

**An Effective Public Procurement Model for Small, Medium and Micro
Construction Enterprises in South Africa**

By

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**Submitted in fulfilment of the academic requirements of Doctor of Philosophy:
Construction Management**

Construction Studies

School of Engineering

College of Agriculture, Engineering and Science

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South Africa

2022

PREFACE

The research contained in this thesis was completed by the candidate while based in the Discipline of Construction Studies, School of Engineering of the College of Agriculture, Engineering and Science, University of KwaZulu-Natal, Howard, South Africa.

The contents of this work have not been submitted in any form to another university and, except where the work of others is acknowledged in the text, the results reported are due to investigations by the candidate.



Signed: Prof T. C Haupt (Supervisor)

Date: 7 August 2021

DECLARATION 1: PLAGIARISM

I, Thulani Alfred Mdadane, declare that:

- i. The research reported in this thesis, except where otherwise indicated, is my original research.
- ii. This thesis has not been submitted in part or whole for any degree or examination at any other institution.
- iii. This thesis does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.
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Date: 7 August 2021

DEDICATION

The entire dissertation is dedicated to the Lord Almighty for His wonderful blessings, love, mercy and grace to complete this research.

ACKNOWLEDGEMENTS

I give praise to Almighty God for His protection, love, mercy and grace throughout the course of my studies. This study could not have been successfully completed without God.

The second acknowledgement goes to my supervisor, Professor TC Haupt, for his numerous contributions towards the successful completion of this research.

The next acknowledgement goes to my mother, Mrs. Winfrieda Mdadane, for her support towards my dream. Sincere appreciation also goes to my daughters, Ms. Mandisa Mdadane, and Ms. Amawela Mdadane, for allowing me to focus much time and attention on this study.

Appreciation also goes most importantly to my family and colleagues, who supported me throughout my studies.

ABSTRACT

Public procurement plays a vital role in the economy and public expenditure of any country and serves as an indicator of the effectiveness of a government. Despite the several reforms made to the South African public procurement system and application of supply chain management as a strategic policy strategic instrument, the South African public procurement system has still been strongly criticised for not encouraging the participation of small and medium enterprises. Therefore, this study aims to develop an effective public procurement model for small, medium, and micro enterprises in South Africa. The study further explores the relationship between competitiveness, openness, accountability, transparency, and value for money on effective public procurement. A quantitative method consisting of a questionnaire survey was adopted. A stratified sampling technique was used to select 250 participants for the study. A closed-ended questionnaire was used to collect data from the respondents. The Statistical Package for Social Sciences, version 27.0, and Analysis of Moment Structures, version 26.0, were used to analyse the data. The results showed that openness, accountability, transparency, and value for money influenced public procurement. Competitiveness, as a factor, however, had no effect on public procurement. The findings revealed that effective public procurement is a four-factor model. The final model revealed that openness, value for money, accountability, and transparency are significant with effective public procurement. Therefore, the identified constructs have a significant direct influence and are determinants of effective public procurement. Also, the goodness of fit and statistical significance of the parameter estimates met the cut-off criteria for the hypothesized model. This study is unique as it contributes to expanding the body of knowledge on the public-procurement system in South Africa. An important implication of this study is that it contributes to enhancing efficiency in the South African public-procurement system. This study could be used as a tool to encourage the participation of small, medium, and micro enterprises in public procurement. In addition, the value of this study is that it provides mechanisms through which the South African public-procurement system can be improved to eliminate corruption, maladministration, and irregularities. Based on the findings, the recommendation is that the public procurement process comply with procurement regulations to encourage the participation of small, medium, and micro enterprises.

Keyword: Construction industry, effective public procurement, procurement, small, medium and micro enterprises, South Africa

ISIQINISEKISO

Lolu cwaningo lwakha imodeli yokuthengwa kwempahla yomphakathi esebenzayo yokwakha ama-SMME eNingizimu Afrika. Ucwaningo luqhubeka nokuhlola ubudlelwano phakathi kokuncintisana, ukuvuleleka, ukubophezeleka, ukwenza izinto obala kanye nokuthola imali ekuthengeni komphakathi okusebenzayo.

Indlela yokulinganisa, equkethe inhlolovo yemibuzo yamukelwa. Indlela esetshenzisiwe yokwenza isampula isetshenziselwe ukukhetha ababambiqhaza abangama-250 ocwaningweni. Kusetshenziswe uhlu lwemibuzo osekuphele isikhathi ukuqoqa imininingwane kubaphenduli. Isoftware ye-IBM SPSS, inguqulo 27.0, ne-AMOS, inguqulo 26.0, isetshenziselwe ukuhlaziya imininingwane. Ukuhlaziywa nokuchazwa kwedatha kwenziwe ngokusebenzisa izibalo ezichazayo.

Imiphumela yalolu cwaningo ibihambisana nokutholakele ocwaningweni oluningi, ngaphandle kwethonya eliqondile lokuncintisana ekuthengweni kwempahla okusebenzayo yomphakathi akuzange kusekelwe kusampula ocwaningweni. Okutholakele kuveze ukuthi ukuthengwa komphakathi okusebenzayo kuyisibonelo sezici ezine. Imodeli yokugcina iveze ukuthi ukuvuleleka, inani lemali, ukubophezeleka kanye nokwenza izinto obala kubalulekile ekuthengeni komphakathi okusebenzayo. Ukuncintisana kutholakale kungabalulekile. Ngakho-ke, ukwakhiwa okukhonjiwe kunomthelela oqondile oqondile futhi kungukunquma kokuthengwa komphakathi okusebenzayo. Futhi, ubuhle bokubaluleka okufanelekile nezibalo zesilinganiso sepharamitha kuhlangebezane nenqubo yokusika yemodeli ye-hypothesised.

