62

Table 4.3: Number of Projects you are Currently Involved In and Executed in the Last Five Years 63

Table 4.4: Total Value of Projects Executed in the Last Five Years 63

Table 4.5: Ranked Key Challenges Towards Lack of Construction Project Management 64

Table 4.6: Ranked Key Challenges Towards Lack of Construction Project Management 68

Table 4.7: Ranked Key Challenges Towards Lack of Construction Project Management 72

Table 4.8: Ranked Key Challenges Towards Lack of Construction Project Management 76

Table 4.9: Ranked Key Challenges Towards Lack of Construction Project Management 80

Table 4.10: Ranked Key Challenges Towards Lack of Construction Project Management 84

Table 4.11: Ranked Key Challenges Towards Lack of Construction Project Management 88

Table 4.12: Key Challenges Towards Lack of Project Management Expertise 92

Table 4.13: Factors inhibiting delivering projects successfully 95

Table 4.14: Measures to improve project management expertise 101.

CHAPTER 1: INTRODUCTION TO THE RESEARCH REPORT

1.1 INTRODUCTION

Effective project management is key to social and economic transformation in emerging countries but it suffers from under-developed local capacity and poor implementation of the five main project management processes which include project initiation, project planning, project execution, control and validation, close-out and evaluation. Further, most emerging countries may still be grappling with several systemic issues of security problems, power failure, central and rigid organizational structures, which may be overwhelming to project managers (Adeyemi and Idoko, 2008).

Ling and Formoso (2014) emphasize that in emerging market economies (EMEs), also known as developing countries, which usually undergoes high rates of growth, the built environment needs to be expanded and improved simultaneously to help speed up the country's economic growth and national development. Project management which is strong and ideally integrated, is important for managing the existing infrastructure and newly developed assets, for the country to have improved capabilities for producing services and goods. It is therefore important in this context, to not only deliver projects effectively but also to optimize life-cycle costs of the built assets, and those investments are vital for improving the population's quality of living within emerging economies which most have a wide range of social challenges such as poor wealth distribution, unskilled labour force and inadequate housing conditions (Ling and Formoso, 2014).

EMEs have quite a large potential for growth and profit from projects, however several limitations and risks have also been witnessed in them, which include relatively lack of innovations and low productivity, lack of capital availability and skilled labour, unclear or poor implementation of government policies which leads to risks of managing projects (Athukorola *et al*, 2007). They further stated that project management practical issues should therefore be reflected on to enhance performance and project delivery in the emerging economies.

1.2 BACKGROUND TO THE RESEARCH PROBLEM

1.2.1 Overview of Project Management

The PMI (2013) define project management as "the application of knowledge, skills, tools and technologies to project activities to meet the project requirements".

Project management as a practice has its history going back to the period of building of the pyramids in Egypt or even before, but modern project management was developed by the

US military in the 1950s through developing of techniques such as Programme Evaluation and Review Techniques (PERT), Critical Path Method (CPM) and Work Breakdown Structure (WBS) (Morris, 1997). Project management professional organisations were formed such as IPMA in 1965, PMI in 1969, APM in 1972 and AIPM in 1976, and were responsible for developing bodies of knowledge with PMI releasing the first edition of the Project Management Body of Knowledge (PMBOK Guide) in 1987 (Turner *et al*, 2013). In addition to the interest shown by the military and construction industry, the information technology field showed sustained interest to project management and supported its development in the 1980s (Abbasi & Jaafari, 2018).

According to Baratta (2006) three fundamental elements of project management namely scope, budget or cost and schedule or time known as the triple constraints must be well managed for a project to be successfully completed, and the quality of work is constrained by the project's budget, scope and deadlines. Baratta (2006) further states that to ensure success for the organisation at large, project managers should manage their projects to realize the project market value and towards sustained organisational success instead of only towards successful completion.

1.2.2 Project Management in the Emerging Market Economies Public Sector

While much on project management has been published for developed economies, there is less literature on emerging market economies public sector (Nekvapilova and Pitas, 2016). The spotlight on project management in emerging markets economies has for some time been focused on the BRIC countries of Brazil, Russia, India and China, who are considered the epitome of the EMEs, following the doubling in size of their economies between the years 2004 and 2013, and accounting for a combined 21% of global gross domestic product (GDP) and 53% of emerging market GDP (Boumphrey and Bevis, 2013).

Ling and Formoso (2014) define emerging market economies, also known as developing countries, as those countries which have fast-growing, diverse and vibrant economies, are newly industrialized with growing population and can offer greater returns to investors due to rapid growth but also offer exposure to intrinsic risks. These include but not limited to BRICS countries (Brazil, Russia, India, China and South Africa) and CIVETS countries (Colombia, Indonesia, Vietnam, Egypt, Turkey and South Africa) as well as Malaysia, Poland and Philippines amongst others (Ling and Formoso, 2014). However, for the purpose of this study, only South Africa, Malaysia and Brazil's project management practices within their public sector will be considered and comprehensive literature review conducted on them. The three countries are not only developing countries but they all have diversified their economies from natural resources to mainly science, tourism, commerce and construction

sectors, with the construction sector in Malaysia contributing an average of 4,3% to GDP over the past two decades and achieved the status of newly industrialised market economy in 1990 (Khan *et al*, 2014). Brazil's construction sector has been contributing at an average 5,409% to GDP over the past two decades and has also achieved the status of newly industrialised market economy (Barbosa and Vilnitis, 2017). Lastly, South Africa which has also achieved the newly industrialised market economy status has been contributing an average of 5.0% in the last two decades but saw a decline in the last decade of up to 2.8% contribution in 2020 (Statistics South Africa, 2020).

The public sector, represented by the public administration, is the backbone of a modern state and, it includes a set of institutions which have either central or territorial jurisdiction including public authorities, regions, cities and municipalities. The purpose of its functioning is to satisfy the needs of others rather than its own whilst ensuring social goals balance the economic goals (Twproject, 2019). The public sector is responsible for implementing both government short-term and long-term projects while ensuring that social and economic objectives are met (Nekvapilova & Pitas, 2016). Further, the need for improved project success suggests that it is vital for public sector project managers to understand and be concerned with the challenges facing the sector and how they can be effectively overcome (Twproject, 2019).

South Africa is a developing country or emerging market economy in the South-most tip of Africa, which gained independence in 1961 but only became a democratic government in 1994 when sanctions were lifted and the country started experiencing foreign direct investments (Trading Economics, 2020). Its GDP grew at an annual average of 2.5% from 1994 to 1999, 3.25% from 1999 to 2008, 2.4% from 2009 to 2018 and 0.2% from 2018 to current. South African economy was largely driven by resources and commodities which were in high demand but failed to grow at higher rates or diversify into other less volatile and vulnerable sectors hence the current poor economic growth (Southafricanmi.com, 2020).

1.2.3 Project Management in the Public Sector in South Africa

According to Mabelebele (2006), South African democratic government is confronted with multiple challenges of addressing the socio-economic backlogs inherited from the apartheid legacy and, detailed programmes and projects have been initiated with insufficient and less-developed state capacity to implement them, and as a result, poorly managed public sector projects cost the taxpayers a fortune yearly.

Mabelebele (2006) contends that South African public service project management has not grown to a level at which it can be quantified. Mabelebele (2006) further stated that most

government departments do not have mature project management offices (PMOs) to drive the establishment of the effective project management culture and very tight government planning cycle which makes it challenging to plan and implement multi-year projects. This environment therefore create limitations to the application of classical project management. Critical skills, which are not only confined to the knowledge of business and risk management but require integration management, are therefore required (Mabelebele, 2006). Selepe (2019) concur that despite the significant investment since the dawn of democracy in 1994, most of the projects in the public sector have failed to meet delivery expectations in South Africa, with the lack of extensive project management experience identified as the most contributing factor. In seeking to address these gaps and enhance future outcomes, the South African government has resorted to engaging private sector practitioners to increase project management competency within its public sector. Selepe (2019) concluded that the incorporation of extensive project management mechanisms into the public sector will yield efficiency and effectiveness benefits, and will enable the public sector to be highly project oriented and gradually refrain from utilising the services of private sector project management companies.

Barry and Uys (2011) argues that the project management status in the organisations in South Africa need to change. According to their study, 69% of the respondents either agreed or strongly agreed that methods currently used in their organisations to manage projects needs to change. They concluded that in South African organisations, the use of project management evaluation tools was found to be low and as a result, organisations are encouraged to effectively use these tools to enhance their project management practices so it can be comparable with international best practice.

PWC (2017) emphasizes that when it comes to governmental and public initiatives in emerging economies, high number of spectacular delivery failures, budget overruns and obvious incompetence on the part of project managers seems endless, resulting in enraged taxpayers and loss of faith in governments and public organisations capability to successfully deliver on its projects. They futher state that outcomes and resulting benefits in public sector projects can come in many forms, which include an increased range of services, enhanced or more cost-effective delivery of services and other non-financial or not easy to quantify outcomes in line with the government or public organisation’s political objectives.

Project management competencies of public sector organisations responsible for infrastructure development in most emerging market countries are unsatisfactory even though most of them delineate themselves as being able to manage projects effectively. Further, they mainly depend on accidental project managers who lack the necessary skill required (Rwelamila,

2007). Lack of Professional Project Management Practice (PPMP) particularly in emerging market countries has led to low productivity and poor quality of work. Even though professional project management is an evolving discipline, the application of effective construction project management techniques in many emerging market countries still constitute a serious challenge (Kissi and Ansah, 2013).

This study focus on understanding the challenges that are contributing to the poor construction project management practice within the public sector in South Africa as an emerging market economy, from the project management practitioners viewpoint and recommend measures to enhance future outcomes.

1.3 PROBLEM STATEMENT AND RESEARCH QUESTION

The problem statement addressed in this research is:

> *Most of the construction projects in the public sector have failed to meet delivery expectations in South Africa, and poor construction project management practice has been identified as the most contributing factor.*

The research question:

> *What measures should be applied to enhance the construction project management practice within the South African public sector to reduce construction projects failure?*

1.4 RESEARCH PROPOSITION

The research proposition examined is as follows:

> *Poor construction project management practice will result in construction projects not meeting delivery expectations within the public sector in South Africa.*

1.5 RESEARCH OBJECTIVES

The major objectives of this research study are the following:

i. To identify the key challenges affecting construction project management practice within South African public sector.

ii. To determine the impact of the key challenges identified on the implementation of project management practice within the South African public sector.

iii. To recommend measures that can be applied to enhance project management practice in the public sector in South Africa.

1.6 PURPOSE OF THE STUDY

Most public sector projects fail to meet delivery expectations in South Africa with poor construction project management practice in the public sector identified as a key contributing factor. The purpose of this study is to evaluate the key challenges towards poor project management practices in the public sector, draw valuable lessons on project management practices enhancement from other developing countries and, recommend measures to improve project management practice, which should result in improved delivery of successful projects within the public sector in South Africa and, ensure that infrastructure development remain the key economic driver with significant contribution to the country's economic growth.

1.7 RESEARCH METHODOLOGY

1.7.1 Research Approach

In addressing the research objectives described above, a qualitative research methodology approach was adopted to enable investigation and the interpretation of a sample until data saturation was reached.

Secondary data obtained from documents which include peer-reviewed journals, scholarly articles and published books on the literature review of emerging economies and identifying project management practices similar experience and draw lessons from it.

Primary data source was through a questionnaire and the one-on-one semi-structured interviews conducted with the sampled participants.

Data analysis consisted of an analysis of the data collected from the selected sample of public sector project management practitioners.

Conclusion were drawn and presented based on the data obtained.

1.7.2 Data Collecting Method

Data collection method for this study used multiple sources and was divided into secondary and primary methods. Secondary data was obtained from documents and primary data collected through questionnaires and semi-structured individual interviews. Participants to the study were informed by email about the research and its purpose. Those who agreed to

participate were sent the consent form to sign. Upon receipt of signed consent forms, questionnaires were sent and participants were requested to complete and return it within two weeks. Upon receipt and review of the questionnaires which enabled compiling of interview questions, participants were individually phoned to arrange a suitable date and time for the one-on-one interviews. Purposefully selected construction project management practitioners within Gauteng in South Africa, with experience within the public sector were chosen to participate in the study.

The validity techniques in this qualitative research included the triangulation strategy and the use of inductive approach to ensure rigor during data collection and credibility of data.

1.7.3 Data Gathering Process

Questionnaires were sent by email to participants for completion within two weeks prior to arranging one-on-one interviews which were conducted mainly virtually. This process increased the chances of successful data collection, accuracy and its completeness, provided the respondent with more time for considered response and eliminate interviewer bias. The participants privacy and anonymity was maintained by keeping the data confidential and using pseudonyms instead of their names and organisations.

1.8 EXPECTED CONTRIBUTION

According to *A Guide to the Project Management Body of Knowledge* (PMI, 2013) project management draws on 10 knowledge areas, it brings a unique focus which is shaped by goals, the resources and schedule of each project and the value of such focus is proved by the rapid worldwide growth of project management as a recognized and strategic organizational competence, which lead to consistent and successful completion of programs and projects to meet strategic business objectives.

The aim of this dissertation is to contribute to the subject of successful construction project management within EMEs public sector particularly in South Africa and how the key challenges faced should be managed in order to fulfil business objectives.

1.9 SIGNIFICANCE TO THE STUDY

The construction industry plays a major role in the further growth of developed countries and development of developing countries. According to Windapo and Cattell (2013) infrastructure development is amongst the key economic drivers in South Africa and has a significant contribution to the country's economic growth. Maharaj *et al* (2006) argued that good practices and governance within public sector projects will enable and increase investor

confidence. However, the National Department of Public Works & Infrastructure admits it need to strengthen its projects implementation unit to ensure effective and efficient projects implementation, monitoring and successful delivery (CIDB Annual Report 2018/2019).

Comprehensive review of literature which included policy papers, peer-reviewed articles, research studies conducted and newspaper articles reveal that the performance of public sector projects delivery is poor. Most public sector projects fail to meet delivery expectations in South Africa with poor construction project management practice identified as a key contributing factor. This study is therefore significant in that it aimed at identifying the key challenges affecting construction project management practice in the public sector, identifying the perception of the construction project management practitioners of the main challenges contributing to poor construction project management, drawing valuable lesson on project management practice enhancement from other developing countries, and recommending measures to improve construction project management practice, which will result in improved delivery of successful projects within the public sector in South Africa.

1.10 LIMITATIONS OF THE RESEARCH

The scope of this research is limited to construction project management within the public sector in South Africa. Private sector did not form part of the study. A similar study in other sectors of interest is encouraged to compare their level of impact in construction project management and projects delivery.

This research is limited to the primary data collected in Gauteng, South Africa. This therefore opens an opportunity for expanding the research and contribution to the subject matter by widening the research to include other developing countries outside the Republic of South Africa.

The research required more time for data collection considering the individual interviews conducted and the analysis of data collected.

1.11 ETHICAL CONSIDERATION

To ensure the integrity of the research and that no harm is done, full consent from participants was obtained prior to them participating in this study. Participants were informed about the purpose of the study, data collection procedure that would be followed, and that their participation is voluntary and they may exercise the right to withdraw from the study at any stage if they wish to do so. Participants anonymity and their organisations in the study was ensured by not disclosing their personal information on the completed questionnaire as well as detaching the written consent from the questionnaire. Pseudonyms were used

instead. Adequate level of confidentiality of the research data was ensured by not revealing the subjects' identities when reporting or publishing the study. Written letter of permission to conduct the study as obtained from the Department of Construction Economics and Management was attached to the questionnaire when sending it out. Participants were assured that the collected data will only be used for academic purpose.

1.12 STRUCTURE OF THE RESEARCH REPORT

This minor dissertation is structured into five chapters and as follows:

Chapter 1: This chapter comprise the introduction to the research topic, define the problem statement, introduce the research question, objectives as well as limitations of the research.

Chapter 2: This chapter comprise of the comprehensive literature review from published journals, books, dissertations, schorlarly articles, etc. on the same topic, with the view of understanding the knowledge as established by other researchers on the similar topic and of contributing further to the research. The literature review focus on Malaysia, Brazil and South Africa which are EMEs to identify similar and dissimilar experiences regarding their construction project management challenges. The researcher drew lessons from the literature review which together with the primary data from the questionnaires and interviews, provided lessons learnt, to improve construction project management practice challenges to enhance delivery of successful projects in South Africa.

Chapter 3: It discusses the research methodology used in this study and why such methodology was chosen.

Chapter 4: This chapter cover the presentation, analysis and interpretation of the data collected through the questionnaire and semi-structured interviews. It also discusses the findings of this study to determine whether the research question have been answered and the objectives addressed by the findings.

Chapter 5: It concludes the study based on the empirical data and provides recommendations for further research.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter provides an overview of key challenges to the practice of construction project management within the public sector in emerging countries, particularly Malaysia, Brazil and South Africa. It provides several definitions by various authors on the concepts of project management, project management success, project success, etc., and description on critical success factors in project management, that which will be used frequently throughout this study. It further review the attributes of project management in the above three developing countries, its project management contribution to its economic development, key challenges to project management and draw lessons on the key findings with the view of learning from, when identifying key challenges affecting construction project management within the public sector in South Africa.

2.2 ORIGINS OF PROJECT MANAGEMENT

Project management is the “application of knowledge, skills, tools and techniques to project activities to meet the project requirements” (PMI, 2013).

According to Seymour and Hussein (2014), human beings have been working on projects since ancient history where creative architects and engineers of the time delivered monumental projects such as The Great Wall of China, the Colosseum, Great Pyramid of Giza and Stonehenge amongst others, through carefully thinking through the processes of the project from initiation phase to planning, execution, monitoring and until project closing. Someone had to manage the many workers for several years, for each of this projects as well as ensure adequate supplies to sustain the project and, ensure the project stays on track and that the end result meet the expectations.

Kwak (2003) contends that modern project management started between 1900s and 1950s and further capture the history of modern project management by identifying four periods in its history which the first period is prior to 1958 where mainly Gantt Chart was invented by Henry Gantt as well as the concept of job specification. Kwak (2003) further defined the second period between 1958 and 1979 as significant for technological advancements, one such advancement being the introduction of the first plain paper copier by Xerox. The 1950s saw an increase in projects size and complexity particularly development of aircraft, naval vessels, missiles and communication systems proving existing management techniques inadequate and leading to the development of two new network-based planning and control methods, one by DuPont Corporation in 1957 called Critical Path Method (CPM) and the

other by the Navy in 1958 called Program Evaluation and Review Technique (PERT) (Nicholas and Steyn, 2011). Another core project management tool, the Work Breakdown Structure (WBS) was developed. In the same period, International Project Management Association (IPMA) was formed in 1965 and mainly promoted project management in Europe, Asia, and Arab Countries whereas Project Management Institute (PMI) primarily based in USA was formed in 1969 and widely known for publishing the Project Management Book of Knowledge (PMBOK).

The third period between 1980 to 1994 is mainly characterised by the multi-tasking personal computers which made an impact in many aspects of work, business as well as project management. The PMBOK guide was established in 1987. The PRINCE model was also introduced by the United Kingdom government around the same time.

According to Kwak (2003), the fourth and final period, which extends from 1995 to present saw the upgrading of PRINCE to PRINCE II in 1996, the introduction of the Critical Chain Project Management (CCPM) method in 1997 for planning and managing projects. The American National Standards Institute (ANSI) followed by the institute of Electrical and Electronics Engineers (IEEE) recognised PMBOK as a standard in 1998. 2008 and 2012 saw the release of the 4th and 5th edition of the PMBOK Guide respectively, which today, is recognised as the global standard for project management and as one of the best and most versatile resources available for the professional.

2.3 PROJECT AND PROJECT MANAGEMENT

Several authors have provided different definitions on the concept of project management. Olsen (1971) defined project management as the application of a collection of tools and techniques such as the Critical Path Method (CPM) and matrix organisation to direct the use of diverse resources toward the accomplishment of a unique, complex, one-time task within time, cost and quality constraints. Each task requires a particular mix of these tools and techniques structured to fit the task environment and life cycle from conception to completion of the task. Turner (1993) suggests that project management is the art and science of converting vision into reality. Kerzner (2009) defines project management as planning, organizing, directing, and controlling of the company resources for a relatively short-term objective established to complete specific goals and objectives. PMBOK (2013:5) further defines project management as the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. APM Body of Knowledge define project management as ‘the application of processes, methods, skills, knowledge and experience to achieve specific project objectives according to the project acceptance criteria within agreed parameters‘. It further emphasizes the distinguishing key factor between project management and just

'management' which is that project management has final deliverables constrained to a finite timespan and budget, unlike management which is an ongoing process (APMBoK, 2019). Project management is realized through the application and integration of the 47 project management processes, logically grouped and categorized into five process groups which are initiating, planning, executing, monitoring and controlling, and closing (PMI, 2017) and as per figure 2.1 below:

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work 4.4 Manage Project Knowledge	4.5 Monitor and Control Project Work 4.6 Perform Integrated Change Control	4.7 Close Project or Phase
5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
6. Project Schedule Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Durations 6.5 Develop Schedule		6.6 Control Schedule	
7. Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
8. Project Quality Management		8.1 Plan Quality Management	8.2 Manage Quality	8.3 Control Quality	
9. Project Resource Management		9.1 Plan Resource Management 9.2 Estimate Activity Resources	9.3 Acquire Resources 9.4 Develop Team 9.5 Manage Team	9.6 Control Resources	
10. Project Communications Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Monitor Communications	
11. Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses	11.6 Implement Risk Responses	11.7 Monitor Risks	
12. Project Procurement Management		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	
13. Project Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Engagement	13.3 Manage Stakeholder Engagement	13.4 Monitor Stakeholder Engagement	

Figure 2.1: Project Management Process Group and Knowledge Area Mapping (PMBOK, 2017)

The mapping of Process Groups as shown above which coincide with the 10 Project Management Knowledge Areas which take place during anyone of these process groups are key to effective project management.

Managing a project typically includes several factors but is not limited to addressing the various needs, concerns, and expectations of the stakeholders in planning and executing the project; setting up, maintaining, carrying out communications among stakeholders that are active, effective, and collaborative in nature; managing the stakeholders towards meeting project requirements and creating project deliverables; balancing the competing project constraints which include but not limited to, scope, schedule, budget, quality, resources and risks (PMBOK, 2013:6).

Damoah (2015) argues that to define project management as a science that requires a specific methodology is flawed, given that cultural differences across various geographical locations can influence project perfomance, on the other hand, defining project management without set models, frameworks and management practices because of differences in cultures is not enough due the fact that project managers will not be able to manage projects efficiently without following any set models, frameworks and management practices. To adapt the two views, he defined project management practices as the use of management models, tools and practices accepted in the local socio-cultural management practices context; to plan, organise, direct and co-ordinate an organisation's resources to accomplish a task with a defined start and an end date to achieve specific goals and objectives. PMBOK (2013:3) define a project as a temporary endeavor undertaken to create a unique product, service, or result and which has a definite beginning and an end. Damoah (2015) therefore further argues that project management can be considered as a subset of project, in that project management is the means by which the aims of a project are accomplished.

This researcher agrees with the above adaptation of the two views, on the use of management tools and techniques, skills and knowledge to achieve project objectives within a defined timeframe, but note that the argument does not address the challenge of adapting cultural differences of project team members from different geographical locations. Project delivery, depending on the nature and complexity of the project, can involve project stakeholders and team members from across different backgrounds and cultures, who have only come together for that particular purpose since project management deliverables are constrained to a finite timespan.

2.4 CRITICAL SUCCESS FACTORS IN PROJECT MANAGEMENT

Spalek (2005) identifies the following critical success factors in project management as having a substantial influence on the success of a project:

- Formally establishing the project manager;
- Project managers' competencies;
- High authority of the project manager;
- The project goal set in a clear and measurable way;
- Formally establishing a project team and;
- Top management support for the project;

Els *et al* (2012) in their study posit that project success concept comprises of two dimensions which are 'What to achieve' (success criteria) and 'How to achieve' (success factors) and define project success as 'achieving the success criteria of stakeholders' appreciation, completion on time, within cost and quality through success factors of human management, process, contractual and technical, and organisation'. The study further grouped the elements of critical success factors as shown in the diagram below;

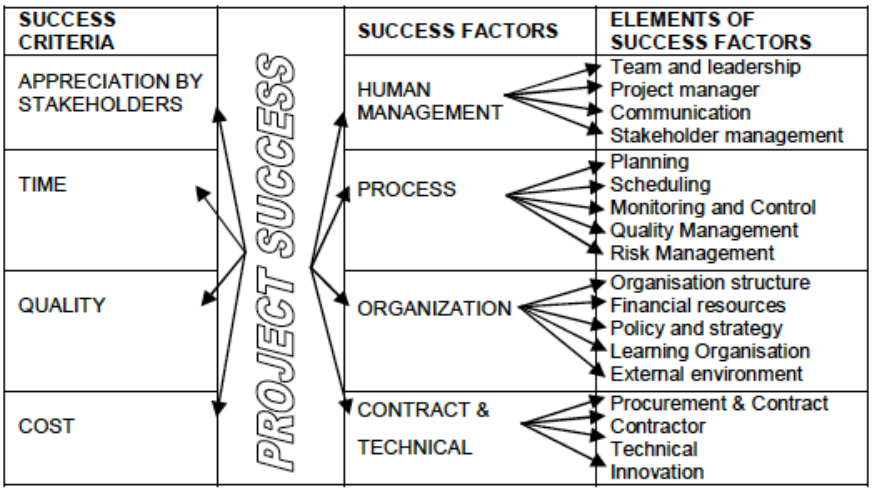


Figure 2.2: Critical Success Factors (Els et al, 2012)

2.4.1 Project Management Success and Project Success

Determining whether a project is a success or a failure can be far more complex. Depending on the stakeholder, a project perceived as a success by a project manager and the project team might be considered a failure by the client or end-user. Liu and Walker (1998) argued that project success can mean different things to different people due to varying perceptions and point of view, which can lead to a disagreement about the success of a project.

Project management success focuses on fulfilling the scope, cost, time and quality criteria, whereas, **project success** deals with the effects of the project's final deliverables, namely project goals, project purpose and satisfaction of stakeholders (Sigurdarson, 2009). Cooke-Davies (2002) concur by defining project management success as being measured against the traditional gauges of performance which include time, cost and quality and project success as being measured against overall objectives of the project.

Project success should be measured in terms of completing the project within the constraints of scope, time, cost, quality resources and risk, as approved between the project manager and the senior management and, to ensure realization of benefits for the project, a test period should form part of the total project time before handing it over for permanent operations (PMBOK, 2013).