Igama elingukhiye: ukuthengwa kwempahla yomphakathi okusebenzayo, imboni yezokwakha, ukuthengwa kwempahla, ama-SMME, iNingizimu Afrika

LIST OF ACRONYMS

Abbreviations	Meaning
ADB	Asian Development Bank
AGSA	Auditor-General South Africa
AMOS	Analysis of Moment Structure
ANC	African National Congress
APEC	Asia-Pacific Economic Cooperation
B-BBEE	Broad-Based Black Economic Empowerment
BER	Bureau of Economic Research
BV	Best Value
CFI	Comparative Fit Index
CGE	Computable General Equilibrium Model
CHE	Council for Higher Education
CIDB	Construction Industry Development Board
CPRs	Commonwealth Procurement Rules
DARPA	Defense Advanced Research Projects Agency
DTI	Department of Trade and Industry
ECTA	Electronic Communications and Transactions Act
EFA	Exploratory Factor Analysis
EMEs	Exempt Micro Enterprises
EU	European Union
GDP	Gross Domestic Product
GPL	Government Procurement Law
GPP	Green Public Procurement
HDI	Historically Disadvantaged Individuals
HDP	Historically Disadvantaged People
HRM	Human Resource Management
ICT	Information Communication Technologies
IFC	International Finance Corporation
FI	Fit Index

IPAPs	Industrial Policy Action Plans
IPP	Innovative Public Procurement
KZN	KwaZulu-Natal
MBF	Black Management Forum
MFMA	Municipal Finance Management Act
MOF	Ministry of Finance
MPAT	Management Performance Assessment Tool
NCR	National and Credit Regulator
NFI	Normed Fit Index
NNFA	Non-Normed Fit Index
NPM	New public management
NSBA	National Small Business Act
OECD	Organization for Economic Cooperation and Development
PAJA	Promotion of Administrative Justice Act
PCCA	Prevention and Combating of Corrupt Activities Act
PCFI	Parsimony Adjusted Comparative Fit Index
PDIs	Previously Disadvantaged Individuals
PEPUD	Promotion of Equality and Prevention of Unfair Discrimination
PFMA	Public Finance Management Act
PNFI	Parsimony Adjusted Normed Fit Index
PP	Public Procurement
PPF	Progressive Professional Forum
PPPFA	Preferential Procurement Policy Framework Act
PV	Public Value
PVM	Public Value Management
PWC	Price Waterhouse Coopers
QLFS	Quarterly Labour Force Survey
QSEs	Qualifying Small Enterprises
R&D	Research and Development
RFI	Relative Fit Index
RfP	Request For Proposals

RSA	Republic of South Africa
SACC	Standard Acquisition Clauses and Conditions
SCA	Supreme Court of Appeal
SCM	Supply Chain Management
SD	Dynamics Model
SEDA	Small Enterprise Development Agency
SEM	Structural Equation Modelling
SITA	State Information Technology Agency
SMB	Small and Medium Business
SMME(s)	Small, Medium, and Micro Enterprise(s)
SPP	Sustainable Public Procurement
SRMR	Standardised Root Mean Square Residual
TAC's	Tender Advice Centres
TLI	Tucker-Lewis Index Incremental
TPA	Traditional Public Administration
TQM	Total Quality Management
UK	United Kingdom
UNCITRAL	United Nations Commission on International Trade Law
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organisation
USA	United States of America
USAID	United States Agency for International Development

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

Public procurement represents the use of state funds by the government through agencies on behalf of the citizens to acquire goods and services at the best price, from the right source, and for the right purpose using the best method (Aigheyisi and Edore, 2015). The purpose of public procurement is to achieve value for money, which improves human welfare and economic growth. It is believed that effective public procurement acts as a vehicle in achieving political, economic, and social goals. Globally, several policies promote the participation of small, medium, and micro enterprises (SMMEs) in public procurement. However, evidence suggests that SMME participation in public procurement is hampered by several factors, including but not limited to access to finance, legal requirements, and lack of reliable collateral (Frimpong, 2015). Likewise, Hoekman and Taş (2020) concur that better quality procurement regulation affects SMME participation and the probability of winning contracts. These findings are consistent with the results of the study conducted by Moreover, Karjalainen and Kemppainen (2008), who argued that SMME participation in public procurement is affected by lack of resources. From the evidence presented, it is believed that several factors limit SMME involvement and participation in public procurement. Despite these findings, there is limited research on a conceptual model that encourages the participation of SMMEs in public procurement. Against this backdrop, the current study aims to develop an effective public procurement model for construction SMMEs in South Africa.

This chapter presents background information contextualised in the literature on public procurement for SMMEs in the construction industry using South Africa as a case study. The chapter proposes the rationale for the study, background to the problem, problem statement, research aims, research questions, research objectives, the significance of the study, assumptions of the study, ethical considerations, delimitations, and structure of the thesis.

1.2 Rationale for the Research (nature and scope)

In recent times, SMMEs have continued to receive attention from scholars and public media for their economic and social contributions. Since 1994, the South African government has realised the significant contribution of SMMEs to its economy. In his speech, the Minister of Trade and Industry stated that, given the unprecedented unemployment rate and poverty levels in South

Africa, the government has no alternative but to pay special attention to employment creation. SMMEs are recognised as the vehicle for addressing unemployment, poverty, and inequality. The minister acknowledges that the private sector is the engine of sustainable development (Mahembe, 2011).

According to Ledwaba and Makgahlela (2017), the rising unemployment, poverty, inequality, and staggering economic growth worldwide are major concerns for many governments, scholars, and policymakers, including South Africa. Chimucheka (2013) points out that since the democratic election in 1994, South Africa faces several social and economic challenges that require urgent attention, including unemployment, skills shortage, mass illiteracy, increasing crime, and rural poverty. However, these challenges are mainly common to rural communities (Ibid). The Construction Industry Development Board [CIDB] (2018) expressed the view that South Africa has high unemployment and skills shortages, such as, for instance, the unemployment rate currently of about 27, 7%.