Shahin and Jamshidian (2004) argues that project management plays a vital role in the success of a project but such a role is affected by other factors which are outside the direct control of the project manager and, it is for this reason that projects can succeed or fail independently of project management success because it meets or fails to meet the higher and long-term objectives compared to the specific and short-term targets of project management.

It therefore follows from the above that for a project to be successful and appreciated by all stakeholders, it require a project manager with relevant project management competencies to lead a competent and innovative project team, to deliver on clear and measurable project goal and objectives with the support of the top management. The organisational structure, policies and strategies should be conducive and not impede the project management process. It therefore becomes vital on the planning stage to agree on project deliverables and objectives with all stakeholders to ensure everyone's satisfaction at the end.

2.5 ROLE OF THE PROJECT MANAGER

Burke (2013:30) defines a project manager as an individual assigned by the performing organisation to lead the team that is responsible for achieving the project objectives. Beal (2013:1) further defines a project manager as a person responsible for leading a project from its inception to completion, and this includes its planning, organisation, execution, monitoring and controlling, and managing the people, resources and the project scope.

Project managers have the responsibility to satisfy the task needs, team needs and individual needs, and with project management being a critical strategic discipline, the project manager's role becomes increasingly strategic and becomes the link between the strategy and the team (PMBOK 2013:17). Even though the understanding and application of knowledge, tools

and techniques are recognized as good practice, it is not sufficient for effective project management, the project manager should also possess the following competencies (PMBOK 2013:17);

- **Knowledge** – refers to what the project manager knows about project management.
- **Performance** - refers to what the project manager is able to do or accomplish while applying his or her project management knowledge.
- **Personal** - refers to how the project manager behaves when performing the project or related activity. Personal affectiveness encompasses attitudes, core personality characteristics, and leadership, which provides the ability to guide the project team while achieving project objectives and balancing the project constraints.

Though traditional project management competencies are critical for project success, communication between team members and the entire network is vital to support a shared understanding of the project and its goals. Managing projects successfully therefore require a balance of skills including interpersonal ability, technical competencies, and cognitive aptitude, along with the capability to understand the situation and people and then dynamically integrate appropriate leadership behaviours (Pant and Baroudi, 2008).

2.6 PROJECT MANAGEMENT IN EMERGING ECONOMIES PUBLIC SECTOR

According to Fryer *et al* (2007), public sector comprise of organisations that delivers governmental services and goods at national and local levels and, the key points that characterize the public sector include: (1) although there are financial controls and objectives, maximizing profit is not the main goal; (2) public sector have several stakeholders; (3) distinct areas for politics, management and professional services exist that have to negotiate with each other; (4) there is lack of clarity about who its customers are; (5) the management of the public sector is subject to the political will and, with change in political administration, management reorganisation also occur in the organisation. Governance in the public sector is an emerging theme associated with a real political need to satisfy stakeholders by demonstrating accountability and transparency while effectively implementing policy. Initiatives in the form of projects and programs, relating to governance are generated by a need for improvement of organizational performance and ability to implement and adapt to change, encouraging a variety of project management implementations in the public sector. Further, the magnitude of the support that project management provides in meeting these demands of public-sector governance is directly

dependent on the value from investment in project management maturity (Crawford and Helm, 2009).

According to Rwelamila (2017), emerging market economies (EMEs) or developing countries venture into Public-Private Partnerships (PPPs) projects to respond to some of its societal problems regarded as hard to manage and to enhance the efficiency of government action. His study concluded that even though PPP projects brings the required development in EMEs which boost economic growth, they fail to really embrace the first “P” (the public) by being fully inclusive in their approach but dominated by an exclusive approach, and this is associated with the handling of project stakeholder management for which the study advocates for a “paradigm shift” in this aspect of project management process.

Strong and ideally integrated project management capabilities in emerging economies is crucial to manage the existing infrastructure and optimize the life-cycle costs of those assets as well as deliver projects effectively as this help accelerate the country’s economic growth, improve the population’s quality of living and address the wide range of social challenges associated with EMEs which include unskilled labour force, poor wealth distribution and inadequate housing conditions (Ling and Formoso, 2014).

Even though large projects in EMEs provide immense opportunities in terms of growth, employment and creation of wealth, managing such projects in these economies poses several challenges and limitations to project management which include resource limitations, weak policies leading to delays in project approvals, accessibility sometimes becomes a key issue in managing a project successfully as recovery might take longer in some EMEs following natural disasters with the project running into many problems, the standard of infrastructure facilities, political instability, and time and cost overruns. Project management therefore requires special skills in EMEs and project managers should be trained to deal with complexities, uncertainties and ambiguities in addition to the project management tools and techniques (Athukorala *et al*, 2007).

Developing countries present various factors that influence project performance and due to the inherent complexity and various problems encountered in implementing infrastructure projects, the project manager must appreciate the project environment, maintain flexibility, and be competent enough to be able to analyse the nature of the associated problems and their adverse effects on the success of the project and address them promptly (Yanwen, 2012).

According to PMBOK (2013:17) project management is a critical strategic discipline which requires the role of the project manager to be increasingly strategic and become the link

between the strategy and the team. The existence of several social, cultural, political, and financial problems leads to poor management performance, and therefore the strategy for implementing project management in developing countries must be consistent with the cultural and characteristics of that particular society and configuration of its economic, political and administrative system (Khalifu al Muqeemi *et al.*, 2008).

There is sufficient evidence to strongly suggest that most future growth and successes of public and private sector organisations will be as a result of successful development of projects, that generate new and state of the art infrastructure facilities, excellent public domain services to citizen and sustainable policies which will create a conducive environment for appropriate investments, and new products, services, or procedures respectively (Rwelamila and Ogunlana, 2015).

2.7 MALAYSIA

2.7.1 Background

Malaysia is a developing country in Southeast Asia which gained its independence in 1957 and, from 1971 to 2018 it managed to grow its GDP at an annual average of 6.6% per annum while also diversifying its economy from natural resources, i.e. agriculture and mining, and expanded in the science, tourism, commerce and medical tourism sectors (Mills *et al*, 2020:111). It was crowned as the best emerging market economy country in the world to invest into or do business in 2019, followed by Poland, Philippines, Indonesia, and Australia at number 5 (Papadopoulos, 2020). In 1990, it achieved the status of newly industrialised market economy and in the same year, former prime minister Dr Mahathir Mohummad launched Malaysia Vision 2020, the vision's main objective being to transform Malaysia from a developing nation status to a developed nation status (Khan *et al*, 2014).

Construction sector in Malaysia has been contributing at an average 4,09% to GDP between 1991 and 2010, growing at an average of 4.74% during those two decades, at an average employment contribution of 8.56% of Malaysia total workforce (Khan *et al*, 2014). Infrastructure development, as in most developing countries as well as developed countries, has strong positive correlation with GDP and, it is therefore vital and crucial that Malaysia take strong measures to ensure its success through successful project management and project delivery practices.

2.7.2 Overview of the Public Sector Project Management in Malaysia

Malaysia with its growing population currently estimated at 32 million and its conversion from mainly agrarian into an industrial country require energy and infrastructure expansion and

therefore large number of projects across different areas. Malaysia has recently discovered project management as an important factor, which in the past and for many years was mostly provided by foreign professionals. 2013 saw the formation of Malaysian Association of Project Management (MAPM) to support the development of necessary project management competencies. MAPM is affiliated with International Project Management Association (IPMA) for support and networking with other associations (IPMA, 2015). IPMA is a federation with about 70 Member Associations, with relationships with corporations, government agencies, universities and colleges, and geographic areas of influence spread across Europe to Asia, Africa, Middle East, Australia, North and South America and, aims at bringing together project management practitioners from all cultures worldwide for networking, sharing of ideas, effective collaboration and cooperation (www.ipma.world).

The Project Management Institute, Malaysia Chapter (PMIMY), an affiliate of Project Management Institute (PMI), was founded in 1994 to advocate and advancement of project management excellence in Malaysia (pmi.org.my).

Malaysia has started a national development plan to address the country's economic and social issues, Malaysia Plan, which runs for every five years since 1966, with its implementation relying on effective project delivery, and its Public Works Department (PWD) being its projects implementing department, and to which the successful projects delivery depend on its successful project management practices. Further, the infrastructure sector has received the largest share of public sector development expenditure in all of the Malaysian Plans and the success of the infrastructure projects, especially large projects is most important for the development of project management, its participants and for the projected contribution to economic growth (Rahim, 2010).

2.7.3 Attributes of the Project Management in Malaysia

Hashim et al (2017) identifies the following attributes as distinctive to the public sector project management practices in Malaysia;

- No clear regulatory framework and guidelines.
- Lack of transparency in procurement process resulting in unethical conduct and corruption.
- Lack of clear measurable and non-measurable performance indicators.
- Inadequate project management maturity in public sector resulting in inefficiency in projects delivery.
- Inadequate knowledge management and good governance.

- Low demonstration of efficiency and flexibility within public sector by project managers when delivering projects.

These attributes impacts negatively on projects delivery thereby affects service delivery, public benefits, quality improvement, cost and time savings.

Project management in Malaysia tends to focus more on traditional project management areas of time, cost and quality and neglect the other knowledge areas, because they are easy to measure (Low, 2012). The Construction Industry Development Board of Malaysia (CIDB) has introduced a quality assessment system in 2001 called the Quality Assessment System in Construction (QLASSIC) as a measure of assessing the quality of completed projects but the system is deemed not conclusive enough to embrace the entire project management strategy in managing the public sector projects which differ from project to project as it is seen to be more suitable for building projects (CIDB, 2001b).

2.7.4 Project Management Contribution to Malaysian Economic Development

The construction industry is vital since rapid economic development has increased the demand for construction of infrastructure and facilities around the globe. To cope with an ever-increasing population, pressure on land, and growing economic activity in developing countries, construction projects and initiatives are in increasing demand and are implemented to ensure sustainable growth of nation economy and to create extensive linkages within the economy. To implement these projects successfully and to meet the functional aim of the projects within their service time, an efficient project management practice needs to be adopted from the planning stage to end (Haron, 2017).

Malaysian government remains the largest client to its construction sector, with a large allocation of national budget for public projects and focusing mainly on the development of the infrastructure which include roads, dams, schools, houses, factories and other physical foundations on which development effort is poured in establishing as well as improving the living standard of the public (Jatarona *et al*, 2016).

Malaysia government introduced Malaysia Vision 2020 in 1990, its objective being to transform the country into a fully developed nation by 2020, in economic sense, quality of life, political stability, system of government, social and spiritual values, national pride and confidence, with the construction sector expected to play a significant and effective role because of its dynamic nature and extends backwards and forward links with other economic sectors. The study further argues that both developing and developed countries have realized and understand the significance of construction sector in socio-economic and

sustainable development of a country and, Malaysia had realized this significance in the early days of its independence and began then to develop the sector (Khan *et al*, 2014).

Malaysia's construction sector's low performance issues include delays, cost overruns and low quality in the public sector projects which threaten public development, resulting in what the study term "sick projects', i.e. projects which are 3 months delayed or abandoned, due to poor project management and threaten the realisation of the expected economic growth (Jatarona *et al*., 2016).

The construction sector demand is derived from every other economic sector, from both public and private sectors, the demand which can generally be classified as wealth creation demand from economic needs for infrastructure and commercial buildings, and quality of life demand such as needs for housing, as well as demand from foreign markets, however large part of the demand come from the public sector and these projects are governed by the government budget and their availability are finite and limited to the budget planned every five years under Malaysia Plan (Chan and Sundaraj, 2009).

This reseacher argues that for infrastructure to positively contribute to the economic growth, it is vital for projects to be delivered successfully within successful project management, that is, within scope, cost, time, quality criteria. Successful project management is therefore vital for government or public sector of developing countries in ensuring that key economic growth strategies are met timeously.

2.7.5 Key Challenges to Project Management in Malaysia

According to Takim *et al* (2004) the challenges faced by government sectors in managing projects include inappropriate business methodologies adopted, failure to determine the critical success factors across project phases, failure to identify the elements of success in the form of efficiency and effectiveness measures, and failure to adopt systematic performance measurement systems conclusively for benchmarking projects. As stated in Aliza *et al* (2010) a number of public sector projects are facing ethical issues that arise in project procurement that eventually lead to a declining quality performance of projects, which defeats Malaysia's construction industry focus on continuous quality improvement. Other challenges affecting the performance of Malaysian construction projects include, delays and/or time overruns, project abandonment, lack of quality control/regulation in the construction industry particularly the public sector, not applying the most suitable project management methods, corruption, late payment by the client and over-dependency on foreign labour (Fraser-Moleketi, 2003).

Sundaraj (2006) also concur by highlighting construction industry challenges, particularly to the public sector which include, inter alia, quality deficiencies, over-dependency on foreign labour leading to a leak in the economy as a result of repatriation of earnings by foreign labour as well as numerous ensuing social and health problems, several major catastrophes, and low productivity of the construction industry.

Failure to timely and successfully implement the entry point projects as per Malaysia National Key Economic Areas impede attaining and sustaining the anticipated construction industry growth (Bahaman, 2011). Malaysia construction industry plays a vital role in the country's economic growth, yet it has been plagued with challenges including cost overruns, uncontrolled and unrealistic schedules, accidents, poor workmanship, conflict among project teams members, abandoned and unfinished private and public construction projects and there is a need and urgency to prevent the failure of projects especially due to poor project management practice in the industry (Haron, 2017).

In its effort to achieve Vision 2020 to become a developed nation, Malaysia' public sector need to deal with several challenges of good governance practices which include;

- Strategic planning.
- Risk Management Consideration.
- Inadequate Fraud Prevention Audit Processes.
- Quality Performance Monitoring System.
- Ensuring regular Maintenance and Compliance of Infrastructure and Facilities.

Fraud Control was found to be the least practised in Malaysia, thus, the level of corruption remains high within its public sector and this impacts on successful project management and successful project delivery (Khalid *et al*, 2016).

Riazi and Lamari (2013) identified the following challenges amongst others:

- Lack of project management experts and incompetent project managers in public sector, the combination which create a high possibility for mistakes and inefficiencies during project delivery.
- Political interference, influence to ensure winning of votes and interest in public sector projects, which is common in developing countries, result in corrupt activities and therefore requires urgent attention as it can impede the sector's growth and cause damage to the country.

- Dependency on foreign labour who are mostly unskilled and while going through a new learning process, initial productivity is usually of low quality and thereby affect project delivery efficiency.

- The 'Bumiputra' quota policy which requires contractors to be either Muslim Malay or indigenous native when tendering for public projects in the construction sector, opened the sector for cronyism and corruption. It has been abused for procuring incompetent consultants and contractors with inadequate skill thereby negatively affect the efficiency in project delivery.

2.7.6 Malaysia Literature Review: Key Findings

Literature review relating to Malaysian public sector construction project management indicated that there are several key factors affecting project management practice, which have the ability to either contribute to project success or project failure, and the factors are summarised as follows;

- Malaysia public sector has been implementing projects on a five years cycle called Malaysia Plan since 1966, which its implementation rely on effective project delivery, which depend on successful project management practice but, the development in project management practice is deemed not entrenched enough and fully matured to match the realities within the sector, resulting in inefficiency in projects delivery (Hashim *et al*, 2017).

- Poor project management practice within public sector in Malaysia contribute to a large number of 'sick projects'. The government should therefore step up its commitment in enhancing project management practice in all governments' projects. A special focus should be to enhance the efficient and effective application of project management tools and techniques among its project managers (Haron, 2017).

- Lack of transparency or ethical issues in project procurement eventually lead to a declining quality performance which defeats the industry's focus on continuous quality improvement.

- Lack of clear regulatory framework and guidelines result in low demonstration of efficiency and flexibility by project managers within the public sector (Hashim *et al*, 2017).

- The contribution of the construction industry to economic growth through its infrastructure development amongst others, is quite significant. Malaysia government

focus more on its infrastructure development, it remains the largest client to its construction sector and consistently allocate a large chunk of national budget for public projects more on infrastructure development as well as improving the living standard of the public (Jatarona *et al*, 2016).

- The high level of corruption and cronyism within public sector impacts on successful project management and successful project delivery (Khalid *et al*, 2016).
- Political meddling and interest in public sector projects which are sometimes used to win votes, is common in developing countries as in Malaysia. Such interference can impede project management processes and delay project delivery. It therefore cannot be ignored and require urgent and proper attention (Riazi and Lamari, 2013).
- Over-dependency on foreign labour due to shortage of local labour lead to below standard quality which affect project delivery efficiency while they are going through their new learning process and a leak in the economy as a result of repatriation of earnings by foreign labour (Sundaraj, 2006). He further argues that while there is nothing wrong with foreign labours working in another country, it should not be to the detriment of efficiency.
- Malaysia suffer from lack of experts within public sector and incompetent project managers and this gap creates a high possibility of mistakes during planning and inefficiencies during projects delivery (Riazi and Lamari, 2013).

Hashim et al (2017) identifies the following attributes as distinctive to the public sector project management practices in Malaysia;

- Lack of clear measurable and non-measurable performance indicators.
- Inadequate knowledge management and good governance.

2.8 BRAZIL

2.8.1 Background

Brazil is a developing and the largest country in South America with a population of about 212 million. Following many years of being a monarch, it was declared a federative republic in 1889 and currently has a presidential government regime which is formed by 26 states and 5 570 municipalities (Barbosa and Vilnitis, 2017). Brazilian economy is currently the largest in Latin America and has managed to grow its GDP at an annual average of 3% per annum while also diversifying its economy from natural resources, mainly agriculture products and

food production which still contribute about 5% to the GDP, to the service sector which contribute nearly 65% to the GDP followed by the industrial sector which contribute about 20% (IMF, Fiscal Affairs Dept., 2018). Brazil's economic growth had been uneven over the past four decades, with periods of high growth realised in the past decade during which the country successfully concluded two infrastructure programmes, the Soccer World Cup in 2014 and Olympics in 2016, megaprojects which resulted in growth over a decade (www.ipmabrasil.org). The country had intermittent periods of slowdown and dips, hence despite achieving the high growth rates at times, the average growth since 1980 is less than 3% (https://data.worldbank.org). Brazil, together with China, India, Indonesia, Mexico and Turkey are newly industrialised market economies in global value chains, and combined they account for more than 90% of GDP generated by newly industrialized countries (www.imf.org, 2016).

Construction sector in Brazil has been contributing at an average 5,409% to GDP between 1995 and 2012, reaching an all-time high of 6,20% in 1998 and a record low of 4,687% in 2003 (www.ceicdata.com; 2012). Brazilian construction sector is closely linked to the fluctuations in the GDP hence investments and productivity in the sector need to grow further and influence the growth of other sectors and consequently the national GDP. (Barbosa and Vilnitis, 2017).

2.8.2 Overview of the Public Sector Project Management in Brazil

Brazil is ranked the 9th largest economy in the world in 2021 in nominal GDP according to the International Monetary Fund (www.imf.org). As it ascend to the top 10 ranking, the need for certified project managers surpassed the currently available certified project managers, which made it hard for companies and public sector to find PMP credential holders and project managers who have relevant project management experience. The Senac Sao Paulo, founded in 1946 and one of the top ten educational institutions in Brazil teamed up with PMI, to become a PMI Registered Education Provider (R.E.P) and it offers ongoing professional development to PMI members and others in the project management profession to enhance their professional development (PMI.org/REP).

Brazil recognise the synergy between project management and cost engineering as paramount and this saw the founding of IPMA Brazil in 2002, which has formed an alliance with IBEC, the Brazilian Institute of Cost Engineers, and is connected to major universities and business schools within the country and offers IPMA 4-Level Certificate System in the country (www.ipmabrasil.org).

The Project Management Institute, Brazil Chapter, is an affiliate of Project Management Institute (PMI), and was founded in 1969 to champion and advance project management excellence in Brazil and have recently celebrated a 50th anniversary in 2019. It currently comprise of fifteen local chapters with Sao Paulo, Brazil Chapter being the first to be accredited Charter Status in 1998 (https://www.pmi.org.brasil). Outside USA, Brazil is one of the countries with more PMI members and PMP certified professionals worldwide (Lopes, 2014).

2.8.3 Project Management Contribution to Brazilian Economic Development

The construction sector occupies an important role in the Brazilian economy, by directly contributing to the GDP, acting on a substantial productive chain of suppliers, as well as commercialization services and maintenance. Further, the construction sector in Brazil has undergone major changes in recent years, made possible by factors such as the resumption public investments, creation and implementing of laws that facilitate real estate, the investment and funding of external resources as well as the efforts of the Brazilian Quality and Productivity Program, PBQP H (Barbosa and Vilnitis, 2017).

Following a decade of mega-projects which came to an end with the closing ceremony of the paralympics, Brazil economy took a slump forcing the government to consider reforms and urged private companies to invest more in projects for roads, railways, airports and the productivity industry. Besides these projects and programmes, another sector for current projects is energy, and there is a multitude of projects being performed to boost solar wind and hydro-electric energy. In the meanwhile project managers try to help their country out of the situation, a challenging task for the project management profession. Main project activities are launched and sponsored by the Government but definitely requires the involvement of the international and private investors in foreign direct investments (FDIs) and public-private partnership (PPP) (IPMA, 2016).

2.8.4 Key Challenges to Project Management in Brazil

Barbosa and Vilnitis (2017) identified the following challenges, which require attention to reduce the gap between the Brazilian construction sector and that of developed countries, amongst others:

- Social and cultural limitations due to low quality of Brazilian education resulting in lack of skilled labour to meet the required growth needs of the sector.
- Poor quality and low productivity challenges that inhibit full sector development which is common in developing countries public sector.

- Dependency on largely outsourcing construction workers with little schooling and no technical training.
- Levels of informality in the workforce exposing workers to accidents that may be under-reported affect projects delivery efficiency. Brazil construction industry ranks highest in terms of labour accidents registered with official Brazilian government bodies.
- Little investment in technologies. Government and private sector should leave their comfort zone and invest in the renewal of their productive processes and in the development of effective management processes.
- High tax rates are a burden and negatively affect the efficiency in project delivery.

Political and economic climates can change rapidly in the public sector, with elected officials coming and going, as sentiment over public works projects rises and falls, and through it all, project managers must keep the essential government initiatives on track and deliver on politicians promises (Caliste, 2012). The article further identifies the following challenges and trends as affecting how project management works in Brazilian public sector:

- **Managing Multiple Stakeholders:** The project manager in the public sector usually works with several stakeholders from other agencies. Because they may lack governance in their projects, they need to use a lot of negotiation, conflict resolution, communication, and leadership skills.
- **Adapting to a Political Landscape:** Lack of project continuity because of political cycles and elections every two years. Change in leadership usually result in the first couple tiers of leadership underneath them changing as well and usually resulting in new people stopping old projects and starting over again.
- **Understanding Local Politics:** Directives, policies, procedures, and statutes may affect projects. Once project managers get a handle on it all, they will then need to use people skills with teams, negotiation and contracting, and business analysis.
- **Dealing with Public Scrutiny:** There is a great deal of interest in what a project manager does in the public sector because it affects a lot of people. Open government laws mean government cannot conceal information the same way private entities can.

- **Dealing with a Pay Cut:** Public sector project managers rarely get paid as well as their private sector counterparts, and this can contribute to frequent turnover of skilled managers.

According to the UN Global Compact Network Brazil (2018) publication, the public sector project management face challenges which include high levels of corruption and unethical conduct by administration officials, lack of control and transparency in infrastructure project expropriation and resettlement processes as well as delay and difficulty in licensing administrative processes which include environmental, land use and occupation, and archaeological heritage areas.

According to Bezerra *et al* (2021), challenges which include low project management maturity rate within the public administration, difficulty in recognizing a clear methodology that is involves in project management, lack of computerization of the processes that help in project management, under-developed communication efficiency which impede efforts to improve the aspect of project maturity, lack of integration between strategy and project management within public sector, lack of proper organizational structure is one of the biggest problem affecting the public sector regarding project management, immature project-related infrastructure mainly project management office hinder maturity in project management practices in the public sector.

Armijo and Rhodes (2017) argues that Brazil construction sector underperforms compared to that of peer emerging countries especially those in East Asia, with the main challenges including: low levels of infrastructure investment as a share of the GDP; Brazil's major political institutions collectively are often dysfunctional for economic policy-making; cronyism – business government relations characterized by friendships among small groups of elites, lack of transparency, nepotism and oligopoly; ideological-driven policy mistakes with most infrastructure policy discussions fitting into two broad policy *gestalts* which is either centre-right or centre-left administrations or partisan lines.

2.8.5 Brazil Literature Review: Key Findings

Literature review relating to the Brazilian public sector construction project management indicated that there are several key factors affecting project management practice, which have either positive or negative impact, and some of these factors are the following;

- Brazil's regulatory governance has proved to be deficient, resulting in regulatory risk remaining elevated and, this has deterred or at least delayed investment on infrastructure (Amann *et al*, 2016).

- Brazil's cumbersome environmental licensing procedure comprising three stages (preliminary license, installation license and operation license) delays issuing and stands in marked contrast to the more streamlined processes typically found in other emerging and developed economies. No less than 15–20% of the budgets of infrastructure projects in Brazil are accounted for by environmental licensing costs (World Bank, 2012).

- Significant under-investment in infrastructure by private sector due to poor quality of regulatory governance continue to characterize the Brazilian economy despite the clear growth promoting properties as demonstrated by numerous econometric studies (Amann *et al*, 2016).

- Domestic financing for infrastructure investment has been squeezed by public sector fiscal constraints and the relative thinness of the Brazilian capital markets (Amann *et al*, 2016).

- Political meddling and corruption led to the slowing down of the construction market since 2015 as the government implemented what is called the "car wash operation" where political leaders and businesses have been investigated for misuse of public funds, bribery and tax evasion. Such interference impedes project management processes and delay project delivery (https://uk.practicallaw.com, 2016).

2.9 SOUTH AFRICA

2.9.1 Background

South Africa is a developing country located in the South-most tip of Africa and is currently ranked the second biggest economy in the continent after Nigeria. South Africa gained independence in 1961 but only became a democratic government in 1994 when sanctions were lifted and the country started experiencing foreign direct investment (Trading Economics, 2020). Its gross domestic product (GDP) grew at annual average of 2.5% from 1994 to 1999 under first term of its democratic government, 3.25% from 1999 to 2008 under its second term, 2.4% from 2009 to 2018 in its third and fourth term, and 0.2% from 2018 to current. South African economy was largely driven by mineral resources and commodities which were in high demand but failed to grow at higher rates or diversify into other less volatile and vulnerable sectors hence the current poor economic growth (Southafricanmi.com, 2020).

The GDP contribution from the construction sector in South Africa averages 3.9% from 1994 to 2012, where it started reducing and recorded an average 2.2% in 2020 (IDC, 2013).

2.9.2 Overview of the Project Management in South Africa

Project management in the South African public sector only became popular in the early 1990s (Knipe *et al*, 2002). Fraser-Moleketi (2003) called for a standardized project methodology for government to ensure that project management becomes integrated in overall government and public service projects delivery approach and in its organisational culture. The public sector made gains in project management applications since 1994 but it is still not enough to match the realities within the sector (Van Der Waldt, 2011).

Rwelamila and Purushottam (2012) argues that project management postgraduate training in South Africa and Africa as a whole is inadequate in that training designers seem to believe in Book of Knowledge (BoK) regimes religiously resulting in training still technically inclined with technical issues considered above social-cultural aspects. They propose a balanced training which should include technical and socio-cultural as a curicullum for the enhancement of project management.

2.9.3 Development of the Project Management in South Africa

The need to meet and work together by project management professionals from multi-sector forum led to the creation of Project Management South Africa (PMSA) in 1997. PMSA got a recognition in 2013 as a non-statutory professional body which regulate the project management profession, confer designations in project management across different industry sectors and implements development programme to professionals. It pride itself of developing the profession within the framework put in place by South African Qualifications Authority (SAQA) and ideally placed to assist SAQA in meeting its objectives in terms of project management (https://www.projectmanagement.org.za). PMI South Africa Chapter which is an affiliate of Project Management Institute (PMI) has been incorporated in 2001 as a non-profit company for the sole purpose of serving the PMI South African membership base by supporting the promotion and advancement of art, science and benefit project management and related professions (https://pmi.org.za/about/chapter).

A recent trend has been the separate appointment of professional project managers by clients/employers, with the objective of selecting the best experienced project team, including contractors, architects, quantity surveyors, consulting engineers, principal agents, legal advisors, and so on (McKenzie, 2014: 1-2). In South Africa, project management is recognised as a professional discipline that is regulated and standardised through project management professional bills such as The Project and Construction Management Professions Act no 48 of 2000 and councils such as the South African Council for the Project and Construction Management Professions (SACPCMP) and institutes such as the PMI SA

Chapter (http://sacpcmp.org.za). SACPCMP is a statutory body established through section two of the above act and is one of the six councils for the Built Environment Professions, the other five being the following;

- The South African Council for the Architectural Profession, SACAP,
- The Engineering Council of South Africa, ECSA,
- The South African Council for the Landscape Architecture Profession, SACLAP,
- The South African Council for the Quantity Surveying Profession, SACQSP,
- The South African Council for the Property Valuing Profession, SACPVP,

all coordinated by the Council for the Built Environment (CBE), a statutory body established under the Council for the Built Environment Act no 43 of 2000 (https://cbe.org.za).

2.9.4 Attributes of the Public Sector Project Management in South Africa

According to the PMBOK Government Extension (2006), government projects are considered to have unique characteristics compared to private sector and in order to manage the project efficiently and effectively, the project management team must recognise its unique characteristics which include:

- Legal constraints on government projects,
- Accountability to the public, and
- Utilization of public resources.

Government projects are usually subjected to additional laws and regulations that can significantly impact them, compared to private sector. Participants in the accountability process for public sector projects are internal and external to the government body and have a right to challenge decisions made by project managers. As public sector projects are funded with public sector resources, officials, project managers and auditors are entrusted with the responsibility of ensuring that they are used efficiently and effectively.

Van Der Waldt (2011) identifies the basic difference between the private and public sectors of society as boiling down to profit for private sector and service delivery for public sector, as goals to be achieved. Further, any comparison between public and private sector management is dependent on the nature, demographics, ideology, type of dispensation, and culture of a state but since no two states are governed in exactly the same manner, what is applicable to South Africa might not be relevant to other countries around the globe.

The following attributes has been identified as distinctive, peculiar and unique to the public sector project management application in South Africa (Van Der Waldt, 2011);

- *Political Milieu:* government projects are a result of policy formulation at political level and may be regarded as a political success even though it was not successful from project management's point of view. The governance of projects is unique in that input, monitoring and oversight, and political interference from elected representatives must be factored in.

- *Project Management Maturity in Government:* Though project management has made gains in the public sector, it is deemed not entrenched deep enough and fully matured to match the realities within the sector.

- *The developmental nature of projects:* developmental projects are intended for societal change, unique methods are employed by project managers and this usually result in extent outputs and timeframes beyond the scope of conventional projects.

- *Statutory and Regulatory Framework:* project managers in the public sector are always expected to operate within the confinements of national legislation and government policies when planning and designing projects.

- *The Public Service Ethos and Management Culture:* public sector ethos is characterized by a non-profit approach since it acts on behalf of government or community. Its management culture is more hierarchical, and rule bound in nature which typically limit authority delegated to project managers with decision-making typically vests with senior managers and committees, which mostly result in project delays.

- *Organizational Structures and Practices:* the hierarchical structure of public sector makes it more difficult to delegate responsibilities and authority to project managers who are on lower echelons, except for the responsibility to plan or execute a project but without the authority to make resource allocation decisions, this gap makes project management extremely difficult.

- *Project funding: Feasibility and Value-for-Money:* Public institutions aim for the best service to the community within prescribed budgets compared to the commercially profitable interest by the private sector. The process of motivating for a budget, its approval and subsequent implementation usually takes much longer than in the private sector.

- *Project Management Standards: PMBOK's Government Extension and GAPPS:* PMI recognized the complexity of public sector projects implementation and developed a 'Government Extension' of the PMBOK, which specifically address the distinctive practices found in worldwide public sector projects.

- *Projects in a fishbowl:* public sector projects in their nature are publicly funded through taxes and therefore need to be publicly accounted for.
- *The Project Customer:* public sector projects tend to serve an enormous number of citizens to maximize many services. They are therefore regarded as more complex than private sector projects since multiple project objectives are expected by a wide range of stakeholders with different interests associated with the projects.

2.9.5 Project Management Contribution to South African Economic Development

Infrastructure development plays a crucial role in the South African economy, and its contribution to economic growth is significant (Windapo and Cattell, 2013). Infrastructure, amongst other economic drivers, is expected to drive the country's economic revival in the years to come and in gearing to meet the goals of National Development Plan Vision 2030, but following the president's announcement of the infrastructure fund in September 2018 as part of the stimulus package, the Department of Public Works and Infrastructure portfolio admits however, that monitoring will be key and therefore a strong implementation unit need to be set up to ensure that projects are implemented and delivered in time, within budget and to ensure accountability, which is essential to the success of such public sector undertakings (CIDB Annual Report 2018/2019).

Maharaj *et al* (2006) argued that the infrastructure development projects by state-owned enterprises which are required for positive economic growth in South Africa require access to international financing, for which South Africa has to compete for investor funding and, it is therefore important that the overall business environment, particularly the project environment is well governed. Good practices within these projects and within corporations themselves, that will enable and increase investor confidence and overall performance must be established.

In the policy background paper to inform the National Planning Commission's review of progress towards the National Development Plan's Vision 2030 with regard to public infrastructure delivery and construction sector dynamism, the NDP recognises public infrastructure that relate to energy, water and transport as an enabler for the economy to grow faster, for exports and lowering the cost of doing business and further acknowledges that if large infrastructure in particular, is not planned and delivered efficiently and effectively, resulting in having huge cost and time overruns, as it is currently with Medupi and Kusile power stations, they become a hindrance to economic growth rather than an enabler (Watermeyer and Phillips, 2020). Further, the NDP has set a target for public infrastructure

investment at 10% of GDP finances through taxes, loans, tariffs and public-private partnerships by 2030 and it also recognises the importance of sourcing private funding given the government limited finances and that favourable conditions to attract and secure private investment in public infrastructure need to be created. Watermeyer and Phillips (2020) further indicated that public sector infrastructure expenditure has averaged 5.9% as a share of GDP from 1998/1999 to 2017/2018 but has seen a decline since year 2017.

The president emphasised that infrastructure investment should be delivered on time and provide quality services to the public, as such, particular attention will be given to enhancing state capacity and skills improvement. Government will work towards addressing investment policy uncertainties, formulating necessary infrastructure reforms and reconfiguration of the public sector infrastructure ecosystem to allow for a seamless and packaging of projects. He admits that the creation of a consistent and predictable project assessment methodology across all government and the establishment of a single window of entry for project preparation and packaging is key to successful project delivery (SIDS, 2020).

2.9.6 Key Challenges Project Management in South Africa

According to Mabelebele (2006), project management challenges in the South African public sector include the following:

Table 2.1: Project Management Challenges in South African Public Sector

1. The coordination of inter-departmental project teams.	It remains a challenge in South Africa as it is not always practical at the level of budgetary allocation and implementation.
2. Power, authority and political environment.	Possible power relations and political environment as political principals try to meet constituencies needs may result in challenges for project managers on projects, as those needs might contradict the initial project objectives in some instances.
3. Project management skills shortage.	South African government is faced with serious skills shortage particularly in project management, and in many strategic planning processes, most of the work has been facilitated by outside consultants with little consideration to significant skills transfer to staff within the organisations. Some of this outside consultants left government for the lucrative business of consultancy.
4. The government planning cycle.	Government projects are planned using the Medium Term Strategic Framework (MTSF), Medium Term which is three years, and this put long-term projects at risk of under-budgeting.

5. Institutional challenges.	Many departments have project management office (PMO). The centrality of the PMO in the implementation of public service projects and programmes will ensure an oversight role of project process and methodology and assisting in providing project visibility room across the organisation.

PwC Africa (2014) identifies the following challenges:

1. Political interference and corruption;
2. Policy uncertainty which affects timeous project delivery;
3. Bureaucratic delays in decision-making,
4. Lagging behind of regulatory and governance reforms.

Rwelamila and Purushottam (2012) identifies challenges they refer to as “PM trilogy challenges“ and argue that project management is given less attention than it should with about 8 out of 10 project managers with inadequate project management knowledge base, project management is falling short of some fundamental knowledge areas, and organisations which are supposed to be centered on programs and portfolios are, in practice, project-oriented organisations by default with window dressing project management information systems. Their study identified the following challenges;

1. Clients and/or stakeholders‘ dissatisfaction with final products or services;
2. Most project missions have been archaic, i.e. they are completed without initial clarity of project goals and general direction;
3. Most projects do not have appropriate schedules and plans;
4. Most project-based organisations (PBOs) do not have a well-defined systems of consulting with stakeholders;
5. Most PBOs have poor project personnel recruitment and selection systems in place;
6. Most PBOs have poor project monitoring and feedback systems;
7. Most PBOs have poor communication systems;
8. Most PBOs do not have appropriate trouble-shooting strategies;
9. Dominance of incompetent project managers;
10. Excessive power and politics;
11. External organisational factors negatively affecting operations of project teams; and
12. Lack of urgency especially in public sector projects.

2.9.7 South Africa Literature Review: Key Findings

Literature relating to South African public sector construction project management indicated that there is a variety of key factors affecting project management application, both positively and negatively, and some of these factors are the following;

- Gains made in project management applications since 1994 is deemed not enough and fully matured to match the current realities within the public sector (Van der Waldt, 2011). Fraser-Moleketi (2003) cited in Van der Waldt (2011) emphasised the need to entrench project management more deeply in public sector by standardising project methodology for government and ensure it is integrated in the overall public service approach.

- Project management training curriculum in South Africa is too technically inclined in that it follows the BoK religiously with less attention to socio-cultural aspects, which is necessary for the enhancement of project management curriculum. Balanced academic training incorporating technical and socio-cultural aspects is therefore recommended (Rwelamila and Purushotam, 2012).

- Efficient and effective project management in public sector projects is significantly impacted by laws and regulations to which they are subjected to, compared to private sector. Project managers are always expected to operate within confinements of the legislation and government policies when planning and executing projects.

- Public sector projects are funded with public resources and are publicly accountable. The project managers and project team, officials and auditors have a responsibility to ensure such funds are used efficiently and effectively. Transparency in government decision-making and public policy implementation through projects reduces uncertainty and can help curb corruption among public officials (Van der Waldt, 2011).

- Project management application in public sector projects have to accommodate input, monitoring and oversight from elected representatives which is viewed as political interference (Van Der Waldt, 2011).

- In South Africa, public sector projects are service delivery driven compared to profit driven private sector. Project managers employ unique methods to satisfy expectations and multiple project objectives from wide range of stakeholders with different interests associated with the project, who are internal and external to the

government body, and this usually result in extent outputs and timeframes beyond the scope of conventional projects and result in project delays.

- Due to the hierarchical structure of public sector which place project managers in the lower echelons with limited responsibility and authority, except responsibility to plan or execute a project but without authority to make decisions on resource allocation, this impede on project management effectiveness.

- Infrastructure development's contribution is significant to economic growth in South Africa. It is expected to drive the economic revival, amongst other economic drivers, in gearing to meet the National Development Plan Vision 2030 but the government through its Department of Public Works and Infrastructure concede that the department as an implementing unit in its current state of project management level will find it difficult to implement, as a result project management application capabilities need to be strengthened, to ensure that projects are implemented and delivered as scheduled and within budget and to ensure accountability (CIDB Annual Report 2018/2019).

- South African public sector still face project management skills shortage thereby resorting to hiring outside consultants to facilitate most of the work with little consideration to significant skills transfer to staff within the organisations (Mabelebele, 2006).

- Corruption and political interference mostly in the procurement stage compromise the process and may impede the procurement of competent skills to deliver the project efficiently.

- Project management within public sector in South Africa is still dominated by incompetent or accidental project managers (Rwelamila and Purushottam, 2012).

2.10 KEY FINDINGS ON MALAYSIA, BRAZIL AND SOUTH AFRICA

The summary of key findings on construction project management in Malaysia, Brazil and South African public sectors, emanating from the literature review, is tabulated below.

KEY FINDINGS ON MALAYSIA, BRAZIL AND SOUTH AFRICA

Table 2.2: Key Findings on Malaysia, Brazil and South Africa

MALAYSIA	BRAZIL	SOUTH AFRICA	IDENTIFIED KEY CHALLENGES
Development in project management practices deemed not entrenched enough nor fully matured to match the realities of the sector.		Project management applications gains since 1994 is deemed not fully matured to match the current public sector realities.	Lack of maturity in project management practices in public sector.
Lack of clear regulatory framework and guidelines lead to inefficiency by project managers.	Regulatory governance has proved to be deficient resulting in elevated regulatory risk.	Efficient and effective project management in public sector projects is significantly impacted by laws and regulations to which they are subjected to.	Lagging behind on regulatory and governance reforms.
Political meddling, high level of corruption and cronyism impacts on successful project management and project delivery.	Political meddling and corruption led to the slowing down of the construction market.	Corruption and political interference mostly in the project procurement stage compromise the process.	Political interference and corruption.
Suffer from lack of experts within public sector.		South African public sector still face project management skills shortage resorting to hiring outside consultants to facilitate most of the work with little consideration to skills transfer to staff within the organisations.	Little consideration to significant skills transfer to government project management junior staff by seniors.
Incompetent project managers result in high possibility of mistakes during planning and inefficiency during project delivery.		Project management within public sector in South Africa is still dominated by incompetent or accidental project managers.	Recruitment and/or dominance of incompetent and/or accidental project managers.

MALAYSIA	BRAZIL	SOUTH AFRICA	IDENTIFIED KEY CHALLENGES
Dealing with Public Scrutiny.		Public sector projects are funded with public resources and are publicly accountable.	Need for public accountability as projects are funded by public funds.
		Project managers use unique methods to satisfy expectations and project objectives from wide range of stakeholders with different interests attached to the project.	Expectations to satisfy wide range of stakeholders with different interests, internal and external to government body.
		Due to the hierarchical structure of public sector placing project managers in the lower echelons with limited responsibility and authority, this impede on project management effectiveness.	Lower level positioning of project management in the government hierarchical structure limiting responsibility and authority.
		Government through its Department of Public Works and Infrastructure concede that the department as an implementing unit in its current state of project management level will find it difficult to implement.	Weak project management capabilities in the government implementing unit.
Inappropriate business methodologies adopted.			Lack of well-defined project management systems.

MALAYSIA	BRAZIL	SOUTH AFRICA	IDENTIFIED KEY CHALLENGES
	Lack of project continuity due to political cycles and elections every two years.	Policy uncertainty which affects timeous projects delivery (PwC Africa, 2014).	Policy uncertainty which affects timeous projects delivery.
	Public sector project managers rarely get paid as well as private sector counterparts, and this can contribute to frequent turnover of skilled people.		Poor remuneration in the public sector.
	Delay and difficulty in licensing administrative processes which include environmental, land use and occupation, and archaeological heritage areas.		Delays impact on projects planning and execution due to legislation and government policies.
		The coordination of inter-departmental project teams (Mabelebele, 2006).	Difficulty faced in coordination of departmental project teams.
		External organisational factors negatively affecting operations of project teams (Rwelamila and Purushottam, 2012).	External organisational factors which negatively affect operations of project teams.

2.11 SUMMARY

From the key findings comparison on the above three countries, the following 15 key challenges were identified and will be evaluated for its contribution towards poor construction project management practice faced by South African public sector, and to determine the impact of the key challenges identified on the implementation of project management within the public sector and for the recommendation of measures that can be applied to enable improvement and to enhance delivery of successful projects:

- Difficulty faced in coordination of departmental project teams;
- Political interference and corruption;
- Policy uncertainty which affects timeous projects delivery;
- Delays impact on projects planning and execution due to legislation and government policies;
- Lagging behind of regulatory and governance reforms;
- Lack of well-defined project management systems;
- External organisational factors which negatively affect operations of project teams**;**
- Lack of maturity in project management practices in public sector;
- Lower level positioning of project management in the government hierarchical structure limiting responsibility and authority;
- Weak project management capabilities in the government implementing unit;
- Recruitment and/or dominance of incompetent and/or accidental project managers;
- Need for public accountability as projects are funded by public funds;
- Expectations to satisfy wide range of stakeholders with different interests, internal and external to government body;
- Little consideration to significant skills transfer to government project management junior staff by seniors;
- Poor remuneration in the public sector;

In the next chapter, research methodology will be described and justified.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter describe the research methodology adopted to conduct this study, in relation to the research problem statement and, in order to meet the research objectives of the study. The chapter furthermore indicate the geographical area where the study was conducted, the study design as well as the unit of analysis. In addition, the instrument used for collecting the data and the methods implemented to maintain legitimacy and reliability of the instrument are described in this chapter.

The research question for this study is:

What measures should be applied to enhance the construction project management practice within the South African public sector to reduce construction projects failure?

The research question has been addressed through the following objectives:

i. To identify the key challenges affecting construction project management practice within South African public sector.

ii. To determine the impact of key challenges identified on the implementation of project management practice within the South African public sector.

iii. To recommend measures that can be applied to enhance project management practice in the public sector in South Africa.

3.2 RESEARCH APPROACH AND STRATEGY

To address the research objectives described above, a single case study qualitative inquiry research method was adopted to enable investigation and the interpretation of a small sample until data saturation was realised (Welman *et al*., 2005). According to Pathak *et al* (2013) qualitative method of research generates non-numerical data and focuses in comprehending a research query as a humanistic or idealistic approach and is used to understand people's experiences, attitudes, beliefs, behaviours and interactions. Further, qualitative research has the ability to add a new dimension to interventional studies where measurement of variables alone is inadequate to conclude the study. The use of qualitative method allows for flexibility and for unconstrained interaction between the researcher and participants. Participants therefore have freedom to respond in a more elaborate manner providing greater detail (Kothari, 2004). This qualitative research adopted the constructivist approach which emphasize participant observation and interviewing for data generation as

the researcher aims to understand a phenomenon from the perspective of those experiencing it, with the knowledge actively co-constructed through the researcher and the participants during the process.

3.2.1 Case Study

A case study qualitative approach is defined as an intensive study about a person, a group of people or a unit, which is aimed to generalize over several units (Jacobsen, 2002). Creswell (2013:97) posit that case study method “explores a real-life, contemporary bounded system (case) or multiple bounded systems (cases) over time, through detailed, in depth data collection involving multiple sources of information and reports a case description and case themes”. Dyer & Wilkins (1991) argue that single case studies are better when the researcher wants to create a high-quality theory because they produce extra and a better theory. According to Gerring (2004) case studies have a double function, meaning that they are studies of its own unit as well as a larger group of units. Yin (2009) argues that case studies are particularly suited to situations where the researcher seeks to investigate a current phenomenon which is difficult to isolate due to the number of interested variables.

Single case study allows a researcher to explore those situations in which the intervention being evaluated has no clear, single set of outcomes (Yin, 2003). This study was about identification of challenges affecting construction project management practice within the South African public sector, hence a single case study was adopted.

3.2.2 Small Samples in Qualitative Research

Finding the acceptable number of participants in qualitative inquiry is an ongoing debate that lack a straightforward answer (Mason, 2010). It is not easy to decide the optimal number of participants for qualitative research (Barkhuizen, 2014). Several contributing factors decide the participants in one's qualitative inquiry. The purpose and research questions are the major factors to decide the participants. While the qualitative inquiry is a flexible methodological approach, there are no strict rules about the number of participants that need to be selected prior, however, the focus of the qualitative research should be on fulfilling the research aim rather than representing the large samples (Subedi, 2021). Research design is another important contributing factor in selecting the sample for qualitative inquiry. In his study, Mason (2010) found that various qualitative research designs require different number of participants. Mason (2010) further argues that case study, phenomenology and narrative inquiry accept small samples from a single case to 20, compared to other qualitative research designs and that the overall range of the numbers of participants/interviews used

was from 95 (using a case study approach) to 1 (also using a case study and a life history approach). Subedi (2021) suggest including from a single to 20 participants for the qualitative research whichever is suitable in a particular study. Smaller samples are used in qualitative research because the general aim of sampling in qualitative research design is to acquire information that is useful for understanding the complexity, depth, variation, or context surrounding a phenomenon, rather than to represent populations as in quantitative research (Gentles, 2015).

Patton (1990, p.185) emphasises that:

"the validity, meaningfulness and insights generated from qualitative inquiry have more to do with the information-richness of the cases selected and the observational/analytical capabilities of the researcher than with the sample size".

Emphasis is therefore on sampling to acquire rich data that will produce theory with much complexity and convincing empirical grounding than with the sample size. Similarly, this study was conducted based on seven participants who are experienced project management practitioners within the public sector and based in Gauteng Province of South Africa.

3.3 UNIT OF ANALYSIS

The unit of analysis is project management practitioners within the public sector based in Gauteng, South Africa. All are currently involved in construction projects implementation. These practitioners were deemed to be well versed with key challenges affecting construction project management within the public sector and deemed suitable to help the research meets its objectives.

3.4 RESEARCH SAMPLE SELECTION

Various sampling strategies are applicable in qualitative research but purposive sampling provides the researcher with an in-depth understanding of the study phenomenon (Patton, 2015, p. 463). Yin (2011) defines purposeful sampling as "The selection of participants or sources of data to be used in a study, based on their anticipated richness and relevance of information in relation to the study's research questions". Furthermore, Tracy (2020) highlights the importance of purposive sampling that "good qualitative researchers, at the very least, engage in purposeful sampling, which means that they purposefully choose data that fit the parameters of the project's research questions, goals, and purposes" (p.82). The participants constitute a purposive sample as they must meet characteristics identified by the researcher (Campbell, 2015). Similarly, this study adopted purposive sampling because it allows this researcher to select the rich-information participants, thereby enhance the

possibility of rich data that fit the research questions, parameters, goals and purpose, whilst ensuring diversified background based on the following inclusion and exclusion criteria:

- At least 8 years' experience in project management practice within the public sector;
- Various type of projects across the construction industry;
- Selection of projects that have been implemented within South African public sector;

3.5 DATA COLLECTION METHOD

Data collection is a process of collecting information from all sources relevant to the study to find answers to the research problem, to enable testing the hypothesis and evaluate the outcomes (Dudovskiy, 2018). Yin (2014) identifies six sources of evidence: documents, archival records, interviews, direct observation, participant observation, and physical artifacts. However, interviews, observations and documents are the most common sources of information (Aguboshim, 2021). Data collection method for this study used multiple sources and was divided into secondary and primary methods.

3.5.1 Secondary Data

Secondary data was obtained from documents which included peer-reviewed journals, published books, articles, online portals, etc. on the emerging economies of Malaysia, Brazil and South Africa specifically, to identify key challenges affecting construction project management practice within the public sector.

3.5.2 Primary Data

A questionnaire and a semi-structured open-ended interviews were used as primary data collecting method. The questionnaire consisted of four sections, namely A, B, C and D, with section A on demographic information, section B aimed at identifying the key challenges affecting construction project management practices within South African public sector; 15 key challenges were identified for this section from the key findings of the secondary data review; section C sought to determining the impact of the key challenges identified on the implementation of project management practice within the public sector; while section D of the questionnaire explored recommendations to improve on the project management practice challenges to enhance delivery of successful projects in South Africa. On section B, the respondents had to rate the degree of importance of each key challenge on a scale of 1 – 5, with 1 (not at all important), 2 (slightly important), 3 (moderately important), 4 (very important) and 5 (extremely important). Further, the respondent had to identify the top 3 – 5 factors and discuss why they have been selected. The semi-structured interviews focused more on *why,*

what questions based on the degree of importance ticked on the questionnaire as well as seeking further clarity on responses provided for sections C and D. According to Lazar *et al* (2010) and Wilson (2010) semi-structured interviews are the most appropriate when the interviewer has to dig deeper in search of critical comments, design requirements, and other insights. Semi-structured interviews approach allows participants some latitude and freedom to talk about what is of interest or importance to them allowing flexibility in the interview process (Hesse-Biber and Leavy, 2011). Welman *et al* (2005) states that the use of open-ended interviews ensures that questions are not necessarily worded the same way with each participants. Participants to the study were informed by email of the research and its purpose, and were sent the questionnaire to complete and return within two weeks following the signing of the consent form, and upon receiving the completed questionnaire back, one-on-one interviews were arranged on a suitable date and time considering their busy schedules. Selected project management practitioners with experience and practicing within the public sector were chosen to participate in the study.

The validity techniques in this qualitative research included the triangulation methodology and the use of inductive approach to ensure rigor during investigation.

The participants privacy and anonymity was maintained by using pseudonyms instead of their real names on the report and their data kept confidential.

3.6 DATA ANALYSIS METHOD

Inductive content analysis was used in this study to analyse all the information collected during interviews following the transcribing of data into Microsoft Word document. The Atlas.ti™ latest version was used as a qualitative data analysis software programme. Careful consideration was given to transcribing data from recorded interviews to protect its original meaning. Erlingsson and Brysiewicz (2017) describe inductive content analysis as a research technique which uses a set of codes to reduce volumes of verbal, recording or print material into manageable data from which researchers identify patterns and gain insight.