Empirical research reveals that the most sustainable way of addressing the socio-economic challenges facing South Africa is to empower SMMEs to create more jobs (Ridwan Maksum, Yayuk Sri Rahayu and Kusumawardhani, 2020). Cant and Wiid (2013) observed that without SMMEs the economy would not prosper. SMMEs, in addition to economic growth, also act as drivers empowering previously disadvantaged groups through the passage of the Broad-Based Black Economic Empowerment (B-BBEE). Musabayana (2012) supports the view that SMMEs help address the problems that impede most South Africans, especially the previously disadvantaged individuals (PDIs), from living acceptable lives. Likewise, Ofori, Ali Lin and Tjandra (2012) concur that construction SMMEs can improve economic development and growth by providing quality infrastructure. Statistics reveal that there exist approximately 445 million SMMEs globally (World Bank, 2015). However, in its report, the Small Enterprise Development Agency [SEDA] (2016) indicates that more than 2,2 million SMMEs are operating in South Africa. Of the total of 2,2 million SMMEs, 667,433 are formal while 1,497,860 are informal SMMEs. SEDA (2016) discovered that the construction SMMEs in formal and informal economy represent approximately 13% of SMMEs in South Africa.

According to Wentzel, Smallwood and Emuze (2016), the CIDB register of contractors reveals that SMMEs are far more than large firms in South Africa. Wentzel *et al.* (2016) discovered that construction SMMEs are as important to the South African economy as SMMEs in other sectors. The South Africa construction SMMEs are part of the South African government's intervention in creating jobs and fostering economic growth (Shakantu, 2012; Van Scheers, 2011). According to CIDB (2016), in 2008 the construction industry contributed 8% (342,000 jobs) to both formal and informal jobs in South Africa. However, in the second quarter of 2017, more than 430,000 jobs were created in the informal sector alone. This represents an increase of 88,000 jobs or 26% in the construction industry informal sector (CIDB, 2017).

Although the construction industry has been making a significant contribution to South African socio-economic development, it confronts numerous problems. According to CIDB (2017), the construction SMMEs face serious challenges that affect their survival. Martin and Root (2010) posit that more than 70% of construction SMMEs fail in their first year of existence. Researchers have identified diverse challenges facing the South African construction SMMEs, including:

- lack of managerial skills
- lack of access to finance
- poor infrastructure
- setting-up prices
- low research and development
- red tape
- insufficient information to identify/analyse markets
- crime
- government bureaucracy
- inadequate technology
- low production capacity (Bureau of Economic Research [BER], 2016; James, 2016; Mathunyane, 2016; Mthimkhulu and Aziakpono, 2015; Organization for Economic Cooperation and Development [OECD], 2015; Schwab and Sala-i-Martin, 2014).

James (2016) identifies the delays in obtaining permits as a pressing issue that hampers the investment and efficiency of the SMMEs within the construction industry. Pike, Puchert and Chinyamurindi (2018) also found that the regulatory framework such as B-BBEE acts as the

conduit for corruption, limited growth, and skills shortage. Pike *et al.* (2018) further discovered that corruption in the tender process was rife within all industries, including construction, because of inefficiency in conducting the project and excessive spending of tender capital. A study also reveals that lack of support structures is a key challenge for the construction SMMEs because of the limited information on the established institutions for assisting SMMEs (Chimucheka, 2013). Therefore, most South African SMMEs are unaware of government efforts to assist them. Mbuyisa and Leonard (2015) also add that most SMME owners are not educated, and as such, they lack the skills to access vital information.

Ranjit, Mwanaumo and Nkado (2011) identify corruption and fraud in the tender process as a major challenge for the construction SMMEs, especially the new entrants. The findings by Ranjit *et al.* (2011) reaffirm previous research (Ambe and Badenhorst-Weiss, 2012; Bowen, Akintoye, Pearl and Edwards, 2007). Ambe and Badenhorst-Weiss (2012: citing Stemele, 2009) note that the role players of the procurement process have spent approximately R21 billion wastefully, which contravened the provisions of national laws on public procurement. Similarly, in 2009, more than R13 billion of taxpayer money was spent on the procurement process that violated the procurement laws and regulations. Procurement entities have consistently overpaid for goods and services to politically affiliated suppliers and engaged in the mismanagement of public funds (Ambe and Badenhorst-Weiss, 2012). Evidence suggests that the construction industry is still in the process of transforming, given its serious challenges (Martin & Root, 2010). The construction industry's transformation process stems from the desire to eradicate the social ills created by the apartheid government.

Owing to the SMME sector's challenges, successive governments have initiated several interventions to help address the barriers. According to SEDA (2016), the South African government policies promote entrepreneurial activities by creating a platform for new businesses and sustaining the old ones. For instance, the new Public Procurement Bill of 2018 consolidates the legal framework for supply chain management (SCM) (Alhola and Nissinen, 2018). It establishes an apex procurement institute under Section 217 of the Constitution, which requires that public procurement be open, just, transparent, competitive, and cost-effective. Given the high failure rate of the construction SMMEs, there is a need to address their impediments by first identifying the broad procurement challenges that threaten their growth, sustainability,

innovativeness, and survival. From this perspective, the study aims to develop an effective public procurement model for formal and informal construction SMMEs in South Africa.