Large amount of text was systematically transformed into a highly organised and concise summary of key results. The qualitative data was organised according to the following levels of abstraction, from manifest, which is meaning units, to latent content which is themes (Erlingsson and Brysiewicz, 2017).

Analysis of data in this study followed the above levels of abstraction.

3.6.1 Preparing the Data for Analysis

The interviews audio were transcribed verbatim into Microsoft (MS) Word documents for analysis. Audio data in the form of audio recordings from interviews were safely stored as audio files onto the computer as well as a separate hard drive and password protected in both instances during the duration of the study.

3.6.2 Exploring the Data

In accordance with the guidelines provided by Brink (2018), Clark and Creswell (2010), the typed transcripts were perused several times before starting the process of analysing to become familiar with the dataset thereby allow for the insight and understanding of the text, the codes, themes or categories that could be assigned to the events covered in the text. According to Brink (2018) citing Taylor and Lindlof (2010, p.247), the analyst must explore and do close reading of the analysed data to interpret results.

3.6.3 Validating the Data and Results

Methodological triangulation was adopted to enhance the validity of the data in this research. According to Brink (2018) triangulation is the practice of using multiple sources of data to analyse data to enhance the credibility and validity of research findings. Marshall and Rossman (2011) argue that triangulation is the process of bringing together more than one source of data to support one point and enhance the credibility of a research study. Carter *et al* (2014) support the above by postulating that triangulation is the use of multiple methods or data sources in qualitative research to develop a comprehensive understanding of a phenomena. According to Visser *et al* (2016), methodological triangulation for a case study that employs both interviews data and data from other sources can be used to further secure data saturation. While triangulation builds coherent justification of interpretation, rich thick description facilitated through the provision of verbatim quotes to allow readers to assess the strength of the relation between data and analysis can impact data saturation (Aguboshim, 2021). Similarly, data verbatim quotes has been provided in the research findings from interviews data to enable readers to assess the strength of the relation between data and analysis. Kandasamy *et al* (2017) calls for the use of multiple sources of data in qualitative case study to secure data saturation by thinking of data in terms of rich (high quality) and thick (enough quantity) data rather than sample size alone. This idea was also supported by Stålberg and Fundin (2016) in the sense that without adoption of multiple sources of data, a single case study that is limited to one case organization may lack external validity. According to Azmat and Rentschler (2016), methodological triangulation of data from different sources and methods is recommended by some qualitative single case researchers

as useful in confirming, complementing or disconfirming perspectives obtained from study in relation to securing data saturation.

The credibility and validity of the findings in this study is based on a methodological triangulation that incorporated questionnaire responses and one-on-one semi-structured interviews as well as a review of secondary data from documents which include journals, published books, articles, online portals, etc., as shown in figure 3.1 below.

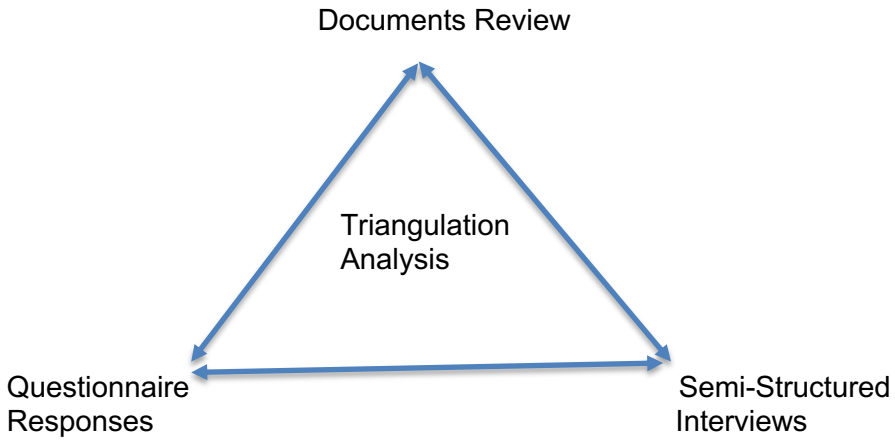


Figure 3.1: Triangulation Principle

3.7 LIMITATIONS OF THIS RESEARCH STUDY

The scope of this research was limited to key challenges affecting construction project management within the public sector in South Africa. Private sector did not form part of this study. A study on identifying key challenges in other sectors of interest is encouraged to compare their level of impact in construction project management and projects delivery.

This research was limited to the primary data collected from construction management practitioners based in Gauteng, South Africa. This therefore opens an opportunity for expanding the research and contribution to the subject matter by widening the research to include other developing countries outside the Republic of South Africa.

The research required more time for data collection considering the individual interviews required, analysis of research information and the reliance on a relatively small purposive sample who were not readily available hence the need to fit in their busy schedules.

Some participants were concerned about the confidentiality of information they provide.

3.8 ETHICAL CONSIDERATION

Research ethics are moral principles that should be obeyed in research activities, to protect the researcher whilst ensuring the integrity of the research by doing no harm, not breaching confidentiality, not distorting data and so on (Anwar, 2015). Bell and Bryman (2007) identified four main ethical principles as informed consent, avoiding harm to participants, invasion of privacy, and deception. They further included other ethical considerations which are data protection, reciprocity and trust, affiliation and conflict of interest.

According to Bell and Bryman (2007) informed consent means that prospective research participants should be given as much relevant information to enable them to make an informed decision on whether or not they will participate in the study. Anwar (2015) state that harm to participants in this regard comprise of physical and psychological harm, and researchers should take extra care and pay more attention in every single activity undertaken to avoid harm to participants or indirect participants in their study. Bell and Bryman (2007) recommend the involvement of the third party to review research plans involving human participants as a means of protecting research participants interests. “The objectives of any study do not give researchers a special right to intrude on a participant’s privacy nor to abandon normal respect for an individual’s values” (Bell and Bryman, 2007). The third ethical principle is avoiding invasion of privacy and emphasise that researchers should respect privacy of participants and their right on whether to answer or not to answer every single questions asked by the researcher in the interview, particularly if they feel such is intruding their privacy. The last main ethical research principle is avoiding deception. Bell and Bryman (2007:141) state that “deception occurs when researchers represent their research as something other than what it is”, and the important message regarding deception is that it should be minimized, researchers should weigh the gains achieved against the cost in human dignity and, should deception be necessary, full and accurate explanation to participants must be provided by the researcher at the conclusion of the study including appropriate counselling.

In this research, full consent from participants was obtained prior to their participation in the study. Participants were informed about the purpose of the study, data collection procedure that would be followed which included audio recordings, that data usage will be limited to the purpose of this study and, that their participation was voluntary and their right to withdraw from the study at any stage if they so wish. All data in the form of audio recordings from interviews, which shall be safely stored as audio files onto the computer also as a separate hard drive and password protected in both instances for the duration of the study. Hard copy data shall also be safely stored in a lockable cabinet and, both sets of data shall be handed

over to the University of Cape Town upon completion of the study. Confidentiality of participants and their organisations in the study has been ensured by not disclosing the respondent's personal information on the completed questionnaire as well as detaching the written consent from the questionnaire. In ensuring anonymity, pseudonyms has been used instead of the participants real names. Adequate level of confidentiality of the research data has been ensured by not revealing the subjects' identities when reporting or publishing the study.

Lastly, a written letter of permission to conduct the study obtained from the Department of Construction Economics and Management was attached to the questionnaire when sending it out.

3.9 SUMMARY

This chapter discussed and justified the survey and semi-structured interview based research design used for this study.

The research approach and strategy which involve the adoption of a single case study to enable investigation was discussed and justified. The sample selection applying the purposive sampling, the triangulation data collection method involving secondary data from documents review as well as primary data through questionnaire and a semi-structured open-ended interviews and, the data analysis method, were also discussed.

The limitations encountered during the study are also summarised.

The following chapter document the research findings as well as the discussions thereof.

CHAPTER 4: RESEARCH FINDINGS AND DISCUSSIONS

4.1 INTRODUCTION

This chapter reports on the case study conducted on seven participants who are construction project management practitioners in the public sector in Gauteng, South Africa. A questionnaire was sent to all participants and the data extracted guided the interview questions for the semi-structured interviews conducted with them. Analysis of the data and interpretation of the results are based on the information obtained from the questionnaire and interviews which were used to collect primary data for this qualitative study. This section structure is such that each participant is analysed individually but using the same format for cohesion, and include participants background information, explored the key challenges affecting project management practice within the public sector in South Africa, probed the impact of the key challenges on implementing of project management practice and explored the recommendations on measures that can be applied to improve on the project management practice to enhance delivery of successful projects. The findings drawn from each of the participants are also discussed and evaluated in this chapter.

4.2 DEMOGRAPHIC INFORMATION

This section presents the demographic profile of the participants found in Gauteng. The analysis is based on seven (07) completed questionnaires and seven (07) conducted interviews from participants who responded, out of eleven (11) who were contacted, one (01) declined and three (03) didn't reply. This reflects a response rate of 64%. Pseudonyms has been used for all the participants, as agreed with them, to ensure anonymity. Demographics include job title, years of experience as a project management practitioner, type of projects involved in, number of projects currently involved in, number of projects executed in the last five years and their total value.

Table 4.1: Participants Job Titles and Years of Experience

PARTICIPANT PSEUDONYM	JOB TITLE	YEARS OF EXPERIENCE
Participant 1	Programme Manager	25 years
Participant 2	Construction Project Manager	15 years
Participant 3	Programme Manager	9 years
Participant 4	Project Manager	21 years
Participant 5	Programme Manager	25 years
Participant 6	Construction Project Manager	9 years
Participant 7	Construction Project Manager	20 years

Figure 4.1: Participants Job Titles in Percentages

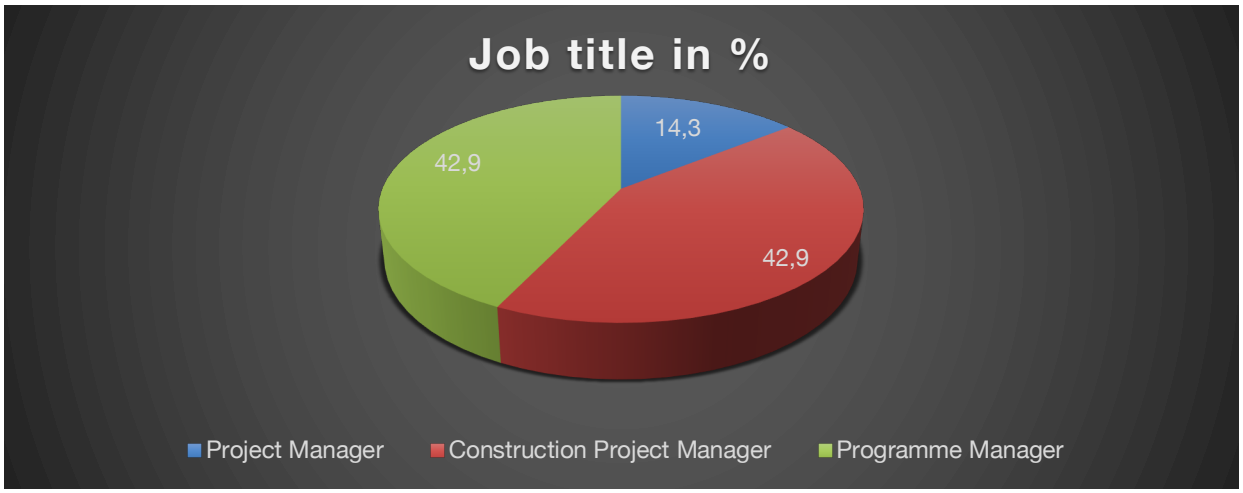
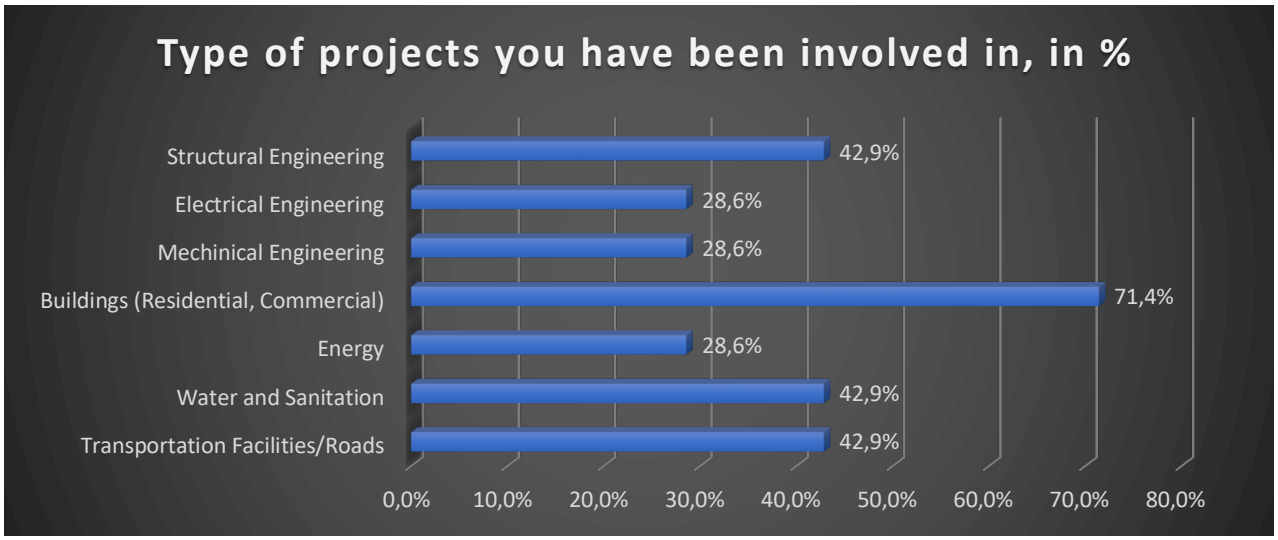


Table 4.1 and figure 4.1 above reveal that three or 42.9% of the participants are programme managers and the other three or 42.9% of the participants are construction project managers, whilst one or 14.3% is a project manager. From Table 4.1, the mean on years of experience is 17,71 which means majority of the participants have approximately 18 years of experience as project management practitioners in the construction industry.

Table 4.2: Projects You Have Been Involved in

		Responses	Percentages
State the type of projects you have been involved in.	Transportation Facilities/Roads	3	42,9%
	Water and Sanitation	3	42,9%
	Energy	2	28,6%
	Buildings (Residential, Commercial)	5	71,4%
	Mechanical Engineering	2	28,6%
	Electrical Engineering	2	28,6%
	Structural Engineering	3	42,9%

Figure 4.2: Type of Projects You Have Been Involved in, in Percentage (%)



The results in Table 4.2 and figure 4.2 above indicate that majority of the participants (71.4%) are involved in building (residential, commercial) projects.

Table 4.3: Number of Projects You are Currently Involved in and Executed in the Last Five Years

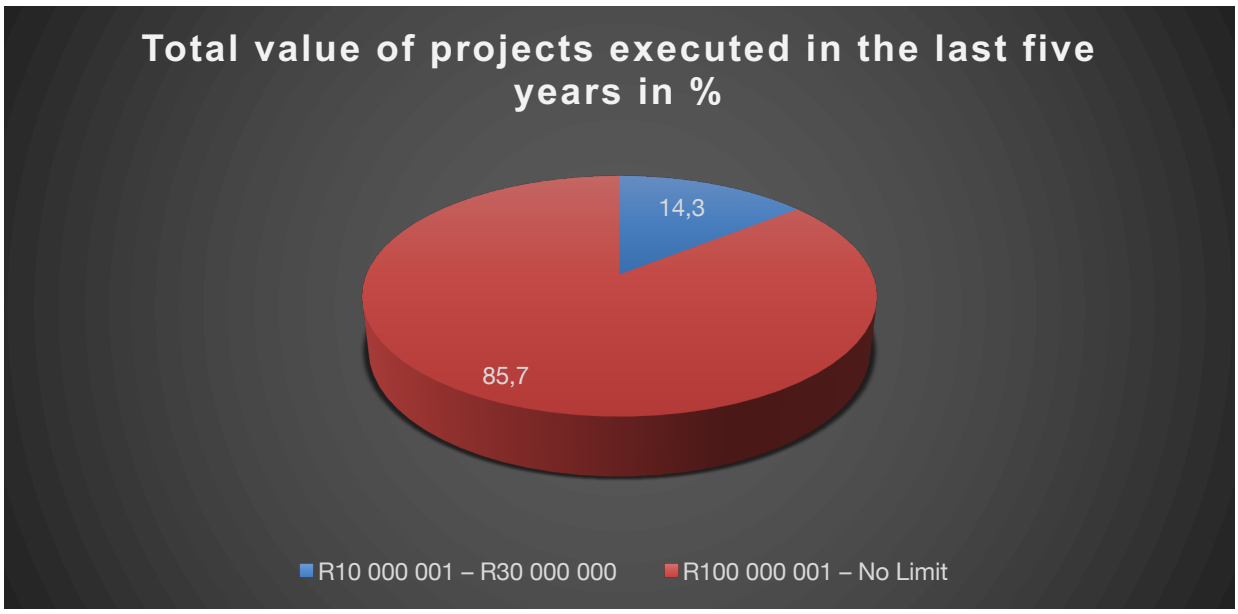
	Mean	Std. Deviation
Number of projects involved in	11,71	14,373
Number of projects executed in the last five years	39,43	75,168

According to the results shown in Table 4.3, majority of the participants are currently involved in approximately 12 projects. Also, majority of the participants have executed approximately 39 projects in the last five years.

Table 4.4: Total Value of Projects Executed in the Last Five Years

	Frequency	Percentage
R10 000 001 – R30 000 000	1	14,3
R100 000 001 – No Limit	6	85,7
Total	7	100

Figure 4.3: Total Value of Projects Executed in the Last Five Years, in Percentages



The results in Table 4.4 and figure 4.3 above show that majority of the participants (85.7%) have executed projects valued at R100 000 001 to no limit in the last five years.

4.3 PRIMARY RESEARCH FINDINGS

4.3.1 PARTICIPANT 1

Participant is a programme manager who has been a construction project management practitioner within the public sector for 25 years, working on the broad spectrum of projects within the construction industry, ranging from transport facilities, roads, water and sanitation and energy. The participant is currently involved in two projects within the local government level and has executed projects worth over R100 000 001 combined over the past five years.

4.3.1.1 Key Challenges Affecting Construction Project Management Practice Within South African Public Sector

Through a questionnaire, the participant was presented with fifteen factors which are findings from the secondary data and considered the key challenges affecting construction project management practice faced by South Africa within the public sector, and ranked them as follows:

Table 4.5: Ranked Key Challenges Affecting Construction Project Management

Factors	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Difficulty faced in coordination of departmental project teams.	1	2	3	4	5 X
Political Interference and corruption.	1	2	3	4	5 X
Policy uncertainty which affects timeous projects delivery.	1	2	3	4	5 X
Delays impact on projects planning and execution due to legislation and government policies.	1	2	3	4	5 X
Lagging behind of regulatory and governance reforms.	1	2	3	4	5 X
Lack of well-defined project management systems.	1	2	3	4	5 X
Recruitment and dominance of incompetent and/or accidental project managers.	1	2	3	4 X	5
Poor remuneration in the public sector.	1	2	3 X	4	5

Factors (continued)	**Not at all Important**	**Slightly Important**	**Moderately Important**	**Very Important**	**Extremely Important**
External organisational factors negatively affecting operations of project teams.	1	2	3	4	5 ✗
Lack of maturity of project management practices in public sector.	1	2	3	4	5 ✗
Need for public accountability as projects are funded by public funds.	1	2	3	4 ✗	5
Expectations to satisfy wide range of stakeholders with different interests, internal and external to government body.	1	2	3	4 ✗	5
Little consideration to significant skills transfer to government project management junior staff by seniors.	1	2	3	4 ✗	5
Lower level positioning of project management within the government hierarchical structure limiting responsibility and authority.	1	2	3	4	5 ✗
Weak project management capabilities in the government implementing unit.	1	2	3	4	5 ✗

According to the results in Table 4.5 above, difficulty faced in coordination of departmental project teams; political interference and corruption; policy uncertainty which affects timeous projects delivery; delays impact on projects planning and execution due to legislation and government policies; lagging behind of regulatory and governance reforms; lack of well-defined project management systems and external organisational factors which negatively affect operations of project teams; lack of maturity of project management practices in public sector; lower level positioning of project management in the government hierarchical structure limiting responsibility and authority, and weak project management capabilities in the government implementing unit, as **extremely important**. To add on, recruitment and/or dominance of incompetent and/or accidental project managers; the need for public accountability as projects are funded by public funds; expectations to satisfy wide range of stakeholders with different interests, internal and external to government body and; little consideration to significant skills transfer to government project management junior staff by seniors, as **very important**. Poor remuneration in the public sector, to be **moderately important**.

This particular participant has ranked ten out of fifteen key challenges as shown above table 4.5, as extremely important but has identified: difficulty faced in coordination of departmental project teams; external organisational factors which negatively affect operations of project teams and; lack of maturity of project management practices in public sector as the top three factors which contribute towards poor construction project management practice faced by South Africa within the public sector.

The participant revealed in the interview that due to governmental departments working in silos, this results in lack of timeous communication leading into inadequate planning. Difficulty faced in coordination does not necessarily reflect only on officials at the level of implementing the projects but it also reflects the way the governance is. At government level, an entire infrastructure development project usually involves several services including housing, roads, public transport, even the environment like the parks, etc. Lack of adequate coordination at planning level do delay projects roll-out and usually filters down and affects projects implementation with project beneficiaries such as the community protesting as a result of delayed service delivery. The participant further revealed that often when communities are not adequately involved as stakeholders during planning in projects of an infrastructure nature where they are beneficiaries, it may result in severe delays during project implementation as they seek to be heard and also claim to have direct involvement and a share, leading to unnecessary standing time which the contractor will have to be paid for doing nothing, which is fruitless expenditure. Involving all stakeholders and giving necessary attention to all other external organizational factors during planning will go a long way in assisting the smooth implementation of projects. The participant further stated that due to lack of maturity of project management practices in the public sector, there is usually a confusion between conventional management and project management such that we end up with accidental project managers who do not have adequate project management skills and competent knowledge levels background in project management. This result in poorly managed public sector projects and compromised service delivery.

4.3.1.2 How do the Key Challenges Affecting Construction Project Management Practice Impact the Implementation of Project Management Within the South African Public Sector

The participant agrees that the key challenges as presented from the secondary data, inhibit the public sector from delivering projects successfully. Participant identified the top three factors from the above and argues that difficulty faced in coordination of departmental project teams result in lack of communication across various relevant department when planning

such projects which contribute to unsuccessful delivery of projects. The participant further argued that lack of timeous consultation with the community where service delivery takes place, not prioritising them by sourcing skills locally, not affording them training and skills transfer as well as enhancement opportunity resulting in job creation and empowerment could inhibit successful delivery. Also, lack of maturity of project management practices in public sector could inhibit successful delivery of projects as it will result in poor project management approach, poor strategy and decision-making process and thereby cost the organisation fruitless expenditure and time delays in executing projects.

The participant elaborated on the above argument regarding difficulty faced in coordination of departmental project teams as follows:

> *"So you will find a member of the mayoral committee (MMC) who is into his own thing and another who is also into his own thing. I find this problem of coordination departmentally, in silos, as the biggest kind of problem simply because you would have infrastructure projects, you will have a project where it's not like distinctly a housing project or it's not distinctly a roads project, somehow the road and the housing are linked, and sometimes they are supposed to be happening at the same time but there is lack of coordination."*

Participant further supported his own argument on lack of timeous consultation with the community where service delivery takes place, and not prioritising them by sourcing skills within the community, with the exerpt below:

> *"It's simply that this community seem to be saying, "we are also a resource, we probably have some things that the contractor can make use of". But now to see these kinds of things, where even people themselves, people who are not necessarily doing skilled work even those at the level of just general labour, services and so on. The community is left out of it. And that in itself, is also a big problem, you never believe it, sometimes how it can be a small group of people, but powerful they are in holding up an urgent project that must happen."*

4.3.1.3 Measures That can be Applied to Improve Construction Project Management Practice Challenges to Enhance Delivery of Successful Projects

From the key measures which are findings from the secondary data, the participant rated all measures presented, as **extremely important**, with the exception of four key measures which include competitive remuneration; standardised project management methodology across the public sector; detailed process for identifying and defining user and

supplementary requirements, scope and benefits and; strict change management process, which have been rated as **very important**.

The participant identified and recommended as the top three measures, making adequate experience a pre-requisite for project management senior positions within the public sector whereby the responsible public official must display adequate knowledge and experience to lead a team and achieve a quality delivery in construction projects; close collaboration among all stakeholders and during all project phases is important for good governance and ensuring benefits and value is realised by beneficiaries. Also, balanced academic training with socio-cultural infusion into the training of project managers will not only result in a clinically technological or engineering project but one that is humanised all along its execution.

4.3.2 PARTICIPANT 2

The participant is a construction project manager who has been a construction project management practitioner within the public sector in one of the state-owned development finance institution in the country for 15 years working on building projects within the construction industry. The participant is currently involved in 42 projects and has executed 20 projects worth over R100 000 001 combined over the past five years.

4.3.2.1 Key Challenges Affecting Construction Project Management Practice Within South African Public Sector

The participant ranked the fifteen factors presented through a questionnaire, which are findings from the secondary data and considered the key challenges affecting construction project management practice faced by South Africa within the public sector, as follows:

Table 4.6: Ranked Key Challenges Affecting Construction Project Management

Factors	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Difficulty faced in coordination of departmental project teams.	1	2	3	4	5 X
Political Interference and corruption.	1	2	3	4	5 X
Policy uncertainty which affects timeous projects delivery.	1	2	3	4	5 X

Factors (continued)	**Not at all Important**	**Slightly Important**	**Moderately Important**	**Very Important**	**Extremely Important**
Delays impact on projects planning and execution due to legislation and government policies.	1	2	3	4	5
Lagging behind of regulatory and governance reforms.	1	2	3	4	5
Lack of well-defined project management systems.	1	2	3	4	5
Recruitment and dominance of incompetent and/or accidental project managers.	1	2	3	4	5
Poor remuneration in the public sector.	1	2	3	4	5
External organisational factors negatively affecting operations of project teams.	1	2	3	4	5
Lack of maturity of project management practices in public sector.	1	2	3	4	5
Need for public accountability as projects are funded by public funds.	1	2	3	4	5
Expectations to satisfy wide range of stakeholders with different interests, internal and external to government body.	1	2	3	4	5
Little consideration to significant skills transfer to government project management junior staff by seniors.	1	2	3	4	5
Lower level positioning of project management within the government hierarchical structure limiting responsibility and authority.	1	2	3	4	5
Weak project management capabilities in the government implementing unit.	1	2	3	4	5

According to the results in Table 4.6 above, policy uncertainty which affects timeous projects delivery; difficulty faced in coordination of departmental project teams, political interference and corruption; delays impact on projects planning and execution due to legislation and

government policies; lagging behind of regulatory and governance reforms; lack of well-defined project management systems; recruitment and/or dominance of incompetent and/or accidental project managers; poor remuneration in the public sector; external organisational factors which negatively affect operations of project teams**;** lack of maturity of project management practices in public sector; the need for public accountability as projects are funded by public funds; expectations to satisfy wide range of stakeholders with different interests, internal and external to government body and; lower level positioning of project management in the government hierarchical structure limiting responsibility and authority, as **extremely important**. To add on, little consideration to significant skills transfer to government project management junior staff by seniors and, weak project management capabilities in the government implementing unit, as **very important**.