1.3 Background to the Problem

Gherghina, Botezatu, Hosszu and Simionescu (2020) argue that SMMEs are the primary driver of economic development globally, especially in emerging nations. In the European Union (EU), evidence shows that nearly 99% of all businesses have created approximately 85% of new jobs (Ndiaye, Razak, Nagayev and Ng, 2018). For example, statistics indicated that in 2015 there were more than 23 million SMMEs providing 90 million jobs, generating a higher added value of €3.9 billion (European Union, 2019). Similarly, a report released by EuroStat (2019) indicates that approximately 26 million SMMEs that operate in the EU have created jobs for more than 109 million people, and account for two-thirds of the European gross national product (GNP). SMMEs are the economic growth and development drivers globally, including in South Africa. The National Small Business Act 102 of 1996 categorises SMMEs into five stages of development: survivalist, micro, very small, small, and medium-sized enterprises. The survivalist enterprises operate in the informal economy, which are owned and run by unemployed persons whose primary goal is to survive economically (Turner, Varghese and Walker, 2008). Survivalist enterprises require little capital since they do not generate much more than necessary income and assets. Micro enterprises employ approximately five employees and operate informally. The owners do not have skills to run the business and as a result they often fail to comply with legislation (Turner et al., 2008). Very small enterprises are part of the formal economy; such enterprises employ fewer than ten employees. These are often professionals able to make use of the appropriate technology. Small enterprises are more established than very small enterprises. Small enterprises are registered entities that operate in fixed business premises, and are organised into complex organisational structures of, at most, one hundred employees. On the other hand, medium enterprises are owner managed. They comply with the law and, like small enterprises, are organised into complex structures of up to two hundred employees who perform their duties in fixed business premises (Isaga, 2015).

Saah (2021) postulates that the recent rapid economic growth in the number of SMMEs in South Africa has attracted research interest from several scholarly researchers. Saah (2021) observes that South African SMMEs have positively impacted economic development through job creation,

contribution to gross domestic product (GDP), and poverty eradication. The BER (2016) reports that, according to Statistics South Africa (StatsSA), the total number of SMMEs in South Africa has increased 3% over the last seven years. Moise, Khoase and Ndayizigamiye (2020) also concur that South African SMMEs drive the country's economy and serve as springboards to industrialisation. Research (Turyakira, 2018; Muriithi, 2017) suggests that SMMEs represent 90% of all businesses. Similarly, the Small Business Institute (SBI) (2018) reports that South African SMMEs account for approximately 98.5% of enterprises. Evidence suggests that South African SMMEs provide much-needed support for the economy, contributing to the country's GDP with an approximate generation of 34–38.8% (Kalidas, Magwentshu and Rajagopaul, 2020; SEDA, 2020; International Finance Corporation (IFC), 2018). Afolayan and De la Harpe (2020) point out that the South African SMME sector contributes to the health of the economy, stimulating market growth and employment, and elevating the standard of living. Bvuma and Marnewick (2020) believe that the township SMMEs, in particular, have created vast job opportunities while playing an essential role in uplifting communities.

Imbadu (2016) contends that South Africa's future economic success depends heavily on new and growing SMMEs in both the formal and informal sectors. It is estimated that the South African SMME sector will contribute about 90% of new jobs and 60–80% of the country's GDP by 2030 (Department of Economic Development and Environmental Affairs (DEDEA), 2017). For Reynolds, Fourie and Erasmus (2019), South African SMMEs contribute up to 22% of the economy's GDP. Mahadea and Kaseeram (2018) share similar sentiments by asserting that SMMEs create more job opportunities and contribute to South Africa's GDP. According to United Nations Industrial Development Organisation [UNIDO], (2017), the construction industry is a critical sector, producing building and civil engineering structures; and it determines how investment efforts in a resource-rich country can be converted into investment outcomes.

Despite the significant contribution of construction SMMEs to the economy, these SMMEs find numerous challenges ranging from access to finance, legislation barriers, managerial skills, procurement management, to quality management and good governance (Jili, Masuku and Selepe, 2016; Ngcobo and Sukdeo, 2015; Fatoki, 2014; Windapo and Cattell, 2013). Martin and Root (2010) identify the lack of knowledge as the most critical hurdle for construction SMMEs. Jili et al. (2016) argue that, although SMMEs contribute to local economic development, they lack

government interventions. Bvuma and Marnewick (2020) also identified the challenges of South African SMMEs, especially those in the townships, including lack of access to finance, lack of infrastructure, limited access to markets, lack of skills, education, training and business insight; inadequate government support, crime and violence, and competition. Among these SMME burdens, public procurement remains a serious concern for most, especially the emerging SMMEs. It has been observed that South African SMMEs are confronted by daunting procurement challenges which are significant and have impacted negatively on the industry's development while limiting its ability to drive the national economy as expected (Pillay and Mafini, 2017; Dauda and Nyarko, 2014; Gbandi and Amissah, 2014; Letchmiah, 2013).

Within the context of South Africa, public procurement occurs in line with the B-BBEE score of companies, which deals with the extent to which companies contract suppliers with high B-BBEE ratings. Beyond the social objectives, South African public procurement aims to create employment opportunities, and boost local manufacturing capacity, among other green and inclusive growth priorities (Turley and Perera, 2014). According to World Bank (2020) and Ambe and Badenhorst-Weiss (2012), the origin of public procurement can be linked to the responsibility of government officials to provide goods, services, and infrastructure to the people of a country at all levels. The World Bank (2020) observes that public procurement is a necessary strategic development tool for promoting good governance and embedding the most effective and efficient use of public resources, which ultimately results in improved service delivery. Due to the ever-increasing focus on sustainable development, the role and direction of public procurement have shifted from a predominantly technical and administrative process to a series of processes built around efficiency, transparency, and accountability in using public resources. In the quest to achieve better development outcomes and economic growth, sound public procurement and management of contracts are essential. The primary objective of public procurement across different sectors of an economy is to achieve value for money.

From 1995, the South African public procurement reform initiative focused on addressing two primary objectives: promoting good governance and introducing a preferential system to address socio-economic concerns. The reform was underpinned by several legal frameworks, including the Public Financial Management Act (PFMA) and the Preferential Procurement Policy Framework Act (PPPFA). According to the National Treasury (2014), public procurement is underpinned by

five pillars: value for money (the best available outcome when all applicable costs and benefits over the procurement cycle have been considered), open and effective competition (open and fair procurement system), ethics and fair dealing (ethical standards based on mutual respect, and trust), accountability and reporting (the degree to which public official and government entities are accountable for their plans, actions, and outcomes), and equity (fair and equal access to public procurement). Fourie and Malan (2020) observe that, even with the public procurement reform and supply-chain management (SCM) reposition, there are still far-reaching challenges hampering South African public procurement processes. The Auditor-General of South Africa (AGSA) (2019) and the National Treasury (2015), in their reports, highlighted procurement practices that are not in compliance with legislation, specifically in terms of openness, transparency, and fairness. These procurement practices include unpublished bid documents, non-disclosure of information concerning evaluation minutes and standard contracts during the bid committee meeting, failure to publish bids, failure to subject the entire evaluation process to open scrutiny, and inability to publish progress and contract implementation reports (National Treasury, 2015). Fourie and Malan (2020) found that poorly designed organisational structures and a lack of qualified procurement authorities weaken the capacity and capability of procurement. According to Fourie (2017), poor procurement practices and control could result in poor service delivery, inflated prices, and increased opportunities for abuse due to inadequate specifications and inaccurate costing by officials.

Literature suggests that very few studies have attempted to identify these factors and explore the extent to which these factors can be incorporated into the development of an effective procurement model for SMMEs in the construction industry. Moreover, the extant literature shows that, although the South African public procurement processes are hampered, it is not clear how these factors impact the participation of SMMEs in public procurement. The lack of empirical research in this area requires further research to explore the problem.

1.4 Problem Statement

Of recent times, there has been a paradigm shift in the South African public procurement system. It is required that the South Africa public procurement process be conducted following the National Treasury's legal framework. Fourie and Malan (2020) argue that, unlike in the past, the South African public procurement system is required to ensure timely, effective, and efficient delivery.

Within the context of this study, effective public procurement comprises three elements, including innovative, green, and sustainable public procurement. According to Uyarra, Flanagan, Magro and Zabala-Iturriagagoitia (2017), public procurement is touted as a vehicle for promoting innovation at all levels in the sphere of government. Moreover, Lenderink, Halman and Voordijk (2019) postulate that public procurement is increasingly seen as a vital tool for inducing innovation in the private sector. It has been argued that, although the importance of social interaction for innovation is offered as a rationale for the use of public procurement for innovation, there is little discussion of its corresponding spatial dimensions (Fourie and Malan, 2020). Although there exist several studies on the potential of public procurement to trigger and promote innovation (Manninen, Mainela, Ulkuniemi, Karhu and Ryttilahti, 2015; Knutsson and Thomasson, 2014; Rolfstam, Phillips and Bakker, 2011; Uyarra and Flanagan, 2010; Aschhoff and Sofka, 2009), the innovative ways of implementing the public procurement (IPP) process (Knutsson and Thomasson, 2014) remain under-researched.

Nikolaou and Loizou (2015) believe that recently many governments have begun to incorporate specific environmental criteria into public procurement. This assertion underscores the importance of green public procurement (GPP). Tshikhudo, Aigbavboa and Thwala (2016) claim that, although many governments have enacted environmental laws to cope with growing ecological problems, little attention has been given to GPP as a policy tool. The mainstream literature appears to pay more attention to government procedures for incorporating specific criteria to green their procurement and public purchasing for various products (Palmujoki et al., 2010; Parikka-Alhola, 2008). Furthermore, extant literature seems to suggest a lack of research on the extent to which SMMEs implement GPP in their procurement process. It can therefore be assumed that SMMEs have problems with incorporating green criteria and practices into public procurement processes.

Sustainable public procurement (SPP) also constitutes an essential aspect of effective public procurement. SPP is considered a process whereby firms apply goods, services, works, and utilities to meet value for money on whole life, while generating benefits to the organization and society and the economy and minimising damage to the environment. SPP can be a tool in establishing synergies among the three pillars of sustainable development under the principle of good governance. Such includes economic feasibility (value for money, economic growth, employment creation, promotion of small and medium enterprises, environmental and social integration),

environmental balance (efficient use of natural resources, maintaining the quality of the ecosystems, conservation of biodiversity, and reducing ecology), and social progress (protection of human rights, poverty alleviation, reduction of hunger and inequality, addressing food security, promotion of decent work and living conditions, and promotion of health and safety). Despite the importance of public sector procurement, there is limited research on how SPP can be achieved through public procurement, especially in SMMEs. Moreover, the literature review suggests limited research on effective public procurement within the South African context. Manyathi, Burger and Moritme (2021), in their study, point out that there is little empirical evidence that anyone previously has tried to model or link some of the best practices of public procurement in organisations. Hence, the current study aims to provide a model for effective procurement for construction SMMEs.

1.5 Aim of the Study

The study aims to develop a sustainable public procurement model that would assist in addressing the procurement challenges that confront SMMEs in the construction industry, while addressing the shortcomings of the current practice. Besides this, the study seeks to identify the specific factors that limit the participation of construction SMMEs in the public procurement process.

1.6 Research Questions

In examining the research problem, the following questions will be addressed:

- What is the level of performance of the existing procurement models in the South African construction industry?
- What are the factors that influence effective public procurement for SMMEs in the South African construction industry?
- What are the challenges to the adoption of effective public procurement practices in the South African construction industry?
- How does the hypothesized model fit with the sample data?

1.7 Research Objectives

The specific objectives of the research are the following:

- To determine the level of performance of the existing procurement models in the South African construction industry

- To identify the factors that influence effective public procurement for SMMEs in the South African construction industry
- To evaluate the challenges to the adoption of effective public procurement practices in the South African construction industry
- To develop an effective public procurement model for SMMEs in the South African construction industry
- To determine the goodness of fit of the hypothesized model.

1.8 Significance of the Study

The most significant contribution of the study is the development of a sustainable procurement model. This model assists with mitigating recurring challenges or gaps in the public procurement process. Further, this study contributes methodologically by adopting a quantitative approach through a survey and structural equation modelling (SEM), a novel approach. The recommendations from the study will further enhance policy development towards the growth and sustainability of the construction SMMEs in South Africa. In addition, the results of the study will help extend the frontier of knowledge in the field of public procurement and construction management. This will add to the body of knowledge on public procurement; and will serve as a source of reference material for students, academics, governments, procurement entities and stakeholders. Moreover, this study is significant because it will identify and mitigate the challenges that limit the participation of construction SMMEs in the South African public procurement process. The findings could be a useful tool to promote construction SMME participation in the public procurement process.