The participant identified lack of well-defined project management systems; lack of maturity of project management practices in public sector; little consideration to significant skills transfer to government project management junior staff by seniors and; delays impact on projects planning and execution due to legislation and government policies as the top four factors which contribute towards poor construction project management practice faced by South Africa within the public sector.

The participant revealed in the interview that inconsistent and inadequate risk allocation and management practices leads to inappropriate choice of procurement strategy in the public sector and this is associated with weak project management capabilities in the government implementing unit. Inadequate documentation of lessons learned from previous projects and lack of transfer of experience and skills results in low organizational knowledge, learning and transfer of knowledge. Further, lack of infrastructure delivery management skills within the public sector results in poor implementation of construction procurement strategies and, this is also associated with weak project management capabilities. Inappropriate organizational culture among project partners leads to resistance to change and innovation in the construction supply chain and, this is associated with lack of maturity of project management practices in the public sector.

4.3.2.2 How do the Key Challenges Affecting Construction Project Management Practice Impact the Implementation of Project Management Within the South African Public Sector

The participant concur that the key challenges as identified from the secondary data, inhibit the public sector from delivering successful projects. The participant identified the top three factors from the above and argues that delays impact on projects planning and execution

due to legislation and government policies result in the inability of the government to spend funding allocated and the inadequacy to assess timeously private consultants documents submitted due to lack of capacity contribute to unsuccessful delivery of projects. The participant further argues that mismatch between available skills and required skills whereby most project managers have no formal project management qualification nor training are a genuine obstacle to successful delivery. Also, the participant argued that little consideration to significant skills transfer to government project management junior staff by seniors contribute to poor delivery capacity and performance and thereby derail successful delivery of projects.

The participant expanded on the above argument regarding little consideration to significant skills transfer to government project management junior staff by seniors contributing to poor delivery capacity and performance, as follows:

> *"Which will also stem from the skills transfer, mostly government sectors absorb people who were its bursary holders, with book knowledge but no field experience and it makes it difficult for them to execute projects because they require close guidance and skills transfer from experienced practitioners until they are adequately trained."*

With regard to most of the public sector project managers not having formal project management qualification nor training, the participant elloquently said:

> *"What I have also picked up is, with JBCC for instance, when someone reaches Practical Completion, one thinks that the project is complete, and it is not the case. The same as with the NEC, it does not have practical completion but only completion. So, lack of formal qualication, training and experience result in the confusion and wrong application of these tools of managing projects."*

4.3.2.3 Measures That can be Applied to Improve Construction Project Management Practice Challenges to Enhance Delivery of Successful Projects

From the key measures presented, and which are findings from the secondary data, the participant rated all the fourteen key measures as **extremely important**.

The participant identified and recommended as the top three measures, standardised project management methodology across the public sector to enable effective coordination of inter-departmental project teams; clear demarcation between roles and responsibilities of public servants and their political principals to ensure public servants are able to run the administration without political meddling and prevent implementation of public sector projects

and programmes under unpredictable political environment. Public sector suffer from construction project management skills shortage mainly in strategic planning positions resulting in such work being outsourced to private consultants, the participant recommend the professionalising of the project management personnel recruitment and selection systems to improve on this challenge. Where necessary to use private consultants, significant skills transfer to public sector project management personnel should be mandatory, controlled and monitored.

4.3.3 PARTICIPANT 3

The participant is a programme manager who is a construction project management practitioner within the public sector in one of the local government institution in the country for 9 years working on building and structural engineering projects within the construction industry. The participant is currently involved in 3 projects and has executed 7 projects worth over R10 000 001 – R30 000 001 combined over the past five years.

4.3.3.1 Key Challenges Affecting Construction Project Management Practice Within South African Public Sector

The participant ranked the fifteen factors presented through a questionnaire, which are findings from the secondary data and considered the key challenges affecting construction project management practice faced by South Africa within the public sector, as follows:

Table 4.7: Ranked Key Challenges Affecting Construction Project Management

Factors	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Difficulty faced in coordination of departmental project teams.	1	2	3	4	5 X
Political Interference and corruption.	1	2	3 X	4	5
Policy uncertainty which affects timeous projects delivery.	1	2	3	4 X	5
Delays impact on projects planning and execution due to legislation and government policies.	1	2 X	3	4	5
Lagging behind of regulatory and governance reforms.	1	2	3 X	4	5

Factors (continued)	**Not at all Important**	**Slightly Important**	**Moderately Important**	**Very Important**	**Extremely Important**
Lack of well-defined project management systems.	1	2	3	4 X	5
Recruitment and dominance of incompetent and/or accidental project managers.	1	2	3	4 X	5
Poor remuneration in the public sector.	1	2	3	4 X	5
External organisational factors negatively affecting operations of project teams.	1	2 X	3	4	5
Lack of maturity of project management practices in public sector.	1	2	3	4	5 X
Need for public accountability as projects are funded by public funds.	1	2	3	4 X	5
Expectations to satisfy wide range of stakeholders with different interests, internal and external to government body.	1	2	3	4	5 X
Little consideration to significant skills transfer to government project management junior staff by seniors.	1	2	3	4	5 X
Lower level positioning of project management within the government hierarchical structure limiting responsibility and authority.	1	2	3	4	5 X
Weak project management capabilities in the government implementing unit.	1	2	3	4 X	5

According to the results in Table 4.7 above, difficulty faced in coordination of departmental project teams; lack of maturity of project management practices in public sector; expectations to satisfy wide range of stakeholders with different interests, internal and external to government body; little consideration to significant skills transfer to government project management junior staff by seniors and; lower level positioning of project management in the government hierarchical structure limiting responsibility and authority, are **extremely important**. Policy uncertainty which affects timeous projects delivery; lack of well-defined project management systems; recruitment and/or dominance of incompetent and/or accidental project managers; poor remuneration in the public sector; the need for public accountability as

projects are funded by public funds and; weak project management capabilities in the government implementing unit, are **very important**. Political interference and corruption; lagging behind of regulatory and governance reforms, are **moderately important**. External organisational factors which negatively affect operations of project teams and; delays impact on projects planning and execution due to legislation and government policies, are **slightly important**.

The participant identified delays impact on projects planning and execution due to legislation and government policies; lower level positioning of project management in the government hierarchical structure limiting responsibility and authority; expectations to satisfy wide range of stakeholders with different interests, internal and external to government body and; lack of maturity of project management practices in public sector as the top four factors which contribute towards poor construction project management practice within South Africa within public sector.

The participant revealed in the interview that due to lower level positioning of project management in the government hierarchical structure, project managers in the public sector have limited delegation of power and authority, and those who sit in approval committees or senior managers, who have such authority to sign in approval are reluctant to do so most of the time as they are not on the ground, lacks clear understanding of the issues and project management. Participant 3 further revealed that supply chain policies and public or municipal finance management acts provide good administrative guidance however, they also cause red tape which delay project execution as the projects go through various committees for approvals before implementation and this is associated with delays impact on projects planning and execution due to legislature and government policies. Also that, lack of maturity of project management practices and models affect most of public entities in the public sector. There is no focus on developing project management methodologies within the organization to ensure it enable them to meet their service delivery objectives and targets. Project managers are reduced to simple administrators with their role reduced to just reporting and doing internal functions.

It was further revealed that expectations to satisfy wide range of stakeholders with different interests, internal and external to government body proves to be a challenge as there are usually too many stakeholders all with expectations and sometimes conflicting demands and, this usually delay the project and the project manager to implement the project.

4.3.3.2 How do the Key Challenges Affecting Construction Project Management Practice Impact the Implementation of Project Management Within the South African Public Sector

The participant agree that key challenges as per the secondary data key findings, inhibit the public sector from delivering successful projects. The participant identified the top three factors from the above and argues that contrary to popular beliefs, public sector project management practitioners are poorly remunerated, hardly get raises and bonuses, and these result in low morale and possibly low productivity where they find themselves prioritising side hustles to make ends meet instead of projects. The participant further argues that only recently that the public sector started advertising senior project management practitioners positions with professional registration as a requirement. Few are professionally registered and there is not a shift to mentorship or proper skills transfer to interns, instead interns are given projects to manage, sometimes on their own with little knowledge. Also, due to lower level positioning of project management in the governmental hierarchical structure, project managers have limited responsibility and authority, they do not have professional indemnity insurance and have to go to a committee for approvals resulting in delays.

The participant further elaborated that:

"You give the person the professional indemnity insurance and delegation of authority to make decisions because that is what they do in the private sector. The project manager should have those powers but because of the structure of the government organizations, they do not have and therefore rely on their senior managers who might be reluctant to take decisions for fear of getting it wrong due to the lack adequate project management experience and understanding of processes".

4.3.3.3 Measures That can be Applied to Improve Construction Project Management Practice Challenges to Enhance Delivery of Successful Projects

From the key measures presented, which are findings from the secondary data, the participant rated professionalising the project management and planning in the public sector; stable and mature project management processes; make adequate experience a prerequisite for project management senior positions; introducing continuous professional development program for project management practitioners; professional project management personnel recruitment and selection systems; competitive remuneration; ensuring clear limitations on the role of politicians in order to create sufficient space for administration to run a professional public administration system; clear demarcation between the roles and responsibilities of public servants and their political principals and standardized project

management methodology across the public service and; close collaboration among all stakeholders and during all project phases, as **extremely important**. Detailed process for identifying and defining user and supplementary requirements, scope and benefits; strict change management process and; accountability and transparency in the public service, as **very important**. Balanced academic training which include technical and socio-cultural aspects in the curriculum is rated as **moderately important**.

The participant identified and recommended as the top three measures, professionalising project management and planning in the public sector; strict change management process and; detailed process for identifying and defining user and supplementary requirements, scope and benefits.

4.3.4 PARTICIPANT 4

The participant is a construction project manager who is a construction project management practitioner within the public sector in one of the national government departments in the country for 21 years working on buildings, mechanical engineering, electrical engineering, structural engineering, water and sanitation projects within the construction industry. The participant is currently involved in 10 projects and has executed 23 projects worth over R100 000 001 – no limit combined over the past five years.

4.3.4.1 Key Challenges Affecting Construction Project Management Practice South African Public Sector

The participant ranked the fifteen factors presented through a questionnaire, which are findings from the secondary data and considered the key challenges affecting construction project management practice within South African public sector, as follows:

Table 4.8: Ranked Key Challenges Affecting Construction Project Management

Factors	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Difficulty faced in coordination of departmental project teams.	1 X	2	3	4	5
Political Interference and corruption.	1 X	2	3	4	5
Policy uncertainty which affects timeous projects delivery.	1 X	2	3	4	5

Factors (continued)	**Not at all Important**	**Slightly Important**	**Moderately Important**	**Very Important**	**Extremely Important**
Delays impact on projects planning and execution due to legislation and government policies.	1	2	3	4	5
Lagging behind of regulatory and governance reforms.	1	2	3	4	5
Lack of well-defined project management systems.	1	2	3	4	5
Recruitment and dominance of incompetent and/or accidental project managers.	1	2	3	4	5
Poor remuneration in the public sector.	1	2	3	4	5
External organisational factors negatively affecting operations of project teams.	1	2	3	4	5
Lack of maturity of project management practices in public sector.	1	2	3	4	5
Need for public accountability as projects are funded by public funds.	1	2	3	4	5
Expectations to satisfy wide range of stakeholders with different interests, internal and external to government body.	1	2	3	4	5
Little consideration to significant skills transfer to government project management junior staff by seniors.	1	2	3	4	5
Lower level positioning of project management within the government hierarchical structure limiting responsibility and authority.	1	2	3	4	5
Weak project management capabilities in the government implementing unit.	1	2	3	4	5

According to the results in Table 4.8 above, poor remuneration in the public sector and external organisational factors which negatively affect operations of project teams, are

extremely important. The participant ranked the rest of the fifteen factors in the above table as **not at all important**.

The participant identified poor remuneration in the public sector and; external organisational factors which negatively affect operations of project teams as the top two factors which contribute towards poor construction project management practice faced by South Africa within the public sector.

The participant revealed in the interview that poor remuneration in the public sector contribute to the lack of knowledgeable, suitably qualified and experienced construction project management practitioners as they are attracted to private sector which offers better remuneration. The participant further emphasised that those that are currently in the government are mostly demoralised as a result but most would rather remain with the government rather than join the private sector where they will be found lacking in the required skill to deliver projects which are profit-driven and placing strong emphasis on triple constraints which are delivering the project within budget, scheduled time and within scope, compared to public sector projects which serve the purpose of providing basic public services to larger people. Participant also revealed that external organisational factors negatively affect operations of project teams as mostly in community based projects, the community hardly think of quality but are more concerned about how the project will empower them, create jobs for them and would go to great lengths including protests to stop the project until their demands are met.

4.3.4.2 How do the Key Challenges Affecting Construction Project Management Practice Impact the Implementation of Project Management Within the South African Public Sector

Participant agree that the fifteen key challenges which are findings from the secondary data, inhibit the public sector from delivering successful projects. The participant only identified top two factors from the above and argues that public sector project management practitioners are poorly remunerated and this contribute to the lack of experienced and adequately qualified practitioners in the sector. The participant further argued that salaries of project management practitioners, across public and private sector, should be standardized. Also, that external organisational factors contribute and using the community as an example, argued that they pays less or no attention at all to quality but to empowerment by employing local content and creating jobs.

The participant on elaborating on poor remuneration as a hindrance stated that:

"It doesn't lead to them to leave the public sector to go to private sector. So, it means project managers in the public sector are stuck with demoralisation because most of them, due to their limited experience, will find the private sector tough and too demanding, and therefore unlikely to succeed"

4.3.4.3 Measures that can be Applied to Improve Construction Project Management Practice Challenges to Enhance Delivery of Successful Projects

The participant rated professionalising project management and planning in the public sector; introducing continuous professional development program for project management practitioners; professional project management personnel recruitment and selection systems; competitive remuneration; ensuring clear limitations on the role of politicians in order to create sufficient space for administration to run a professional public administration system; clear demarcation between the roles and responsibilities of public servants and their political principals and; standardized project management methodology across the public service, as **extremely important**. The above have been identified and recommended by the participant as the top five measures that can be applied to improve construction project management practice challenges to enhance delivery of successful projects. The participant argues that continuous development program will enable project management practitioners to be kept abreast with the latest knowledge and trends in project management. Also that, remuneration in the public sector should be as competitive as in the private sector to attract experienced project managers and ensure adequate skill to deliver public sector projects successfully. The participant further argued that professionalized project management personnel recruitment and selection system should be introduced to ensure the right skill and experienced practitioners for the job. Lastly, clear demarcations on the role of politicians and project management practitioners to enable both to focus on their roles without any political meddling.

4.3.5 PARTICIPANT 5

The participant 5 is a programme manager who is a construction project management practitioner within the public sector in one of the state owned enterprise in the country for 25 years working on transportation facilities, energy, mechanical engineering and electrical engineering projects within the construction industry. The participant is currently involved in 5 projects and has executed 20 projects worth over R100 000 001 – no limit combined over the past five years.

4.3.5.1 Key Challenges Affecting Construction Project Management Practice within South African Public Sector

The participant ranked the fifteen factors presented through a questionnaire, which are findings from the secondary data and considered the key challenges affecting construction project management practice faced by South Africa within the public sector, as follows:

Table 4.9: Ranked Key Challenges Affecting Construction Project Management

Factors	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Difficulty faced in coordination of departmental project teams.	1	2	3	4 X	5
Political Interference and corruption.	1	2	3	4 X	5
Policy uncertainty which affects timeous projects delivery.	1	2	3	4 X	5
Delays impact on projects planning and execution due to legislation and government policies.	1	2	3 X	4	5
Lagging behind of regulatory and governance reforms.	1	2 X	3	4	5
Lack of well-defined project management systems.	1	2 X	3	4	5
Recruitment and dominance of incompetent and/or accidental project managers.	1	2	3	4 X	5
Poor remuneration in the public sector.	1	2 X	3	4	5
External organisational factors negatively affecting operations of project teams.	1	2	3	4 X	5
Lack of maturity of project management practices in public sector.	1	2	3	4 X	5
Need for public accountability as projects are funded by public funds.	1	2 X	3	4	5

Factors (continued)	**Not at all Important**	**Slightly Important**	**Moderately Important**	**Very Important**	**Extremely Important**
Expectations to satisfy wide range of stakeholders with different interests, internal and external to government body.	1	2	3	4 X	5
Little consideration to significant skills transfer to government project management junior staff by seniors.	1	2	3 X	4	5
Lower level positioning of project management within the government hierarchical structure limiting responsibility and authority.	1	2 X	3	4	5
Weak project management capabilities in the government implementing unit.	1	2	3	4 X	5

According to the results in Table 4.9 above, difficulty faced in coordination of departmental project teams; political Interference and corruption; policy uncertainty which affects timeous projects delivery; recruitment and/or dominance of incompetent and/or accidental project managers; external organisational factors which negatively affect operations of project teams; lack of maturity of project management practices in public sector; expectations to satisfy wide range of stakeholders with different interests, internal and external to government body and; weak project management capabilities in the government implementing unit, are **very important**. The participant ranked delays impact on projects planning and execution due to legislation and government policies and; little consideration to significant skills transfer to government project management junior staff by seniors, as **moderately important**. The rest of the fifteen factors which include lagging behind of regulatory and governance reforms; lack of well-defined project management systems; poor remuneration in the public sector; need for public accountability as projects are funded by public funds and; lower level positioning of project management in the government hierarchical structure limiting responsibility and authority were ranked, as **slightly important**.

The participant identified political interference and corruption; recruitment and/or dominance of incompetent and/or accidental project managers; lack of maturity of project management practices in public sector; expectations to satisfy wide range of stakeholders with different interests, internal and external to government body and; weak project management capabilities in the government implementing unit as the top five factors which contribute

towards poor construction project management expertise faced by South Africa within the public sector.

The participant revealed in the interview that due to lack of maturity of project management practices in the public sector, government processes are not aligned to a lean fast-track process that is vital to the successful execution of a projects. Every day counts and there is no time to follow weeks and months to get approvals required to procure necessary service, plant or equipment hence expectations to satisfy wide range of stakeholders with different interests, mostly conflicting, internal and external to government body contribute to derailing. Participant further revealed that projects are usually business decisions and political interference and corruption do derail the successful outcome. Participant 5 also identified recruitment and/or dominance of incompetent and/or accidental project managers and stated that a project manager should have certain attributes in addition to knowledge and experience as projects does not always follow the book but can be dynamic requiring practical experience and specific skills to navigate. Lack of the attributes, knowledge and experience contribute to weak project management capabilities in the government implementing unit and affect successful projects delivery.

4.3.5.2 How do the Key Challenges Affecting Construction Project Management Practice Impact the Implementation of Project Management Within the South African Public Sector

The participant concur that key challenges as presented through a questionnaire, which are findings from the secondary data inhibit the public sector from delivering successful projects. Participant identified the top five factors from the above as delays impact on projects planning and executing due to legislation and government policies; recruitment and/or dominance of incompetent/accidental project managers; lack of maturity of project management practices in public sector; expectations to satisfy various stakeholders with different interests and weak project management capabilities in the government implementing unit.

The participant argues that legislation and government policies delays projects planning and execution as it slow down the procurement process and not being able to procure the best service provider while the focus is on the lowest cost and B-BBEE status. The participant further argues that not recruiting the suitably qualified and experienced project managers as well as lack of consequence management for non-performers impact successful delivery of projects and result in weak project management capabilities within the government implementing unit.

To elaborate on not recruting suitably qualified and experienced personnel, the participant stated that:

> *"That is why especially now in recent weeks, if you read the newspapers, management is constantly saying we need to bring back people that actually know how to operate and maintain and fix a plant. Because we have been using contractors that are not competent. But because of people saying well, they don't care about competence, they care about what the status is, are they from the local community?, and local people must get a chance. And that was the philosophy over the last 10 years and that is why our plants aren't running."*

4.3.5.3 Measures that can be Applied to Improve Construction Project Management Practice Challenges to Enhance Delivery of Successful Projects

From the key measures presented, which are findings from the secondary data, the participant rated making adequate experience a prerequisite for project management senior positions; professionalising project management personnel recruitment and selection systems; ensuring clear limitations on the role of politicians in order to create sufficient space for administration to run a professional public administration system; accountability and transparency in the public service and; close collaboration among all stakeholders and during all project phases, as **very important**. Introduction of continuous professional development program for project management practitioners; competitive remuneration; clear demarcation between the roles and responsibilities of public servants and their political principals; standardizing project management methodology across the public sector; detailed process for identifying and defining user and supplementary requirements, scope and benefits and; strict change management process, as **moderately important**. The participant ranked professionalising project management and planning in public sector; stable and mature project management processes and; balanced academic training which include technical and socio-cultural aspects in the curriculum, as **slightly important**.

The participant identified and recommended the top five from the key measures, the making adequate experience a prerequisite for project management senior positions; professionalising project management personnel recruitment and selection systems; ensuring clear limitations on the role of politicians in order to create sufficient space for administration to run a professional public administration system; accountability and transparency in the public service and close collaboration among all stakeholders and during all project phases.

4.3.6 PARTICIPANT 6

The participant is a project manager within the public sector in one of the state-owned enterprise in the country and has been a project management practitioner for 9 years working on transportation facilities/roads, water and sanitation, buildings and structural engineering projects within the construction industry. The participant is currently involved in 3 projects and has executed 10 projects worth over R100 000 001 – no limit combined over the past five years.

4.3.6.1 Key Challenges Affecting Construction Project Management Practice Faced by South Africa Within the Public Sector

The participant ranked the fifteen factors presented through a questionnaire, which are findings from the secondary data and considered the key challenges affecting construction project management practice faced by South Africa within the public sector, as follows:

Table 4.10: Ranked Key Challenges Affecting Construction Project Management

Factors	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Difficulty faced in coordination of departmental project teams.	1	2	3	4	5 X
Political Interference and corruption.	1	2	3	4	5 X
Policy uncertainty which affects timeous projects delivery.	1	2	3	4	5 X
Delays impact on projects planning and execution due to legislation and government policies.	1	2	3	4	5 X
Lagging behind of regulatory and governance reforms.	1	2	3	4 X	5
Lack of well-defined project management systems.	1	2	3	4 X	5
Recruitment and dominance of incompetent and/or accidental project managers.	1	2	3	4	5 X
Poor remuneration in the public sector.	1	2	3 X	4	5

Factors (continued)	**Not at all Important**	**Slightly Important**	**Moderately Important**	**Very Important**	**Extremely Important**
External organisational factors negatively affecting operations of project teams.	1	2	3	4 X	5
Lack of maturity of project management practices in public sector.	1	2 X	3	4	5
Need for public accountability as projects are funded by public funds.	1	2	3	4 X	5
Expectations to satisfy wide range of stakeholders with different interests, internal and external to government body.	1	2	3	4 X	5
Little consideration to significant skills transfer to government project management junior staff by seniors.	1	2 X	3	4	5
Lower level positioning of project management within the government hierarchical structure limiting responsibility and authority.	1	2	3	4 X	5
Weak project management capabilities in the government implementing unit.	1	2	3	4	5 X

According to the results in Table 4.10 above, difficulty faced in coordination of departmental project teams; political Interference and corruption; policy uncertainty which affects timeous projects delivery; delays impact on projects planning and execution due to legislation and government policies; recruitment and/or dominance of incompetent and/or accidental project managers and; weak project management capabilities in the government implementing unit as **extremely important**. The participant ranked lagging behind of regulatory and governance reforms; lack of well-defined project management systems; external organisational factors which negatively affect operations of project teams; need for public accountability as projects are funded by public funds; lower level positioning of project management in the government hierarchical structure limiting responsibility and authority; and expectations to satisfy wide range of stakeholders with different interests, internal and external to government body as **very important**. Poor remuneration in the public sector as **moderately important** and, lack of maturity of project management practices in public sector and; little consideration to

significant skills transfer to government project management junior staff by seniors as **slightly important**.

The participant identified political interference and corruption; weak project management capabilities in the government implementing unit; expectations to satisfy wide range of stakeholders with different interests, internal and external to government body; delays impact on projects planning and execution due to legislation and government policies and lack of well-defined project management systems as the top five factors which contribute towards lack of construction project management practice faced by South Africa within the public sector.

The participant revealed in the interview that interest from politicians and other influential people often results in appointments of incapable contractors and this leads to delays in projects delivery, sometimes terminations due to non or poor performance. The project managers find it difficult to execute proper decisions as the contractors have ties with those above them. Many public sector employees do not possess the relevant qualifications and experience to carry out projects, and as a result of weak project management capabilities, there is no commitment and adequate effort in their application. He further revealed that there is an increasing trend among communities to stop projects until their demands are met, which may include that they be subcontracted or cash benefit. Participant 6 further revealed that sometimes there is delays in decision making during planning due to policies and processes that need to be followed, with decision makers reluctant to make decisions due to lack of well-defined systems as wrong decisions may be costly.

4.3.6.2 How do the Key Challenges Affecting Construction Project Management Practice Impact the Implementation of Project Management Practice Within the South African Public Sector

The participant agree that the fifteen key challenges as presented through a questionnaire, which are findings from the secondary data inhibit the public sector from delivering successful projects. Participant identified the top five factors from the above and argues that expectations from various stakeholders with different interest such as business people within a community who might claim a stake in the project and, unless their demands are met, the project might not proceed. The participant further argues that poor application of project management principles due to weak capabilities and lack of inadequate skill will most likely derail the project delivery. Project planning is often stalled by legislation and policies that need to be complied with prior to execution and this usually unnecessarily takes longer. Some of the policies are not so clear and takes significant amount of time among the stakeholders to make necessary decisions. Also, external organisational factors such as strikes, suppliers production delays

amongst others, negatively affects implementation by project teams and result in project delays.

From the interview, the participant elaborated on weak capabilities and lack of inadequate skill, postulated that:

> *"In many public sectors, you'll find that somebody has been there for a long period. They maybe did this and that and likely not having the correct qualifications. They will just say please head this project. Then often time these people do not have the proper interest and in-depth knowledge of what needs to be done. This is what we experience with many public sectors when we do projects."*

4.3.6.3 Measures that can be Applied to Improve Construction Project Management Practice Challenges to Enhance Delivery of Successful Projects

From the fourteen measures presented through a questionnaire, which are findings from the secondary data, the participant rated stable and mature project management processes; introduction of continuous professional development program for project management practitioners; ensuring clear limitations on the role of politicians in order to create sufficient space for administration to run a professional public administration system; clear demarcation between the roles and responsibilities of public servants and their political principals and; close collaboration among all stakeholders and during all project phases as **extremely important**. The participant ranked professionalising project management and planning in public sector; making adequate experience a prerequisite for project management senior positions; Competitive remuneration; accountability and transparency in the public service and balanced academic training which include technical and socio-cultural aspects in the curriculum as **very important**. Professionalising project management personnel recruitment and selection systems; standardizing project management methodology across the public service and; strict change management process as **moderately important**.

The participant identified and recommended as the top five measures: identifying and ensuring close collaboration among all stakeholders during the project lifecycle in ensuring that all interests are taken into consideration and avoid delays at a later stage; roles and responsibilities need to be clear amongst politicians and public servants to avoid interference resulting project delivery delays; introduction of continuous professional development program for the project management practitioners to ensure that they remain up to date with the latest trends and knowledge in the industry and therefore enhance their projects delivery capability; the role of political principals be clearly limited to formulating policy in ensuring that they do

not influence the administrators on projects procurement and implementation and; balanced academic training which include technical and socio-cultural aspects in the curriculum to enable ability to relate to various stakeholders and ensure efficiency in project delivery.

4.3.7 PARTICIPANT 7

The participant is a construction project manager within the public sector in one of the provincial government's department in the country and has been a project management practitioner for 20 years working on buildings projects within the construction industry. The participant is currently involved in 17 projects and has executed 4 projects worth over R100 000 001 – no limit combined over the past five years.

4.3.7.1 Key Challenges Affecting Project Management Practice Faced by South Africa Within the Public Sector

The participant ranked the fifteen factors which are findings from the secondary data and presented through a questionnaire, and considered the key challenges affecting construction project management practice faced by South Africa within the public sector, as follows:

Table 4.11: Ranked Key Challenges Affecting Construction Project Management

Factors	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Difficulty faced in coordination of departmental project teams.	1	2	3	X 4	5
Political Interference and corruption.	1	2	3	4	X 5
Policy uncertainty which affects timeous projects delivery.	1	2	3	4	X 5
Delays impact on projects planning and execution due to legislation and government policies.	1	2	X 3	4	5
Lagging behind of regulatory and governance reforms.	1	2	3	X 4	5
Lack of well-defined project management systems.	1	2	3	X 4	5
Recruitment and dominance of incompetent and/or accidental project managers.	1	2	3	X 4	5

Factors (continued)	**Not at all Important**	**Slightly Important**	**Moderately Important**	**Very Important**	**Extremely Important**
Poor remuneration in the public sector.	1	2	3	4 X	5
External organisational factors negatively affecting operations of project teams.	1	2	3	4	5 X
Lack of maturity of project management practices in public sector.	1	2	3	4	5 X
Need for public accountability as projects are funded by public funds.	1	2	3	4 X	5
Expectations to satisfy wide range of stakeholders with different interests, internal and external to government body.	1	2	3	4	5 X
Little consideration to significant skills transfer to government project management junior staff by seniors.	1	2	3 X	4	5
Lower level positioning of project management within the government hierarchical structure limiting responsibility and authority.	1	2 X	3	4	5
Weak project management capabilities in the government implementing unit.	1	2	3	4	5 X

According to the results in Table 4.11 above, political Interference and corruption; policy uncertainty which affects timeous projects delivery; weak project management capabilities in the government implementing unit; external organisational factors which negatively affect operations of project teams; lack of maturity of project management practices in public sector and; expectations to satisfy wide range of stakeholders with different interests, internal and external to government body as **extremely important**. The participant ranked difficulty faced in coordination of departmental project teams; recruitment and/or dominance of incompetent and/or accidental project managers; lagging behind of regulatory and governance reforms; lack of well-defined project management systems; need for public accountability as projects are funded by public funds and; poor remuneration in the public sector as **very important**. Delays impact on projects planning and execution due to legislation and government policies; and little consideration to significant skills transfer to government project management junior staff by seniors as **moderately important**. Lower level positioning of project management in

the government hierarchical structure limiting responsibility and authority as **slightly important**.

The participant identified political interference and corruption; recruitment of incompetent project managers; lack of maturity in project management systems and; expectations to satisfy wide range of stakeholders with different interests, internal and external to government body as the top four factors which contribute towards lack of construction project management expertise faced by South Africa within the public sector.

The participant revealed in the interview that political interference creates a platform for political cronyism resulting interference with procurement processes to ensure they favour awarding of projects to their friends, fellow politicians or organisations deemed supportive to their political affiliations regardless of their capability to deliver quality work which usually affect delivery of successful projects due to non or poor performance and, the project managers usually find it difficult to execute proper decisions or even terminate such non-performing contracts as the contractors have strong ties with their political principals. Government has not been that attractive to competent and experienced project managers. It is not comparable with the private sector in terms of the level of competence and still leans towards the private sector for such. Also the size of the projects that people get exposed to hardly provides a platform in terms of growth and development due to its limited size and, what remains is that they attract newly qualified graduates who come straight into the government from the university – lack of adequate exposure makes it difficult to get your professional registration. He further revealed that due the large number of stakeholders involved in government projects, this makes the public sector business complex, and in an attempt by the government to satisfy so many stakeholders, this result in potential delays in successful delivery of projects. The participant further revealed that lack of maturity in public sector project management systems contribute to delays in decision making during planning and execution due to uncertainty and fear of making costly decisions.

4.3.7.2 How do the Key Challenges Affecting Construction Project Management Expertise Impact the Implementation of Project Management Practice Within the South African Public Sector

The participant concur that the key challenges as presented through a questionnaire, which are findings from the secondary data inhibit the public sector from delivering successful projects. Participant identified the top four factors from the above and argues that expectations to satisfy wide range of stakeholders with different interests, both inside and outside government usually inhibit project delivery as projects tends to come to a standstill until such

stakeholders are satisfied. Included in the factors identified above, the participant also identified the recruitment of incompetent project managers; lack of maturity in public sector project management practices and; political interference and corruption.

On political interference and corruption being one of the top identified factor inhibiting successful projects delivery within public sector, the participant added that:

> *"We have normalised political patronage to override principle and professional practice, and that you will never have a proper structure of governance that delivers service accordingly if patronage if patronage is at the forefront, that results in corruption."*

4.3.7.3 Measures that can be Applied to Improve Construction Project Management Practice Challenges to Enhance Delivery of Successful Projects

From the fourteen key measures, which are findings from the secondary data, and presented through a questionnaire, the participant rated professionalising project management and planning in public sector; stable and mature project management processes; making adequate experience a prerequisite for project management senior positions; introduction of continuous professional development program for project management practitioners; professionalising project management personnel recruitment and selection systems; ensuring clear limitations on the role of politicians in order to create sufficient space for administration to run a professional public administration system and; clear demarcation between the roles and responsibilities of public servants and their political principals as **extremely important**. The participant ranked competitive remuneration; standardizing project management methodology across the public service; close collaboration among all stakeholders and during all project phases; accountability and transparency in the public service and; balanced academic training which include technical and socio-cultural aspects in the curriculum and strict change management process as **very important**.

The participant identified and recommended as the top four measures, professionalising project management and planning in public sector; introduction of continuous professional development program for the project management practitioners to ensure that they remain up to date with the latest trends and knowledge in the industry and therefore enhance their projects delivery capability and; making adequate experience a prerequisite for project management senior positions and clear demarcation on roles and responsibilities amongst politicians and public servants to avoid interference resulting in delayed projects delivery.

4.4 DISCUSSION OF FINDINGS

This part discusses the findings of this study to determine whether the research questions have been answered from the above findings. The discussion also takes into consideration the secondary data reviewed in chapter two. The results are presented in relation to the research themes that guided the study and as found in the questionnaire and the data as analysed.

4.4.1 RESEARCH THEME 1: Key Challenges Affecting Construction Project Management Practice Within South African Public Sector

According to the results in Table 4.12 below, more than half (57.1%) of the participants find difficulty faced in coordination of departmental project teams; political interference and corruption; policy uncertainty which affects timeous projects delivery; external organisational factors which negatively affect operations of project teams and; lack of maturity of project management practices in the public sector, to be extremely important. To add on, 57.1% of the participants revealed that the recruitment and/or dominance of incompetent and/or accidental project managers and; the need for public accountability as projects are funded by public funds, as very important. Furthermore, 42.9% of the participants found that the delays impact on projects planning and execution due to legislation and government policies; expectations to satisfy wide range of stakeholders with different interests, internal and external to government body; lower-level positioning of project management in the government hierarchical structure limiting responsibility and authority and; weak project management capabilities in the government implementing unit, as extremely important. Lastly, 28.6% of the participants revealed that the factor lagging behind of regulatory and governance reforms and; poor remuneration in the public sector, to be extremely important.

Table 4.12: Key Challenges Affecting Project Management Practice

Difficulty Faced In Coordination of Departmental Project Teams				
	Frequency	**Percentage**	**Mean**	**Std. Dev**
Not Important at all	1	14,3	4,14	1,464
Very Important	2	28,6		
Extremely Important	4	57,1		
Total	7	100		
Political Interference and Corruption				
Not Important at all	1	14,3	4,00	1,528
Moderately Important	1	14,3		
Very Important	1	14,3		
Extremely Important	4	57,1		
Total	7	100		

Policy Uncertainty Which Affects Timeous Projects Delivery				
Not Important at all	1	14,3	4,14	1,464
Very Important	2	28,6		
Extremely Important	4	57,1		
Total	7	100		
Delays Impact on Projects Planning and Execution Due to Legislation and Government Policies				
Not Important at all	1	14,3	3,43	1,618
Slightly Important	1	14,3		
Moderately Important	2	28,6		
Extremely Important	3	42,9		
Total	7	100		
Lagging Behind of Regulatory and Governance Reforms				
Not Important at all	1	14,3	3,43	1,512
Slightly Important	1	14,3		
Moderately Important	1	14,3		
Very Important	2	28,6		
Extremely Important	2	28,6		
Total	7	100		
Lack of Well-Defined Project Management Systems				
Not Important at all	1	14,3	3,57	1,512
Slightly Important	1	14,3		
Very Important	3	42,9		
Extremely Important	2	28,6		
Total	7	100		
Recruitment and/or Dominance of Incompetent and/or Accidental Project Managers				
Not Important at all	1	14,3	3,86	1,345
Very Important	4	57,1		
Extremely Important	2	28,6		
Total	7	100		
Poor Remuneration In The Public Sector				
Slightly Important	1	14,3	3,71	1,113
Moderately Important	2	28,6		
Very Important	2	28,6		
Extremely Important	2	28,6		
Total	7	100		
External Organisational Factors Which Negatively Affect Operations of Project Teams				
Slightly Important	1	14,3	4,29	1,113
Very Important	2	28,6		
Extremely Important	4	57,1		
Total	7	100		
Lack of Maturity of Project Management Practices In Public Sector				
Not Important at all	1	14,3	3,86	1,676
Slightly Important	1	14,3		
Very Important	1	14,3		
Extremely Important	4	57,1		
Total	7	100		

Need for Public Accountability as Projects are Funded by Public Funds				
Not Important at all	1	14,3	3,43	1,397
Slightly Important	1	14,3		
Very Important	4	57,1		
Extremely Important	1	14,3		
Total	7	100		
Expectations to Satisfy Wide Range Of Stakeholders With Different Interests, Internal and External to Government Body				
Not Important at all	1	14,3	4,00	1,414
Very Important	3	42,9		
Extremely Important	3	42,9		
Total	7	100		
Little Consideration to Significant Skills Transfers to Government Project Management Junior Staff by Seniors				
Not Important at all	1	14,3	3,14	1,345
Slightly Important	1	14,3		
Moderately Important	2	28,6		
Very Important	2	28,6		
Extremely Important	1	14,3		
Total	7	100		
Lower-Level Positioning of Project Management in the Government Hierarchical Structure Limiting Responsibility and Authority				
Not Important at all	1	14,3	3,43	1,718
Slightly Important	2	28,6		
Very Important	1	14,3		
Extremely Important	3	42,9		
Total	7	100		
Weak Project Management Capabilities in the Government Implementing Unit				
Not Important at all	1	14,3	4,00	1,414
Very Important	3	42,9		
Extremely Important	3	42,9		
Total	7	100		
Mean: 3,76 **Std Deviation: 1,115**				

Findings from the survey supports the work of Mabelebele (2006) where he concluded that project management challenges in the South African public sector include: coordination of inter-departmental project teams; power, authority and political environment; project management skills shortage and; government planning cycle and institutional challenges. PwC Africa (2014) also identified key challenges including: political interference and corruption; policy uncertainty which affects timeous project delivery; bureaucratic delays in decision-making and; lagging behind of regulatory and governance reforms.

This study found and ranked the following key challenges affecting project management practice within South African public sector: external organisational factors which negatively affect operations of project teams (1); difficulty faced in coordination of departmental project

teams (2); policy uncertainty which affects timeous projects delivery (2); political interference and corruption (3); expectations to satisfy wide range of stakeholders with different interests, internal and external to government body (3); weak project management capabilities in the government implementing unit (3); recruitment and/or dominance of incompetent and/or accidental project managers (4); lack of maturity of project management practices in public sector (4); poor remuneration in the public sector (5); lack of well-defined project management systems (6); delays impact on projects planning and execution due to legislation and government policies (7); lagging behind of regulatory and governance reforms (7); need for public accountability as projects are funded by public funds (7); lower-level positioning of project management in the government hierarchical structure limiting responsibility and authority (7); little consideration to significant skills transfer to government project management junior staff by seniors (8).

4.4.2 RESEARCH THEME 2: Factors Impacting the Implementation of Project Management Practice Within the South African Public Sector

From the fifteen key challenges as presented through a questionnaire, which are findings from the secondary data, all participants collectively agree that the key challenges contribute to poor construction project management practice, which inhibit the sector from delivering projects successfully and this has a negative impact on service delivery. Participants were asked how the key challenges impact the implementation of project management practice within the public sector, by identifying their top three to five factors from the above and discussing how. The analysis based on the seven participants reveals the following results:

Table 4.13: Factors Inhibiting Delivering Projects Successfully

Factors	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Difficulty faced in coordination of departmental project teams.	P4	-	-	P3;P5;P6;P7	P1;P2
Political Interference and corruption.	P4	-	P3	P5	P1;P2;P6;P7
Policy uncertainty which affects timeous projects delivery.	P4	-	P5;P7	P3	P1;P2;P6
Delays impact on projects planning and execution due to legislation and government policies.	P4	-	-	P5;P7	P1;P2;P3;P6

Factors *(continued)*	**Not at all Important**	**Slightly Important**	**Moderately Important**	**Very Important**	**Extremely Important**
Lagging behind of regulatory and governance reforms.	P4	-	P5;P7	P6	P1;P2;P3
Lack of well-defined project management systems.	P4	P5	-	P1;P2;P7	P3;P6
Recruitment and dominance of incompetent and/or accidental project managers.	P4	-	-	P1;P3;P5;P6; P7	P2
Poor remuneration in the public sector.	-	P5	P1;P6	P7	P2;P3;P4
External organisational factors negatively affecting operations of project teams.	-	-	-	P5	P1;P2;P3;P4 ;P6;P7
Lack of project management practices maturity in public sector.	P4	-	P6	P5;P7	P1;P2;P3
Need for public accountability as projects are funded by public funds.	P4	P5	P6	P1;P3;P7	P2
Expectations to satisfy wide range of stakeholders with different interests, internal and external to government body.	P4	-	-	P1;P5	P2;P3;P6;P7
Little consideration to significant skills transfer to government project management junior staff by seniors.	P4	-	P5;P7	P1;P2;P6	P3
Lower level positioning of project management within government hierarchical structure limiting the responsibility and authority.	P4	P7	P1;P5	P3	P2;P6
Weak project management capabilities in the government implementing unit.	P4	-	-	P5	P1;P2;P3;P6 ;P7

According to the results in Table 4.13 above, 85.7% of the participants identified external organisational factors which negatively affect operations of project teams; 71.4% of the participants identified weak project management capabilities in the government implementing

unit and recruitment and/or dominance of incompetent and/or accidental project managers. Furthermore, 57.1% of the participants identified political interference and corruption; delays impact on projects planning and execution due to legislation and government policies; expectations to satisfy wide range of stakeholders with different interests, internal and external to government body and difficulty faced in coordination of departmental project teams. 42.9% of the participants identified policy uncertainty which affects timeous projects delivery; lagging behind of regulatory and governance reforms; poor remuneration in the public sector; lack of maturity of project management practices in public sector; need for public accountability as projects are funded by public funds and little consideration to significant skills transfer to government project management junior staff by seniors.

Data extracted from the semi-structured interviews on how the key challenges inhibit the sector from delivering projects successfully further support the above by revealing that there are quite a number of negative factors that inhibit project managers to successfully deliver services in the public sector and factors include: lack of community engagement; poor planning and coordination; absence of lessons learnt documentation; poor consequence management; decentralisation of departments; poor remuneration; delays and stringent policies; employment of unqualified employees; inadequate implementation of projects and; political interference. The figure below is a visual representation of the inhibiting factors put forth.

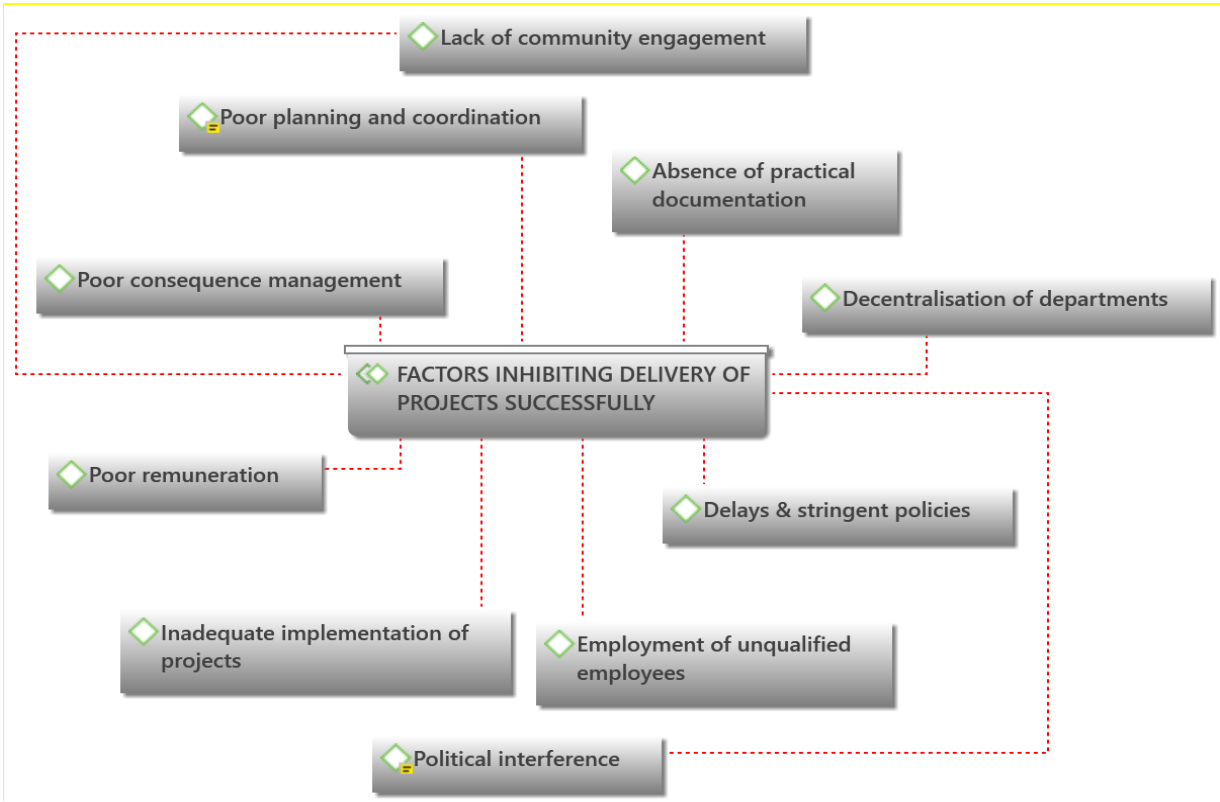


Figure 4.4: Factors Inhibiting Delivery of Projects Successfully

Lack of Community Engagement

Participant 1 posit that involving community members in public or community projects makes the society to have a sense of control and ownership and that minimize project regression and delays due to societal unrests. The participant however argues that there is lack of community engagement and this contribute to the factors inhibiting service delivery. Participant 1 further highlight that the issue with non inclusivity of community members is that contractors, although they have skill and capacity to carry out their duties, they still need a conducive enviroment and a fair understanding socio-cultural aspects of the community which can be attained by involving the community as a stakeholder, to ensure project implementation with less conflicts. Contrarily, participant 4 maintain that the above is not always the case, when the community and local contractors get involved, quality get compromised as their aim is mostly to get the work done quickly at whatever cost, so they can be paid.

Poor Planning and Coordination

Poor planning and coordination are one amongst other factors contributing to poor projects delivery within the public sector. Participant 1 explained that stakeholders from different departments are not working collaboratively to solve the construction project management challenges, each stakeholder official is doing their own thing resulting in the projects suffering. Supporting the above statement, participant 7 added that the officials do not sit down as a team and properly schedule the plan or strategy to be followed to thoroughly execute a project. That leaves the project team members with no clear idea of what is expected of them as they work on the projects.

Absence of Archived Lessons Learnt Documentation

Participant 2 argued that lack of archived documentation comprising lessons learnt from previous projects may disadvantage the execution of current projects, because when they experience problems with a similar project at hand, they have no previous lessons learned they can refer to for guidance, hence projects end up taking too long to be completed.

Decentralisation of Departments

One participant claimed that having cross-sector partnerships coming together to execute a project might sometimes not work because it might take a while to reach a common ground due too many involved stakeholders from different departments with different expectations, and resulting in project delays. However, most participants argued that having a centralized project implementation unit across several departments will enhance and expedite projects

execution provided the unit comprise of adequately qualified and experienced project management practitioners.

Poor Consequence Management

Participants 1 and 7 argued that the absence of strict measures taken to professionally and effectively guard against transgression of public government officials is also a serious factor that contributes to poor projects delivery. The officials do as they please because there is no consequence management. Participant 7 further added that, not only government officials should be subjected to consequence management, penalties should be imposed across projects team members including professionals where there is serious underperformance.

Poor Remuneration

All participants agreed that good remuneration motivates employees to be more enthusiastic about their job and ensuring timeous deliverables. Participants 3 and 4 further stated that public sector project managers are poorly compensated and therefore feel despondent with participant 3 adding that poor remuneration discourage experienced project management practitioners into joining the public sector.

Delays & Stringent Policies

Most participants shared that projects delays result in delayed service delivery. The delays result in additional costs to the projects, and if project managers are consistently delayed due to stringent policies, this have a negative impact on service delivery. Participant 3 further stated that the policies implemented affects project managers who fail to deliver projects timeously, and to service providers, resulting in extended stay on site and payment delays.

Inadequate Implementation of Projects

Some participants posit that inadequate implementation of projects also hinders successful service delivery. Participant 1 indicated that there are several components of public sector community-based projects scheduled to be implemented, however these components are hardly implemented. Requirements as per policy documentation, and some of the procurement policies require certain percentage for skills training, sourcing from local suppliers and using local content but these components are hardly complied with, with minimal or no consequence.

Employment of Unqualified Employees

Most of the participants stated that employing staff with inadequate skills and experience affects the productivity of other competent employees, as they cannot keep up with the required rate of delivery while they are still learning on the job. Participant 2 also alluded to that although the government is trying to create opportunities for the graduates, that in turn has its own implications, because majority of graduates do not have the exposure of practical skills to back up their theoretical knowledge which inturn result in the inability to execute projects. Participant 4 brought another perspective in that same thing happens within communities, people are hired for the sake of community inclusion whilst projects suffer. Community members usually lack relevant skills and their inclusion in big projects will affect the quality of work to be produced, and where interventions are suggested by a consultant on the project to enhance quality of works, the community usually fights back. Participant 6 stressed further on the above factor by mentioning that projects get jeopardized by putting old staff to lead projects due to their number of years within the institution, even though they lack in-depth capacity, skills and training to lead and carry-out the projects.

Political Interference

In addition to the key challenges inhibiting successful projects delivery, all participants agreed that political officials usually meddle with project management processes for their benefit, and this negatively affects the morale of project managers. Participant 4 indicated that politicians meddle with processes to an extent that procurement processes are bypassed resulting in the appointment of their preferred contractor, overlooking the best potential contractor in terms of capability and capacity. This usually result in unsuccessful delivery of projects or so many delays if the project is finally delivered. In another perspective, participant 7 stated that political principals use construction projects for socio-economic development and for electioneering hence they promise the community development within a short period without considering the detailed planning involved prior to implementing, which takes considerable time.

4.4.3 RESEARCH THEME 3: Measures that can be Applied to Improve Construction Project Management Practice in the Public Sector in South Africa

According to the results in Table 4.14 below, 85.7% of the participants identified, introduction of continuous professional development program for project management practitioners; ensuring clear limitations on the role of politicians in order to create sufficient space for administration to run a professional public administration system and; clear demarcation between the roles and responsibilities of public servants and their political principals. 71.4% of

the participants identified, professionalise project management and planning in the public sector; stable and mature project management processes; make adequate experience a prerequisite for project management senior positions; professional project management personnel recruitment and selection systems. Furthermore, 57.1% of the participants identified close collaboration among all stakeholders and during all project phases. 42.9% of the participants identified, competitive remuneration and; standardized project management methodology across the public service.