1.9 Assumptions of the Study

The following assumptions underpin the study. Firstly, there is a level of performance of the existing procurement models in the South African construction industry. Secondly, several factors influence effective public procurement for construction SMMEs in South Africa. Thirdly, certain challenges influence the adoption of effective public procurement practices in the construction industry. Fourthly, an effective public procurement model exists for the construction SMMEs in South Africa. Fifthly, there exists the goodness-of-fit of the hypothesized model. Also, all

respondents are knowledgeable on public sector procurement and have adequate experience of working in that space. Lastly, all data provided by respondents will be accurate and complete.

1.10 Ethical Considerations

The approval for the study was granted by the Social Science Research Ethics Committee of the University of KwaZulu-Natal, South Africa. An online application was submitted to the Research Office. The ethical considerations addressed in this study are discussed as follows:

In accordance with international ethical norms and standards, no sensitive data was used in the study. The information elicited from the respondents is kept in secure place to avoid unauthorised access. No respondents were remunerated for participating in this research. Other ethical considerations addressed include the following.

- All the data collected during the research was handled in a strictly confidential manner. Moreover, the data was aggregated to ensure that no information can be traced to a particular respondent.
- The consent of the respondents was obtained prior to the distribution of research instruments. A consent form was given to each respondent which contained information such as the research methods and procedures, the research aim, the benefits of the research, and information about the researcher and the supervisor.
- The anonymity of the data was ensured by replacing the respondents' personal information with pseudonyms, and limiting their identity information in the thesis, oral presentations, and subsequent publications.
- All the secondary sources cited in this study were properly referenced.
- Efforts were also made to limit the risks, if any, associated with the research.

1.11 Delimitations of the Study

The scope of the study was limited to the construction SMMEs in KwaZulu-Natal, Gauteng, and Western Cape Provinces, given that these provinces are the largest provinces by population (Statistics SA, 2011). The study only focused on the construction SMMEs awarded contracts by the government between 2014 and 2018. A critical limitation of the study was the COVID-19 pandemic, as many participants felt reluctant to participate in the study because of the fear of

possible infection. However, to overcome this challenge, a remote collection method was adopted. Another limitation of the study was the timeline for completing the study.

1.12 Chapter Outline

This study comprises seven chapters, as follows:

Chapter 1- Introduction: The chapter provides an introductory overview of the study including the background of the study, problem statement, research aims, motivation of the study, the research questions, objectives, contribution of the study, ethical considerations, and limitations of the study.

Chapter 2- Construction Sector Overview: Chapter Two reviews literature relating to the construction SMMEs. The chapter includes the contribution of the construction sector, characteristics of the construction sector, and challenges facing the construction sector.

Chapter 3-SMME Characteristics and Participation in the Industry: This chapter reviews literature on SMME characteristics, the contribution of SMMEs, challenges facing SMME participation in the industry, and the addressing of the challenges of SMMEs.

Chapter 4 -Public Procurement System to Encourage SMME Participation: The chapter reviews empirical research on the public procurement system in South Africa. The review includes legal frameworks that regulate the procurement system, pillars of public procurement, effective public procurement, and procurement challenges that affect construction SMMEs. Furthermore, the chapter reviews relevant existing public procurement models/frameworks on SMMEs across different countries set in the South African context. This chapter contains a comparative analysis of the public procurement system and processes between South Africa and other jurisdictions. It also represents the conceptual model that underpins the study.

Chapter 5 - Research Method: This chapter discusses the research design and methodology that guide the study. The chapter will cover the research paradigm, approach, research design, the study location, study population and sampling procedures, sample size, data-collection instrument pilot study, data quality control, measurement scale, and data analysis.

Chapter 6 - Presentation of Survey Results: This chapter presents and analyses the data obtained from the study respondents. To establish the relationship between the constructs and to test the proposed concept for good fit, SEM was performed, with the findings presented. Results of the exploratory factor analysis (EFA) are conducted before SEM are also presented.

Chapter 7 - Discussion of Survey Results: Results and interpretations of the survey and SEM are presented in this chapter.

Chapter 8 - Conclusions and Recommendations of the Study: This final chapter presents the empirical findings and draws conclusions from the research findings. It also outlines the recommendations and the directions for further research.

1.13 Chapter Summary

The chapter addressed the introductory overview of the research. It described the background of the study. Moreover, it highlighted the gaps that form part of the investigation. The research questions and objectives are also outlined in the chapter. Additionally, the chapter included the significance of the study, assumptions that underpinned the research, delimitations of the study, ethical considerations, and structure of the research.

CHAPTER TWO: CONSTRUCTION SECTOR OVERVIEW

2.1 Introduction

The construction industry plays a vital role in economic growth worldwide, especially in developing countries (Dithebe, Aigbavboa, Oke and Muyambu, 2018). It is suggested that the construction industry's contribution is evident in the production of much-needed infrastructure required for the development and growth of the economy, construction productivity, and the well-being of the citizens (Dlamini, 2012). In South Africa, the construction industry contributes significantly towards economic growth as it produces the infrastructure required to develop other productive activities in the country. This chapter aims to provide an overview of the construction sector. It focuses on the construction industry's contribution, and factors influencing the performance of the construction industry, strategies that promote sustainability of construction SMMEs, and participation of construction SMMEs in public procurement.

2.2 Contribution of the South African Construction Industry

South Africa's public sector represents the largest procurer of construction works. Therefore, the construction industry's performance is primarily predicated on government infrastructure spending. This figure reaches about R220 billion per year (PwC, 2015; CIDB, 2017). It has further been argued that the government has consistently been the largest client of the construction industry (Windapo and Cattell, 2011). Compared with other industries, the construction industry contributes most to South African economic growth (CIDB, 2012; Statistics South Africa (Stats SA), 2010). According to United Nations Industrial Development Organisation (UNIDO) (2009) and Ofori (2007), the construction industry is the major contributor to the South African economy as it produces building and civil engineering structures, and determines the extent to which investment efforts in a resource-rich country are translated into investment outcomes. UNIDO (2009) reports that the construction industry is not a single industry but a complex cluster of industries such as banking, materials and equipment manufacturers, and contracting organisations.

Giang and Pheng (2011) also confirm that the construction industry plays a vital role in the socio-economic development of any nation, including South Africa. This industry makes an essential contribution to the national economy through job creation, development, and transfer of technology, creation of opportunities for enterprises, and improvement in the quality of life of the users of its products. Stats SA (2014) reports that the construction industry creates employment

for more than 1.4 million people all over the country. Thus, it helps the formal and informal sectors generate income and contribute to the economy's growth by creating employment. A study suggests that the economic significance of the construction industry is further "underscored by the fact that construction activities impact other industries such as manufacturing and banking" (Dixit, Pandey, Mandal and Bansal 2017:742). Some parts of the business investment of other industries are reliant on construction, as their service delivery is mainly dependent on physical infrastructure (Shah and Ahad 2017; Chia, Skitmore, Runeson and Bridge 2014). Higher construction labour productivity flows through the economy because of the significance of the construction sector to other economy-dependent sectors (Dixit, Mandal, Thanikal and Saurabh 2018).

Furthermore, evidence suggests that, of recent years, the construction sector has made a significant contribution to the increase in infrastructure development and construction activities in South Africa (CIDB, 2007). The industry has contributed to capital accumulation, which has led to increased socio-economic activity (Tan, Shen and Langston, 2012). Statistics show that in 2016 construction work accounted for approximately R305 billion (or R420 billion in nominal rands). As of the fourth quarter of 2016, the sector has employed more than 1 004 000 people within the formal sector, and a further 479 000 informally (Statistics South Africa, 2016). Moreover, in 2017, the industry employed about 965 000 people in the formal sector and 430 000 in the informal sector. Statistics South Africa (2014) reports that the construction sector has accounted for 10% of total employment. This industry remains one of the driving forces behind the nation's socio-economic development (Saidu, Shakantu, Damu and Anugwo, 2017).

According to Statistics South Africa (2016), the construction industry contributes a significant percentage of the GDP, and employs a substantial proportion of the working population in the country. Statistics South Africa (2014) estimates that the total income for the construction industry was R15.68 billion in 2012, R16.48bn in 2013, and R15.42bn in 2014. In 2015, it was anticipated that the output value of the South African construction industry would rise at an annual growth rate of 2.62% by the year 2020 (Report Buyer, 2016). The CIDB (2016) reports that the construction industry in South Africa makes up at least 50% of the total national capital investment in the country, and as much as 4% of the GDP. A recent survey conducted by Research and Markets (2021) reveals that the South African construction sector is a driver of socio-economic development and a key employment multiplier. Research and Markets (2021) agrees with the

above scholars, such as Research and Markets (2021) and Statistics South Africa (2016) that in 2019 the value added by the construction industry accounted for approximately 4% of GDP, and it employed more than 1.3 million people.

2.3 Performance of the South African Construction Project

Chingara and Moyo (2014) observe that the challenge of poor performance, especially in emerging economies requires considerable infrastructural development projects to stimulate economic growth. Most developing nations prioritise poverty alleviation and sociocultural dimensions that sustain harmony and co-existence, which in turn, negatively impacts performance of construction projects (Ugwu and Haupt, 2007). In the quest to improve the performance of the South Africa construction industry, a survey conducted by the South African Workforce Management Group Adcorp (SAWMGA) reveals that labour productivity in the South African construction industry has been poor for several years (Chingara and Moyo, 2014). Against this background, there is the need for the South African construction industry to play a decisive role in the country's bid to achieve rapid socio-economic development while ensuring improved project performance.

A report released by the CIDB (2012:3) reveals that 13% of the surveyed project clients were dissatisfied with the performance of contractors. The level of poor performance can be attributed time and quality of product delivery. Therefore, to improve customer satisfaction, Mbachu and Nkado (2007) proposed that the requirements and expectations of clients be understood by their service providers, ultimately striving to satisfy their expectations.

2.4 Challenges Facing the South African Construction Industry

The review of extant literature reveals that, although the construction industry contributes to the South African economy, it faces several impediments that negatively impact its growth and sustainability. Research (Shah and Ahad 2017; Akogbe, Feng and Zhou 2015) confirms that the global construction industry is challenged by poor productivity, and is usually criticised for its underperformance. This has negatively affected the construction project performance, stakeholders, and construction businesses. The challenges affecting the performance of the construction industry in the South Africa have been long-lasting, and there is little evidence to establish the non-existence of these challenges. The challenges affecting the performance of the South African construction industry are discussed as follows.

2.4.1 Public-sector capacity

Mbande (2010) contends that there is a shortage of skills within the South African skills sector and state-owned enterprises. According to CIDB (2004), public-sector capacity is a key constraint on the South African construction industry's infrastructure delivery and sustainable growth. Milford (2010) also points out that the lack of public-sector capacity has led to an inefficient and cumbersome process of funding construction projects by the government and, in some cases, backlogs of more than six months in payments to contractors. Van Wyk (2003) observes the inability of the South African government to spend allocations received and its failure to evaluate public-private partnership schemes submitted to it for much-needed infrastructure. CIDB (2011) identifies specific issues of concern, including the quality of tender documents and specifications and the management of change orders. Shinde and Hedao (2017) also concur that the lack of experience of workers is a contributing factor to the poor performance of the South African construction industry. For this reason, Adebawale and Smallwood (2018) identify the need for construction managers to take cognisance of effective management of construction projects through consistent employee training.