Table 4.14: Measures to Improve on Project Management Practice

Recommendations to Improve on the Project Management Practice Challenges to Enhance Delivery of Successful Projects	**Not at all Important**	**Slightly Important**	**Moderately Important**	**Very Important**	**Extremely Important**
Professionalise project management and planning in the public sector.	-	P5	-	P6	P1;P2;P3; P4;P7
Stable and mature project management processes.	P4	P5	-	-	P1;P2;P3; P6;P7
Make adequate experience prerequisite for project management senior positions.	P4	-	-	P5;P6	P1;P2;P3;P7
Introduce continuous professional development program for project management practitioners.	-	-	P5	-	P1;P2;P3; P4;P6;P7
Professional project management personnel recruitment and selection systems	-	-	P6	P5	P1;P2;P3; P4;P7
Competitive remuneration.	-	-	P5	P1;P6;P7	P2;P3;P4
Ensure clear limitations on the role of politicians in order to create sufficient space for administration to run a professional public administration system	-	-	-	P5	P1;P2;P3; P4;P6;P7
Clear demarcation between the roles and responsibilities of public servants and their political principals (depoliticize).	-	-	P5	-	P1;P2;P3; P4;P6;P7

Standardized project management methodology across the public service.	-	-	P5;P6	P1;P7	P2;P3;P4
Detailed process for identifying and defining user and supplementary requirements, scope and benefits.	P4	-	P5;P6	P1;P3;P7	P2
Strict change management process.	P4	-	P3;P5	P1;P3;P7	P2
Accountability and transparency in the public service.	P4	-	-	P3;P5;P6; P7	P1;P2
Close collaboration among all stake-holders and during all project phases.	P4	-	-	P5;P7	P1;P2;P3;P6
Balanced academic training which include technical and socio-cultural aspects in the curriculum.	P4	P5	P3	P6;P7	P1;P2

Data extracted from the semi-structured interviews explored the recommendations participants made on measures that could be applied to improve on the project management practice challenges so as to enhance service delivery and they include: employing professionals with adequate skills and experience; standardizing salary across the public and private sectors; implementing methods to circumvent policy red tape; remodelling construction project management training; segmenting the administrative processes; establishing archive centres for project management; public sector to offer professional indemnity insurance for project managers; curbing political interference; enforcing strict policies; promoting continuous development and; ensuring effective community engagement.

The participants collectively recommended applying the above measures to improve on the project management practice challenges thereby enhancing the successful delivery of projects. The figure below is a visual representation of the recommendations put forth.

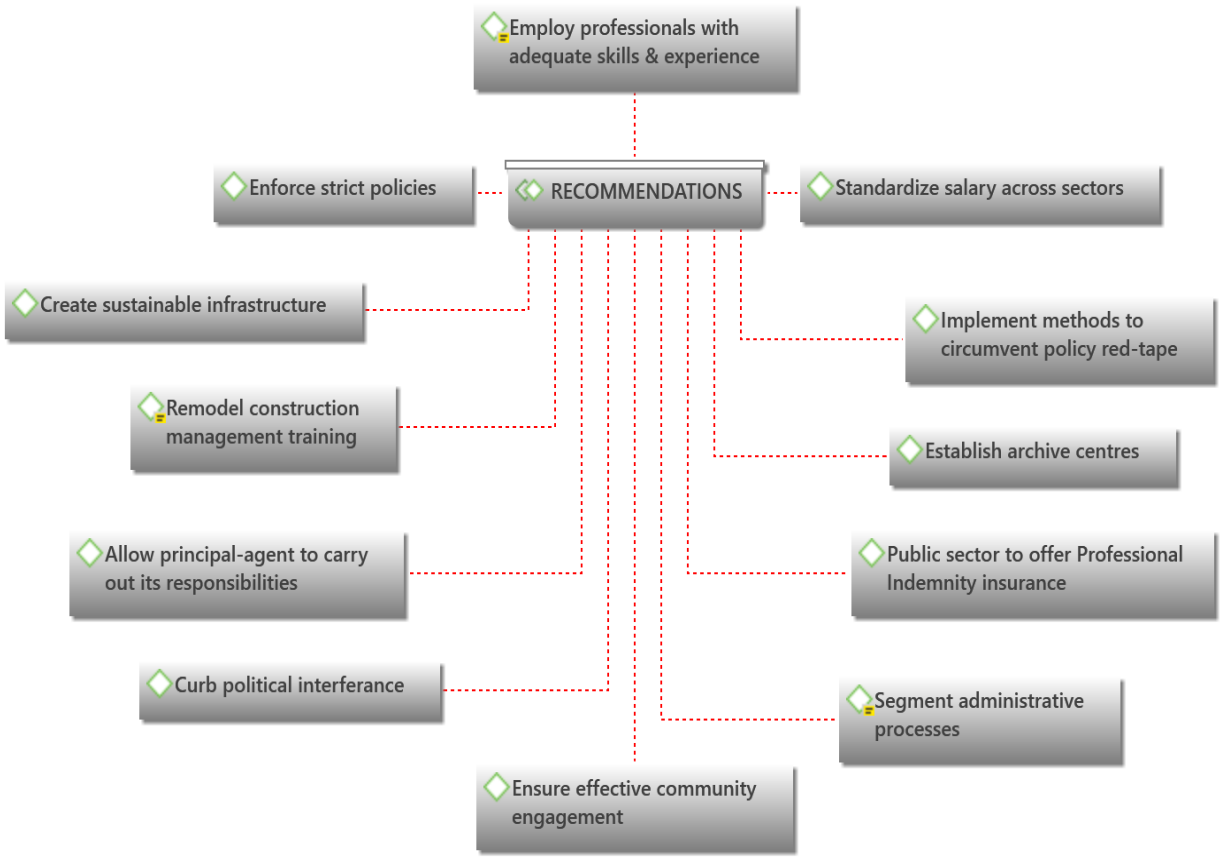


Figure 4.5: Recommendations Tree Diagram

In thinking about the potential measures to be taken to enhance construction project management practice to improve projects delivery within public sector, participant 4 recommended the need to **standardize salaries across** in both public and private sectors for project management practitioners.

> *"I'm looking at the issue of being in the same industry because if you have an equal package no one is going to have a problem with what the other one is earning in the private sector. So I'm trying to say people, can you standardize (Participant 4)."*

Participant 3 argue that employing professionals with adequate skills & experience is best for projects, to have people with adequate expertise working on it, and be able to manage or complete the projects successfully. The argument is that oftentimes in the public sector, project managers without the relevant expertise are hired to manage a project and end up not **delivering successfully** due to inadequate knowledge and experience.

> "*And I think just the planning, if there was a proper planning office with professionals who sit there, they can even be professional project managers,*

who then just get straight into planning and you know that a project does not come for implementation until it is approved. It is planned, everything is in place and everybody is happy that it has been done correctly (Participant 3)*"*

"Being a good engineer does not automatically make you a good project manager overnight, project management is a skill on its own, which you need to be academically trained in, accumulate field experience and become an experienced project management practitioner (Participant 5)".

"*It's absolute. Look, let's not play games. Let's not play marbles. Do you want to do a big infrastructure project like a water project? Then really? Make sure that you have an engineer* (Participant 1)."

Enforcing stricter policies will be instrumental for projects delivery and, in the instance of finances, the effectiveness of project implementation largely depend on contractors being paid timeously for their service. Furthermore, the government also paying all other service providers in time will be beneficial.

"So, if you delay payments by 60 days, you're not only incapacitating the contractor or the consultant, you are also putting the project at risk. So, if government can be strict in its commitment to pay within 30 days, this can assist in enhancing project delivery (Participant 1)*."*

Participants 1 and 4 enriched this study by emphasizing the need to **create sustainable infrastructure** for the communities they serve. The participants noted the importance of focusing on the quality of their project product instead of the quantity or the technology used.

"It means the message that the steering committee should deliver to the community is the same that will be coming from the consultants and say, 'please go and tell your local people that they must not focus only on the quantity they must also focus on the quality' those two things work together (Participant 4)."

"There is no way you can engage today in an infrastructure project without understanding that crust of this infrastructure project has to do with the future, it has to do with people yet to come. You are putting the pipe today, but it's linked to the needs of a future generation (Participant 1)."

There is a need **to implement methods for project managers to circumvent policy red-tape**. Participants noted delays to project timelines due to bureaucratic red tape that would, at times, even cause the termination of projects. Participant 3 explained that project managers in the public sector do not have the hierarchical authority to approve deviations in the projects

and the process of approval of changes to be implemented take long, having negative consequences for the projects.

> *"So, if there is a change introduced in a project, it can just be approved to be implemented for the project to progress swiftly. The process of getting changes approved within the public sector can take months, but change is required for approval within a week, it ends up costing money by taking long* (Participant 3)".

Participant 2 highlighted the need to **establish archive centres** so that project managers can have reference of how processes were implemented in previously completed successful projects and learn from previous lessons.

> *"So, it is like when you do a project, if you can archive project close-out documents, then have a post-mortem at the end of the project, you would know what worked and what did not work, instead of trying to move along with processes that will not even be beneficial to you* (Participant 2*)".*

In the effort to suggest to the department to **remodel construction management training** participant 6 mentioned a crucial point relating to the need for higher education institutions to invest in balanced academic training which includes technical and social skills, which is imperative because often project managers think they do not need social skills and lack of could make it difficult for them to communicate and interact effectively with other stakeholders.

> *"So, by putting this, we will have both. You come there with the technical knowledge and the know-how to interact, to pass the message across certain stakeholders which can be very useful in project management and delivering the project efficiently* (Participant 6)*".*

Participant 3 extensively explored the need for the **public sector to offer professional indemnity insurance** to public sector project managers so that they are protected from some of the risky decisions they are required to make in ensuring the successful delivery of a project.

> *"The project managers, should be given Professional Indemnity (PI) Insurance, and the delegation of authority to make those decisions, because that is what they do in the private sector, but because of the structure of the public sector organizations, they do not offer PI insurance and they rely on someone at the top who might not necessarily understand project management processes or the conditions of contract, resulting in delayed decisions and project* (Participant 3)".

Allow principal-agent to carry out its responsibilities as they are an important part of any construction project simply because, they ensure that the task is performed to guidelines,

therefore participant 3 recommends that there should be a presence of principal agents in projects. This allows for the project to continue even without the project manager's presence.

> *"So, if you introduce a change in a project, which could be a scope change and a variation because you cannot just change, and the principal agent whom you should trust, because remember, a principal-agent as defined by JBCC, is someone you are giving total control as the client to represent you, and they have powers to make decisions on your behalf. Now, the public sector does not allow the principal agent to carry out the functions fully as described in their contract".*

- **Curbing political interference** allows the project management practitioners to plan and implement the projects without meddling as political interference mostly in the procurement stage may compromise the process and may impede the procurement of competent skills to deliver the project efficiently and also result into corruption.

> *"That is a requirement if we want to deliver projects successfully, but it will not be possible because there is hardly any project that can be implemented without support from the politicians, and politicians cannot support projects where they are not benefitting* (Participant 4)*".*

To assist project managers in the successful execution of the projects and to ensure their smooth roll-out, participant 3 suggested that the public sector should **segment administrative processes** in their business.

> "*If there was a proper planning office with professional project managers who sit there, who then just get straight into planning, and you know that a project does not come for implementation until it is approved. It is planned, everything is in place, and everybody is happy that it is done the right way* (Participant 3)".

In support of the above, participant 5 added:

> *"Senior administrators usually do not listen to project managers during planning phase but when the project manager do not deliver the project on time, he is referred as bad and incompetent* (Participant 5)".

Ensuring effective community engagement by allowing the community to fully engage in the services they require, or the one offered to them is another way to ensure the effectiveness of the project. Participant 1 argue that to some extent, acknowledging community members as stakeholders gives them a sense of ownership.

"*One of the things that I think is very much lacking is the role of the community in projects themselves, whatever the size of the project, but what is the role of the community? At the end of the day, they are also going to be the direct beneficiaries of these projects* (Participant 1)".

"I don't think, they will want to be claiming that they can sit with the professional and tell him how do his job but definitely, they can contribute to the project brief by expressing their expectations, which can assist in refining the designs. I think the community is not there to impede how the expert works but at least it must be there as someone that you also reference (Participant 1)*."*

The constant need to want to keep developing yourself through **continuous development programs** in the construction project management industry will forever prevail, simply because bettering themselves will enable professionals to enhance their knowledge, keep up with the latest trends and improve on social skills.

"So, continuous development is going to enable, the project managers to deal with the community in a better way so that projects can be delivered successfully. Because you need to understand what the community wants. Actually, the issue of community-based projects...(Participant 4)*."*

4.5 SUMMARY

This chapter discussed the various findings from the data analysis which included the demographic factors, analysed data on the seven case studies conducted on seven participants who are construction project management practitioners in the public sector in Gauteng, South Africa. The analysis showed more than half (57.1%) of the participants find that difficulty faced in coordination of departmental project teams; political interference and corruption; policy uncertainty which affects timeous projects delivery; external organisational factors which negatively affect operations of project teams and; lack of maturity of project management practices in public sector to be extremely important key challenges towards lack of project management practice.

All participants collectively agreed that the identified key challenges affect the construction project management practices, which negatively impact the sector in implementing the practices to deliver projects successfully and this has a negative impact on service delivery.

The participants collectively recommended measures to improve on the project management practice challenges so as to improve on the successful delivery of projects.

CHAPTER 5: CONCLUSSION AND RECOMMENDATIONS

The objective of this study was to identify the key challenges affecting construction project management practice in order to determine the impact of the key challenges on the implementation of project management practice within the South African public sector, and subsequently formulate recommendations on measures that can be applied to improve construction project management key challenges to enhance delivery of successful projects in Gauteng, South Africa. This chapter therefore present and discuss the conclusion and recommendations of the research study.

The problem statement proposed in chapter 1 was stated as:

> *Most of the construction projects in the public sector have failed to meet delivery expectations in South Africa, and poor construction project management practice has been identified as the most contributing factor.*

The research question formulated to guide the investigation in addressing the problem statement, was stated as:

> *What measures should be applied to enhance the construction project management practice within the South African public sector to reduce construction projects failure?*

The research objectives were:

a) To identify the key challenges affecting project management practice within South African public sector.

b) To determine the impact of the key challenges identified on the implementation of project management practice within the South African public sector.

c) To recommend measures that can be applied to improve project management practice in the public sector in South Africa.

The research proposition examined was as follows:

d) Lack of significant project management practice result in construction projects failing to meet delivery expectations within public sector in South Africa.

5.1 VALIDATION OF THE PROBLEM STATEMENT

The problem statement to be addressed in this study is:

Most of the construction projects in the public sector have failed meeting delivery expectations in South Africa, and poor construction project management practice identified as the most contributing factor.

The problem statement is addressed by the findings from the analysed data and the interpretation thereof. The findings show that poor construction project management practice result in most construction projects in the South African public sector failing to meet delivery expectations. The study identifies lack of significant construction management practice in the public sector as the main contributor to failing to achieve successful project delivery. The findings explain that the determinants of poor significant construction management practice include several key challenges which collectively render the public sector environment unattractive to experienced project managers.

5.2 VALIDATION OF THE RESEARCH QUESTION

The study report addresses the following research question:

What measures should be applied to enhance the construction project management practice within South African public sector to reduce construction projects failure?

Literature review in Chapter 2 identified fifteen key challenges affecting project management practice faced by public sector practitioners. The chapter also reveals that the key challenges inhibit public sector project managers from delivering projects successfully. Chapter 4 details the findings emanating from the survey conducted in the form of a questionnaire and semi-structured interviews. The study recommend several measures that should be applied to improve project management practice key challenges to enhance delivery of successful projects.

The research question has therefore been addressed.

5.3 ACHIEVEMENT OF THE RESEARCH OBJECTIVES

5.3.1 RESEARCH OBJECTIVE 1

The first research objective was to identify the key challenges affecting project management practice faced by public sector practitioners in South Africa. Findings from the secondary data review revealed that the key challenges are: lack of project management maturity in the government; corruption and political interference; dominance of incompetent or accidental project managers; statutory and regulatory framework; public service ethos and management culture; delay due to publicly accounting process on public funds used on public sector

projects; hierarchical organisational structures and practices placing project managers in lower echelons; need to satisfy expectations and multiple project objectives from wide range of stakeholders with different interests associated with public sector projects; weak project management implementing unit; poor remuneration; external organisational factors; policy uncertainty; lack of well-defined project management systems; reliance on external consultants due to skills shortage with little consideration to significant skills transfer to staff within the organisation; less attention to socio-cultural aspects in project management curriculum.

The questionnaire survey and interview results obtained from the participants revealed that from the above fifteen key challenges, external organisational factors which negatively affect operations of project teams; difficulty faced in coordination of departmental project teams; policy uncertainty which affects timeous projects delivery; political interference and corruption; recruitment and/or dominance of incompetent and/or accidental project managers; expectations to satisfy wide range of stakeholders with different interests, that are internal and external to government body; weak project management capabilities in the government implementing unit; lack of maturity of project management practices in public sector; were considered the top eight key challenges towards lack of project management practice faced by South Africa within the public sector.

From both the secondary review, the questionnaire survey and interview, the first objective was achieved.

5.3.2 RESEARCH OBJECTIVE 2

The second research objective was to determine the impact of the key challenges identified on the implementation of project management practice within the South African public sector. Data extracted from the interviews analysis shows that there are quite a number of negative factors that inhibit project managers to successfully deliver projects in the public sector, and they include: absence of documentation on lessons learnt which could serve as reference on resolving challenges on current projects; decentralisation of departments; delays & stringent policies have a negative impact on projects delivery and result in additional costs to the projects; employment of unqualified project managers result in poorly managed projects and hinder projects implementation; inadequate implementation of projects requirements such as complying with skills training, sourcing from local suppliers and local content as stipulated in procurement policies also hinders successful service delivery; lack of community engagement result in delays due protests when the community feel economically and socially excluded; political interference result in meddling with procurement processes to favour their preferred service providers for their benefit; poor consequence management despite transgressions and

serious underperformances result in poor projects delivery; poor planning and coordination yield poorly delivered projects; and public sector project managers are demotivated and feel despondent due to poor remuneration.

From both the questionnaire survey and semi-structured interviews, the second objective was achieved.

5.3.3 RESEARCH OBJECTIVE 3

The third and last research objective was to recommend measures that can be applied to improve project management practice key challenges to enhance delivery of successful projects. Data extracted from questionnaire survey reveal that, recommended measures for the improvement of the project management practice to enhance delivery of successful projects within the public sector in South Africa include: ensuring clear limitations on the role of politicians in order to create sufficient space for administration to run a professional public administration system – depoliticize; introduction of continuous professional development program for project managers; clear demarcation between the roles and responsibilities of public servants and their political principals – depoliticize; professional project management personnel recruitment and selection systems; professionalise project management and planning in the public sector; competitive remuneration; make adequate experience a prerequisite for project management senior positions; standardized project management methodology across the public sector; close collaboration among all stakeholders and during all project phases; stable and mature project management processes; accountability and transparency in the public service; detailed process for identifying and defining user and supplementary requirements, scope and benefits; strict change management process; balanced academic training which includes technical and socio-cultural aspects in the curriculum.

Data extracted from the semi-structured interviews further explored the recommended measures from the questionnaire survey that participants made, that could be employed to improve on the project management practice challenges, so as to enhance service delivery and the following recommended measures were further revealed: Employ professionals with adequate skills and experience; standardize salary across the public and private sectors; implement methods to circumvent policy red tape; remodel construction project management training; segment the administrative processes; establish archive centres for project management; public sector to offer professional indemnity insurance for project managers; curb political interference; enforce strict policies; Promote continuous development; ensure effective community engagement.

From the questionnaire survey and semi-structured interviews, the third objective was achieved.

The research question on what measures should be applied to enhance the construction project management practice within South African public sector to reduce construction projects failure has therefore been addressed.

The research proposition examined, which states:

> *Poor project management practice result in construction projects failing to meet delivery expectations within public sector in South Africa*,

Based on the evidence revealed by the secondary data from literature review, analysed primary data from the questionnaire survey and semi-structured interviews, the public sector in South Africa is affected by poor project management practice due to several key challenges which inhibit successful project management practice and negatively affect service delivery. The proposition is therefore true.

5.4 CONCLUSSION

Secondary data review based on construction project management in developing countries including Malaysia, Brazil and South African public sectors revealed fifteen key challenges affecting project management practice faced by public sector practitioners in developing countries. The questionnaire survey and interviews results obtained from the participants identified the top eight key challenges from the fifteen revealed. Data extracted from the questionnaire and interviews analysis revealed that there are quite a number of negative factors that inhibit public sector construction project managers to successfully deliver projects in South Africa, ten factors were identified. The study further recommended measures for the improvement of the project management practice and fourteen measures were identified from secondary data review and substantiated by analysed data from semi-structured interviews.

The results of this study revealed that in as much as there are common key challenges challenges affecting project management practice faced by practitioners within the public sector in developing countries, different environments present their several unique key challenges which require unique measures to be employed to improve on the project management practice challenges so as to enhance service delivery. The findings and results of this study therefore contribute to the body of knowledge and provide valuable insight into key factors faced by South African project management practitioners within the public sector as well as

recommended measures that can be applied to improve the project management practice and enhance delivery of successful projects within the public sector in South Africa.

5.5 RECOMMENDATIONS

Governments in developing countries including South Africa rely heavily on the contribution of the construction sector to the economic growth and in turn, the sector rely on successful construction project management to deliver successful projects. This study revealed through secondary data review analysis, questionnaire survey and semi-structured interviews, the key challenges which inhibit the public sector project managers from delivering projects successfully in South African public sector. These challenges were evaluated and the extent to which they inhibit was determined. To improve on construction project management practice challenges, the research recommends the following measures:

- **Standardized salaries across** sectors. Standardized remuneration for project managers across public and private sectors to create skills balance amongst both sectors.
- It is recommended that **public sector offer professional indemnity insurance** to project managers so that they are protected from some of the risky decisions they are required to make when managing projects.
- It is further recommended that **methods be implemented for project managers to circumvent policy red-tape**. To avoid delays to project timelines due to bureaucratic red tape that would, at times, result in the termination of projects. In the public sector some project managers do not have the hierarchical authority to approve deviations in the projects they are managing and the process of approval of changes take months, having negative consequences for the projects.
- **Mature project implementation units** within the public sector will assist project managers in the successful execution of the projects they manage as well as to ensure the smooth roll-out of the construction projects.
- **Establish archive centres** so that project managers can have a reference of practices previously implemented and learn lessons from them.
- **Remodelling of construction project management training** in higher education institutions to invest in training for social skills to ensure that project managers practicing within the public sector are empowered to deal with community challenges.

- **Skills transfer** through an introduction of formal mentorship where experienced project managers mentors newly qualified project managers to assist in the transfer of knowledge and skills.

- **Employ professionals with relevant skills & experience** and thereby ensure the project have project managers with relevant expertise managing them and complete the projects successfully.

- **Enforcing stricter policies** in future will be instrumental in better service delivery and, in the instance of finances, the effectiveness of project implementation will be largely dependent on when and how the project manager and contractors are remunerated fairly for their service and time. Furthermore, the government also paying contractors in time will be beneficial as late payments put the successful project delivery at risk.

- **Ensure effective community engagement,** allowing the community to fully engage in the services they require, or being offered to them is another way to ensure the effectiveness of the project. To some extent, acknowledging community members as a stakeholder gives them a sense of ownership and makes them feel as deserving beneficiaries.

- **Promote continuous development,** the constant need to want to keep developing oneself in the construction project management industry will forever prevail, simply because bettering themselves will enable professionals to be able to keep abreast with the latest trends in the industry.

5.6 RECOMMENDATIONS FOR FURTHER STUDIES

Due to the limitations in this study, it can be recommended that further research be conducted on the following:

- A study identifying the key challenges in other sectors of interest including the private sector is encouraged to compare their level of impact in construction project management and projects delivery.

- This research was limited to the primary data collected in Gauteng, South Africa from construction project management practitioners in the public sector. An opportunity therefore exist for expanding the research and contributing to the subject matter by widening the research to include other developing countries outside the Republic of South Africa.

REFERENCES

Abbasi, A. & Jaafari, A., 2018, 'Evolution of Project Management as a Scientific Discipline' Data and Information Management 2(2), 91-102.

Adeyemi, L. A. & Idoko, M., 2008, 'Developing Local Capacity for Project Management: Key to Social and Business Transformation in Developing Countries', Paper presented at PMI® Global Congress 2008—EMEA, St. Julian's, Malta. Newtown Square, PA: Project Management Institute.

Aguboshim, F.C., 2021, 'Adequacy of Sample Size in a Qualitative Case Study and the Dilemma of Data Saturation: A Narrative Review', World Journal of Advanced Research and Reviews, 10(03), 180–187.

APM 2019, APM Body of Knowledge, 7th Edition, Association for Project Management, Princes Risborough.

Armijo, L.E. & Rhodes, S.D., 2017, 'Explaining Infrastructure Underperformance in Brazil: Cash, Political Institutions, Corruption, and Policy *Gestalts'*, Policy Studies, 38(3), 231-247.

Athukorala, R.N.A., Khang, D.B., Ruangrob, A., Sedigh, M.A.B., De Silva, M., Gupta, V. & Panday, I.M., 2007, 'Managing Large Projects in Emerging Markets', Vikalpa 32(3), 91-105.

Azmat, F., Rentschler, R., 2017, 'Gender and Ethnic Diversity on Boards and Corporate Responsibility: The Case of the Arts Sector', Journal of Business Ethics, 141(2), 317-336.

Baratta, A., 2006, 'The Triple Constraint: a Triple Illusion', Paper presented at PMI Global Congress 2006 – North America, Seattle, WA. Newtown Square, PA: Project Management Institute.

Barbosa, A.A.R. & Vilnitis, A., 2017, 'Innovation and Construction Management in Brazil: Challenges of Companies in Times of Quality and Productivity', IOP Conference Series: Material Science and Engineering, 251, 012040.

Barkhuizen, G., 2014, Number of Participants. *Language Teaching Research*, *18*(1), 5-7.

Barry, M.L. & Uys, L., 2011, 'An Investigation Into the Status of Project Management in South Africa', South African Journal of Industrial Engineering 22(1), 29-44.

Baxter, P. & Jack, S., 2008, ‘Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers’, The Qualitative Report 13(4), 544-559.

Bell, E. and Bryman, A., 2007, ‘The Ethics of Management Research: An Exploratory Content Analysis’, British Journal of Management, 18, 63 - 77.

Bezerra, E.C. da S., Amorim, B.P. & Melo, F.J.C., 2021, ‘Barriers to Maturity in Project Management in the Public Sector: a Systematic Literature Review’, *Research, Society and Development* 10(10), p. e513101019223.

Bhardwaj, P., 2019, Types of Sampling in Research, J Pract Cardiovasc Sci, 5, 157-163.

Boddin, D., 2016, ‘The Role of Newly Industrialized Economies in Global Value Chains’, viewed 29 September 2021 from https://www.imf.org/external/pubs/ft/wp/2016/wp16207.pdf

Boumphrey, S. and Bevis, E., (2013), Reaching the Emerging Middle Classes beyond BRIC.

Burke, R., 2013, Project Management: Planning and Control Techniques, 5th Edition.

Caliste, A. L. E., 2012, The Project Management Project—Challenges in the Public Sector. Paper presented at PMI® Global Congress 2012—North America, Vancouver, British Columbia, Canada. Newtown Square, PA: Project Management Institute.

Campbell, S., 2015, ‘Conducting Case Study Research’, 28(3), Clinical Laboratory Science.

Carson, D., Gilmore, A., Perry, C. & Gronhaug, K., 2001, Qualitative Marketing Research, Thousand Oaks, CA: Sage.

CEIC (2021) Brazil Contribution to GDP: Industry: Construction (online). Available from: https://www.ceicdata.com/en/brazil/sna-1993-contribution-to-gross-domestic-product-by-industry-current-price/contribution-to-gdp-industry-construction [Accessed: 7 August 2021].

Chan, T.K. & Sundaraj, G., 2009, Performance Measures for the Malaysian Construction Industry Development Board. In: Dainty, A. (Ed) Procs 25th Annual ARCOM Conference, 7-9 September 2009, Nottingham, UK, Association of Researchers in Construction Management, 371-9.

Construction Industry Development Board, Annual Report 2018/2019 [Online], Available from: http://www.cidb.org.za/publications/documents/annual report 2018 to 2019.pdf/

Cooke-Davies, T., 2002, 'The "Real" Success Factors in Projects', International Journal of Project Management 20, 185–190.

Council for the Built Environment, [Online], Available from: https://cbe.org.za/

Cousin, G., 2005, 'Case Study Research', Journal of Geography in Higher Education, 29(3), 421-427.

Crawford, L.H. and Helm, J., 2009, 'Government and Governance: The Value of Project Management in the Public Sector', Project Management Journal 40(1). DOI: 10.1002/pmj.20107.

Creswell, J.W., 2013, 'Qualitative Inquiry and Research Design: Choosing Among Five Approaches', Thousand Oaks, CA: Sage.

Creswell, J. W. & Plano Clark, V.L., 2010, 'Designing and Conducting Mixed Methods Research', 2nd Edition, Thousand Oaks, CA: Sage.

Damoah, I.S., 2015, An Investigation Into the Causes and Effects of Project Failure in Government Projects in Developing Countries: Ghana as a Case Study. Doctoral Thesis, Liverpool John Moores University.

Dyer, W.G., Jr, Wilkins, A.L., Eisenhardt, K.M., 1991, 'Better Stories, not Better Constructs, to Generate Better Theory: A Rejoinder to Eisenhardt; Better Stories and Better Constructs: The Case for Rigor and Comparative Logic', The Academy of Management Review, 16(3), 613.

Dudovskiy, J., 2016, 'The Ultimate Guide to Writing a Dissertation in Business Studies: A Step-by-Step Assistance', 1st Edition, research-methodology.net.

Eisenhardt, K.M., 1989, 'Building Theories from Case Study Research', The Academy of Management Review, 14(4), 532-550.

Els, M., Van der Merwe, M.F. & Hauptfleisch, A.C., 2012, 'Critical Success Criteria and Success Factors in Project Management: A Quest to Enhance Generic Professional Practice', ICEC.

Erlingsson, C. & Brysiewicz, P., 2017, 'A Hands-On Guide to Doing Content Analysis', African Journal of Emergency Medicine, 7(3), 93-99.

Fraser-Moleketi, G. J., 2003, Quality Governance for Sustainable Growth and development: Introduction, *International Review of Administrative Sciences*, *69*(4), 463–470.

Fryer, K.J., Antony, J., Douglas, A., 2007, 'Critical Success Factors of Continuous Improvement in the Public Sector: A Literature Review and Some Key Findings', The TQM Magazine 19(5), 497-517.

Gentles, S. J., Charles, C., Ploeg, J., & McKibbon, K., 2015, 'Sampling in Qualitative Research: Insights from an Overview of the Methods Literature', The Qualitative Report, 20(11), 1772-1789.

Gerring, J., 2004, 'What Is a Case Study and What Is It Good for?', The American Political Science Review, 98(2), 341-354.

Goncalves, E.D., Spaccaquerche, F., Moreira, T. and Arlota, A., Filho, M., Filho, V., Advogados, M., 2016, 'Construction and Projects in Brazil: Overview', Practical Law Company Inc, Thomson Reuters. Viewed 10 October 2021, from https://uk.practicallaw.thomsonreuters.com/4-502-3377.

Gustafsson, J., 2017, 'Single Case Studies vs. Multiple Case Studies: A Comparative Study', Academy of Business, Engineering and Science Halmstad University.

Haron, N.A., Devi, P., Hassim, S., Alias, A.H., Tahir, M.M. & Harun, A.N., 2017, 'Project Management Practice and its Effects on Project Success in Malaysian Construction Industry', IOP Conference Series: Materials Science and Engineering, 291**,** 012008.

Hesse-Biber, S.N. & Leavy, P., 2011, '*The Practice of Qualitative Research'* (2nd. Ed.), Los Angeles, CA: Sage.

IMF Annual Report, 2016. Available from: https://www.imf.org/external/pubs/ft/ar/2016/eng/pdf/ar16_eng.pdf

Industrial Development Corporation, 2013, 'South African Economy: An Overview of Key Trends Since 1994', Department of Research and Information.

International Monetary Fund, Fiscal Affairs Dept., 2018, 'Brazil: Technical Assistance Report-Public Investment Management Assessment', 2018(249), 1-70.

International Project Management Association, [Online], Available from: https://www.ipma.world/ [Accessed: 20 July 2021].

Jacobsen, D.I., 2002, 'Vad, hur och varför: – Om metodval i företagsekonomi och andra samhällsvetenskapliga ämnen', Lund: Studentlitteratur.

Jatarona, N., Md Yusof, A., Ismail, S. & Chai, S., 2016, 'Public Construction Projects Performance in Malaysia', Journal of Southeast Asian Research, 1-7.

Kandasamy, S., Vanstone, M., Oremus, M., Hill, T., Wahi, G., Wilson, J.A., Davis, D., Jacobs, R., Anglin, R., Anand, S.S., 2017, 'A Case Study of a Methodological Approach to Cocreating Perinatal Health Knowledge Between Western and Indigenous Communities, International Journal of Qualitative Methods, 16(1), 1-11.

Kerzner, H., 2009, 'Project Management: A Systems Approach to Planning, Scheduling, and Controlling', 10th Edition., John Wiley & Sons, Inc., Hoboken.

Khalid, M.A., Alam, Md. M., Said, J., 2016, 'Empirical Assessment of Good Governance in the Public Sector of Malaysia', Economics and Sociology, 9(4), 289-304.

Khalifu al Muqeemi, H.M., Said, I., Pakir, K. Abd, H. and Osman, O., 2008, 'Challenges in the Implementation of Project Management in Developing Countries: The Case of Sultan of Oman', 2nd International Conference on Built Environment in Developing Countries (ICBEDC 2008).

Khan, R.A., Liew, M.S. & Ghazali, Z.B., 2014, 'Malaysia Construction Sector and Malaysia Vision 2020', Developed Nation Status, Procedia – Social and Behavioural Sciences, 109**,** 507–513.

Kissi, E. and Ansah, S.K., 2013, 'Professional Project Management Practices and its Constraints in Developing African Countries: A Literature Review', Covenant Journal of Research in the Built Environment (CJRBE), 1(2).

Kothari, C.R., 2004, 'Research Methodology: Methods and Techniques', 2nd Edition, New Age International Publishers, New Delhi.

Kwak, Y.H., Carayannis, K.A. & Anbari, F.T., 2003, 'Brief History of Project Management', The Story of Managing Projects, Ch.2, Quorum Books.

Lavrakas, P.J., 2008, '*Encyclopedia of Survey Research Methods'*, Vol. 0, Sage Publications, Inc., Thousand Oaks, CA.

Lazar, J., Feng, J. H. & Hochheiser, H., 2010, '*Research Methods in Human-Computer Interaction',* Hoboken, NY: John Wiley.

Lindlof, T.R. and Taylor, B.C., 2010, Qualitative Communication Research Methods, SAGE Publications Inc.

Ling, F. and Formoso, C., 2014, 'Project Management and Asset Management in Emerging Economies', Built Environment Project and Asset Management, 4(4).

Liu, A.M. and Walker, A., 1998, 'Evaluation of Project Outcomes', Construction Management and Economics, 16(2), 209-219.

Lopes, M., 2014, '2014 FIFA World Cup: Legacy or Lessons Learned?', Project Management Report from Sao Paulo, PM World Journal, III(VI) – 2014.

Mabelebele, J.M., 2006, 'Prospects and Challenges of Implementing Projects in Public Service', 2006 PMSA International Conference, Johannesburg, South Africa.

Mason, M., 2010, 'Sample Size and Saturation in PhD Studies Using Qualitative Interviews', Forum: Qualitative Social Research, 11(3).

Mills, G., Obasanjo, O., Desalegn, H. & Van Der Merwe, E., 2020, 'The Asian Aspiration: Why and How Africa Should Emulate Asia', Picador Africa, South Africa.

Morris, P.W.G., 1997, 'The Management of Projects', Thomas Telford, London.

Nekvapilova, I. & Pitas, J., 2016, 'Factors Affecting Project Management in the Public Sector', International Conference KNOWLEDGE-BASED ORGANISATION, 22(1), 206-214.

Nicholas, J.M., & Steyn, H., 2011, Project Management for Engineering, Business, and Technology, 4th ed., Routledge. https://doi.org/10.4324/9780080967059.

Olsen, R. P., 1971, 'Can Project Management be Defined?', Project Management Quarterly*, 2*(1), 12–14.

Pant, I. and Baroudi, B., 2008, 'Project Management Education: The Human Skills Imperative', International Journal of Project Management, 26(2), 124-128.

Papadopoulos, A., 2020, World's Best Countries to Invest In or Do Business for 2020, CEOWORLD Magazine. (Online). Available from: https://ceoworld.biz/worlds-best-countries-to-invest-in-or-do-business-for-2020/ [Accessed: 2 April 2020].

Pathak, V., Jena, B. & Kalra, S., 2013, 'Qualitative Research. Perspectives in Clinical Research'. 4, 192.

Patton, M. Q., 1990, 'Qualitative Evaluation and Research Methods', 2nd edition, Sage Publications, Inc.

Patton, M. Q., 2015, 'Qualitative Research and Evaluation Methods', 4th edition, Sage Publications, Inc.

Perry, C., 1998, 'Processes of a Case Study Methodology for Postgraduate Research in Marketing', European Journal of Marketing, 32(9/10), 785-802.

PMI (2022) What is Project Management? (online). Available from: https://www.pmi.org/about/learn-about-pmi/what-is-project-management [Accessed: 7 August 2021].

Project Management Institute, 2013, A Guide to the Project Management Body of Knowledge (PMBOK Guide), 5th edition, Newtown Square, Pennsylvania.

Project Management Institute, 2006, *Government Extension to the PMBOK® Guide, Third Edition*, Newtown Square, Pennsylvania.

Project Management Institute, Brazil Chapter, available from: https://www.pmi.org.brasil [Accessed: 6 August 2021].

Project Management Institute, Malaysia Chapter, Available from: https://pmi.org.my [Accessed: 22 July 2021]

Project Management Institute, South Africa Chapter, Available from: https://pmi.org.za/about/chapter [Accessed: 22 July 2021]

Project Management Institute, Boom Times in Brazil: Why Senac Sao Paulo Became a PMI Registered Education Provider, Available from: https://www.pmi.org/-/media/pmi/documents/public/pdf/case-study/senac-rep.pdf?v=d229caac-e7fa-47ed-8889-ea27493b34be [Accessed: 6 July 2021].

Project Management South Africa, Available from: https://www.projectmanagement.org.za [Accessed: 4 August 2021].

PWC (2017) Are Public Projects Doomed to Failure (online). Available from: https://www.pwc.ch/en/publications/2017/pmi-are-public-projects-doomed-to-failure-en-2017.pdf [Accessed: 17 September 2021].

PWC (2014) Capital Projects and Infrastructure in East Africa, Southern Africa and West Africa (online), viewed 31 October 2021, from https://www.pwc.co.za/en/assets/pdf/capital-projects-and-infrastructure.pdf

Rahschulte, T.J. & Milhauser, K., 2010, 'Beyond the Triple Constraints: Nine Elements Defining Project Success Today', Paper presented at PMI Global Congress 2010 – North America, Washington, DC. Newtown Square, PA: Project Management Institute.

Riazi, S.R., & Lamari, F., 2013, Public Sector Project Delay: The Malaysian Perspective and the Way Forward.

Rwelamila, P.D., 2007, 'Project Management Competence in Public Sector Infrastructure Organisations', Construction Management & Economics 25, 55-66.

Rwelamila, P.D. and Ogunlana, S., 2015, 'Construction in Developing Countries Research Roadmap: Report for Consultation', Rotterdam, Netherlands: International Council on Research and Innovation in Building and Construction (CIB).

Rwelamila, P. D., & Purushottam, N., 2012, 'Project Management Trilogy Challenges in Africa—Where to from Here?', Project Management Journal, *43*(4), 5–13.

Selepe, M.M., 2019, 'The Appropriateness of Project Management Mechanisms Within the South African Public Sector Environment', The 4th Annual International Conference on Public Administration and Development Alternatives, Johannesburg, South Africa.

Seymour, T. and Hussein, S., 2014, 'The History Of Project Management', International Journal of Management & Information Systems, 18(4).

Shahin, A. & Jamshidian, M., 2004, 'Critical Success Factors in Project Management: A Comprehensive Review', 01st International Project Management Conference.

Shen, L., Platen, A. & Deng, X.P., 2006, 'Role of Public Private Partnerships to Manage Risks in Public Sector Projects in Hong Kong', School of Civil Engineering: South East University.

South African Council for the Project and Construction Management Professions, 2012, [Online], Available from: https://sacpcmp.org.za/about-sacpcmp/

South African Market Insights, 2020, South Africa's Gross Domestic Product, Available from: https://www.southafricanmi.com/south-africas-gdp.html [Accessed: 28 July 2021].

Spalek, S., 2005, 'Critical Success Factors in Project Management. To Fail or not to Fail, That is the Question!', Paper presented at PMI® Global Congress 2005—EMEA, Edinburgh, Scotland. Newtown Square, PA: Project Management Institute.

Stålberg L., Fundin A., 2016, 'Exploring a Holistic Perspective on Production System Improvement', The International Journal of Quality & Reliability Management, 33(2), 267-283.

Statistics South Africa, 2020, Electronic Data [Online], Available from: https://www.statssa.gov.za/

Subedi, K.R., 2021, 'Determining the Sample in Qualitative Research', Scholars' Journal, 4, 1-13.

Taherdoost, H., 2016, 'Sampling Methods in Research Methodology: How to Choose a Sampling Technique for Research', SSRN Electronic Journal, 5, 18-27.

Takim, R., Akintoye, A., & Kelly, J., 2004, 'Analysis of Measures of Construction Project Success in Malaysia', Association of Researches in Construction Management, *2*(9), 1123–1113.

Teddlie, C., & Tashakkori, A., 2009, '*Foundations of mixed methods research',* London, UK: Sage.

The World Bank Group, GDP Growth (Annual %) – Brazil Data [Online], Available from: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=BR

Thomas, G., 2011, 'A Typology for the Case Ctudy in Social Science Following a Review of Definition, Discourse, and Structure. Qualitative Inquiry', 17(6), 511-521.

Trading Economics, South Africa GDP: 2022 Data, Available from: https://tradingeconomics.com/south-africa/gdp [Accessed: 6 July 2021].

Turner, J.R., 1993, The Handbook of Project-Based Management, 3rd Edition, McGraw-Hill, London.

Turner, J., Anbari, F., & Bredillet, C., 2013, 'Evolution of Project Management as a Scientific Discipline: Perspectives on Research in Project Management: The Nine Schools', Global Business Perspectives, 1(1), 3–28.

TWPROJECT (2022) Project Management in the Public Administration, viewed 22 September 2021, from https://twproject.com/blog/project-management-public-administration/

Van der Waldt, G., 2011, 'The Uniqueness of Public Sector Project Management: A Contextual Perspective', Politeia. South African Journal for Political Science and Public Administration, 30(2), 67-88.

Visser, L.M., Bleijenbergh, I.L., Benschop, Y.W.M., Van Riel, A.C.R., Bloem, B.R., 2016, 'Do Online Communities Change Power Processes in Healthcare?: Using Case Studies to Examine the Use of Online Health Communities by Patients with Parkinson's Disease', BMJ Open; 6(11): 1-6.

Watermeyer, R. & Phillips, S., 2020, 'Public Infrastructure Delivery and Construction Sector Dynamism in the South African Economy', NPC Economy Series – Background Paper.

Welman, C., Kruger, F., & Mitchell, B., 2005, Research Methodology, 3rd edition, Cape Town: Oxford University Press.

Wilson, J., 2010, '*Essentials of Business Research: A Guide to Doing Your Research Project',* Los Angeles, CA: Sage.

Windapo, A., & Cattell, K., 2013, 'The South African Construction Industry: Perceptions of Key Challenges Facing its Performance, Development and Growth', 18, 65-79.

World Bank, 2012, 'How to Decrease Freight Logistics Costs in Brazil', Washington: World Bank.

Yanwen, W., 2012, 'The Study on Complex Project Management in Developing Countries', Physics Procedia, 25.

Yin, R.K., 2003, Case Study Research: Design and Methods, Thousand Oaks, CA: Sage.

Yin, R.K., 2014, Case Study Research: Design and Methods, Thousand Oaks, CA: SAGE Publications, Inc.

APPENDICES

APPENDIX 1

QUESTIONNAIRE

QUESTIONNAIRE ON THE EVALUATION OF CHALLENGES AFFECTING CONSTRUCTION PROJECT MANAGEMENT WITHIN THE PUBLIC SECTOR IN SOUTH AFRICA.

SECTION A: BACKGROUND INFORMATION

This first section of the questionnaire refers to the background information. The information will help us confirm that the respondent satisfy the criteria for the diversified background specified in the research methodology. We are aware of the sensitivity of the questions in this section but we assure you the respondent that your identification will remain confidential.

How to complete the questionnaire: Example

Gender: How do you identify?, indicate with a cross (X) in the appropriate box below.

Male	1
Non-binary	2
Female	X
Prefer to self-describe:	4

1. What is your highest educational qualifications?

Grade 4-9/Standard 2-7/General Certificate	NQF 1	1
Grade 10/Standard 8/Elementary Certificate	NQF 2	2
Grade 11/Standard 9/Intermediate Certificate	NQF 3	3
Grade 12/Standard 10/Matric/Trade Certificate	NQF 4	4
Higher Certificate	NQF 5	5
Diploma/Advanced Certificate	NQF 6	6
Bachelor Degree/Advanced Diploma	NQF 7	7
Honours Degree/Post-Graduate Diploma	NQF 8	8
Master Degree	NQF 9	9
Doctoral Degree	NQF 10	10

2. What is your current job title?

Project Manager	1
Construction Project Manager	2
Construction Manager	3
Quantity Surveyor	4
Others (please specify)	5

3. How many years of experience do you have as a project management practitioner in the construction industry? ……..……..

4. State the type of projects you have been involved in.

Transportation Facilities/Roads	1
Water and Sanitation	2
Energy	3
Buildings (Residential, Commercial)	4
Mechanical Engineering	5
Electrical Engineering	6
Structural Engineering	7
Others: (please specify)	8

5. State the number of projects you are currently involved in ……..

6. State the number of projects executed in the last five years ……

7. Total value of projects executed in the last five years.

Less than R200 000	1
R200 000 – R500 000	2
R500 001 – R1 500 000	3
R1 500 001 – R3 000 000	4
R3 000 001 – R5 000 000	5
R5 000 001 – R10 000 000	6
R10 000 001 – R30 000 000	7
R30 000 001 – R100 000 000	8
R100 000 001 – No Limit	9

SECTION B: KEY CHALLENGES AFFECTING CONSTRUCTION PROJECT MANAGEMENT PRACTICE FACED BY SOUTH AFRICA WITHIN THE PUBLIC SECTOR.

Below are a number of key challenges affecting construction project management practice faced by South Africa within the public sector.

8. To what degree of importance do you think each of the following challenges contribute to poor construction project management practice in South African public sector? Please indicate your answer using the following 5-point scale, where:

1 = Not at all Important;

2 = Slightly Important;

3 = Moderately Important;

4 = Very Important;

5 = Extremely Important;

Factors	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Difficulty faced in coordination of departmental project teams.	1	2	3	4	5
Political Interference and corruption.	1	2	3	4	5
Policy uncertainty which affects timeous projects delivery.	1	2	3	4	5
Delays impact on projects planning and execution due to legislation and government policies.	1	2	3	4	5
Lagging behind of regulatory and governance reforms.	1	2	3	4	5
Lack of well-defined project management systems.	1	2	3	4	5
Recruitment and/or dominance of incompetent and/or accidental project managers.	1	2	3	4	5
Poor remuneration in the public sector.	1	2	3	4	5

External organisational factors which negatively affect operations of project teams.	1	2	3	4	5
Lack of maturity of project management practices in public sector.	1	2	3	4	5
Need for public accountability as projects are funded by public funds.	1	2	3	4	5
Expectations to satisfy wide range of stakeholders with different interests, internal and external to government body.	1	2	3	4	5
Little consideration to significant skills transfer to government project management junior staff by seniors.	1	2	3	4	5
Lower level positioning of project management in the government hierarchical structure limiting responsibility and authority.	1	2	3	4	5
Weak project management capabilities in the government implementing unit.	1	2	3	4	5

9. Identify the top 3 – 5 factors which contribute to poor construction project management practice in South African public sector and discuss why they have been selected.

Factor 1

.....

.....

.....

.....

.....

Factor 2

.....

.....

.....

.....

.....

Factor 3

.....

.....

.....

.....

.....

Factor 4

.....

.....

.....

.....

.....

Factor 5

.....

.....

.....

.....

.....

SECTION C: THE IMPACT OF THE KEY CHALLENGES ON THE IMPLEMENTATION OF PROJECT MANAGEMENT PRACTICE WITHIN THE SOUTH AFRICAN PUBLIC SECTOR.

This section of the questionnaire seeks to determine the impact of the key challenges on the implementation project management practice within the public sector.

10. What is the impact of the key challenges on the implementation of construction project management practice within the public sector? Please indicate your answer using the following 5-point scale, where:

1 – Not at all Important;

2 – Slightly Important;

3 – Moderately Important;

4 – Very Important;

5 – Extremely Important;

Factors	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Difficulty faced in coordination of departmental project teams.	1	2	3	4	5
Political Interference and corruption.	1	2	3	4	5
Policy uncertainty which affects timeous projects delivery.	1	2	3	4	5
Delays impact on projects planning and executing due to legislation and government policies.	1	2	3	4	5
Lagging behind of regulatory and governance reforms.	1	2	3	4	5
Lack of well-defined project management systems.	1	2	3	4	5
Recruitment/dominance of incompetent/accidental project managers.	1	2	3	4	5
Poor remuneration in the public sector.	1	2	3	4	5

External organisational factors which negatively affect operations of project teams.	1	2	3	4	5
Lack of maturity of project management practices in public sector.	1	2	3	4	5
Need for public accountability as projects are funded by public funds.	1	2	3	4	5
Expectations to satisfy wide range of stakeholders with different interests, internal and external to government body.	1	2	3	4	5
Little consideration to significant skills transfer to government project management junior staff by seniors.	1	2	3	4	5
Lower level positioning of project management in the government hierarchical structure limiting responsibility and authority.	1	2	3	4	5
Weak project management capabilities in the government implementing unit.	1	2	3	4	5

11. Identify the top 3 – 5 factors which has an impact on the implementation of construction project management practice and discuss why they have been selected.

Factor 1

.....

.....

.....

.....

.....

Factor 2

.....

.....

.....

.....

.....

Factor 3

.....

.....

.....

.....

.....

Factor 4

.....

.....

.....

.....

.....

Factor 5

.....

.....

.....

.....

.....

SECTION D: RECOMMENDATIONS ON MEASURES TO IMPROVE ON THE PROJECT MANAGEMENT PRACTICE CHALLENGES TO ENHANCE DELIVERY OF SUCCESSFUL PROJECTS.

This section of the questionnaire seeks to explore measures to improve on the project management practice to enhance delivery of successful within the public sector in South Africa.

12. To what extent are the following measures likely to improve on the project management practice challenges to enhance delivery of successful within the public sector in South Africa. Please indicate your answer using the following 5-point scale, where:

1 – Not at all Important;

2 – Slightly Important;

3 – Moderately Important;

4 – Very Important;

5 – Extremely Important;

Recommendations to improve on the project management practice challenges to enhance delivery of successful projects.	**Not at all Important**	**Slightly Important**	**Moderately Important**	**Very Important**	**Extremely Important**
Professionalise project management and planning in the public sector.	1	2	3	4	5
Stable and mature project management processes.	1	2	3	4	5
Make adequate experience a prerequisite for project management senior positions.	1	2	3	4	5
Introduce continuous professional development program for project management practitioners.	1	2	3	4	5
Professional project management personnel recruitment and selection systems.	1	2	3	4	5
Competitive remuneration.	1	2	3	4	5
Ensure clear limitations on the role of politicians in order to create sufficient space for administration to run a	1	2	3	4	5

professional public administration system (depoliticize).					
Clear demarcation between the roles and responsibilities of public servants and their political principals (depoliticize).	1	2	3	4	5
Standardized project management methodology across the public service.	1	2	3	4	5
Detailed process for identifying and defining user and supplementary requirements, scope and benefits.	1	2	3	4	5
Strict change management process.	1	2	3	4	5
Accountability and transparency in the public service.	1	2	3	4	5
Close collaboration among all stakeholders and during all project phases.	1	2	3	4	5
Balanced academic training which include technical and socio-cultural aspects in the curriculum.	1	2	3	4	5

13. Identify the top 3 – 5 measures likely to improve on the project management practice challenges to enhance delivery of successful within the public sector in South Africa and discuss why they have been selected.

Factor 1

.....

.....

.....

.....

.....

Factor 2

.....

.....

.....
.....
.....

Factor 3

.....
.....
.....
.....
.....

Factor 4

.....
.....
.....
.....
.....

Factor 5

.....
.....
.....
.....
.....