2.4.2 Mismatch between available skills and required skills

According to Mbande (2010), there are conflicts of mismatch due to the inadequacy of administration conveyance and lack of skills in the South African construction industry. CIDB (2004) points out that skills acquired by workers through further instruction and training (FIT) were immaterial to the requirements of the development business, which brought about a skills gap and a genuine decrease in the capacity of the expertise within the development business. Van Wyk (2004) confirms that the more significant number of workers and managers who have no training or degrees are genuine obstacles to the advancement of the business. Recent trends suggest a reduction in qualified skills in South Africa. For instance, the Department of Higher Education and Training (2016) reports shortages of personnel in South Africa. The Engineering Council of South Africa (2015) also noted that the number of professional engineers has declined in recent years. Similarly, El-Gohary and Aziz (2014) confirm that lack of labour experience and skills are some of the common problems affecting the productivity and performance of the construction industry.

2.4.3 Globalisation, credit and interest rate issues

Lewis (2007) observes that globalization has affected all sectors of an economy, including the construction sector. Ramachandra, Olabode, and Rotimi (2009) argue that bringing together construction administrations could have an economic impact on the indigenous development segments of the developing nations. Borrowing power for infrastructure projects of many countries is restricted, affecting the construction industry's economic performance.

Since the global economic crisis started in late 2007, banks have become stringent in their lending criteria, compared with the easy access to credit that characterised the period from 2001 to 2003, as shown by Luus (2003). This increased stringency has required developers and purchasers to deposit equity of up to 50% and not less than 20% of the cost of development or housing, which very few people can afford. Funds available for lending have shrunk significantly, directly influencing the number of developments constructed (Luus, 2003). The developers need the banks to finance the building process; and the purchaser needs to access a mortgage to finance the purchase of a house or apartment. In addition, mortgage rates have fluctuated between 13% and 24%, causing substantial problems, with households finding it difficult to afford the higher interest payments and, as a result, failing to pay their mortgage bonds (Tomlinson, 2010).

When the accessibility of funds has been minimised, construction projects are the ones that suffer the most (Luus, 2003). The engineers require the banks to support their building procedure, and the buyer needs a home loan to fund the buying of a house or condo. Moreover, contract rates have gone up in the vicinity of 13% and 24%, causing serious issues, with family units finding it difficult to manage the cost of the higher instalments and subsequently neglecting to pay their home loan securities (Lewis, 2007).

Moreover, as much as global integration encompasses recognizable benefits, there are also shortfalls: the increased cost of building materials. The increase in global interests rates affects the affordability of building materials. Materials represent 60% of aggregate project costs (CIDB, 2004). South Africa creates its key materials and depends on imported hardware. Hence, increments in material expenses directly increase project cost, and if not catered for in the project, this can badly affect the construction industry's performance. The CIDB (2007) investigates the building and construction sector in South Africa. It also takes note of the costs of unpredictable

building materials, for example, steel, bond, sand, copper, timber, polyvinyl chloride (PVC) channels, bitumen and stonework expanded by up to 100% between October 2000 and 2006, which economically affects the entire performance of the construction industry.

In a more recent study, Eton, Mwosi, Okello-Obura, Turyehebwa and Uwonda (2021) observe that financial inclusion is significant in supporting SMME growth. However, it was found that the cost of acquiring and servicing financial services remains the greatest restrictive factor hampering the sustainability of SMMEs (Eton *et al.*, 2021). Against this backdrop, the authors proposed that financial service providers encourage their customers to utilise digitalised financial services which are cheap, secure, and risk averse. Besides this, it was recommended that the cost of capital should also be reduced to encourage borrowing, whereas SMEs should innovatively produce goods that are competitive at domestic and international market (Eton *et al.*, 2021). The findings above are also consistent with the study conducted by Oladimeji, Ebodaghe and Shobayo (2017), which reveals that interest rates, bank credit, and trade openness do not improve the output performance of SMMEs.

2.4.4 Technological advancement and communication

Ofori (1990) points out that, compared with other countries, South Africa is in line with developing countries that are slightly advanced technologically. Technological advancement brings about creativeness and innovation, which is a key component for improved construction industry performance. The developing benchmarks of innovation inside the nation and abroad tend to restrict the extent of the activities that can be executed, including the required material, gear, and the accessibility of staff. There is additionally a difficult issue with clients approving new and improved building techniques and imaginative building frameworks that could contribute to the expected performance of the construction industry. Small and emerging organisations can be advanced by efficient administration arrangements utilised to work in numbers to ease indigence and lift the economy (CIDB, 2007). It would be unjust to confer the importance of technological advancement without including the pivotal role of communication systems in the construction industry. Emuze and James (2013) expressed that communication is one of the key variables impacting construction processes. Communication is hence a key factor in the development business. The absence of compelling communication among people affects employee and organisational performance, which in turn diminishes the industry's performance altogether.

2.4.5 Procurement practices/capacity for sustainable empowerment

The CIDB (2004) reports that the existing preferential procurement environment is challenging as it encourages historically disadvantaged professionals to establish their firms rather than join established companies. According to the report, this fragmentation has reduced the depth and breadth of expertise that can be consolidated within medium and large companies through access to and experience with specialised and diverse projects. In addition, the preferential method of procurement in use in South Africa (CIDB, 2012; Williams, 2007) results in unhealthy levels of competition and impedes the development of small enterprise capabilities and sustainability. Despite the findings, there is still limited research in the South African context on how procurement practices affect construction SMME participation in government tenders.

2.4.6 Availability of infrastructure

Human settlements require infrastructure for sustenance. An area cannot be developed without infrastructure such as electricity, pipe-borne water, roads, streetlights, and sewage disposal systems (Ofori, 1990). The CIDB (2007) observes that the government of South Africa spends a considerable amount of money on improving its old and depreciated urban and rural infrastructure. There is also a huge challenge concerning limitations on electrical capacity (Eberhard, 2008). The electricity-generating company in South Africa, ESKOM, has a nominal generating capacity of 39,154 megawatts. According to reports, water scarcity will also become an increasing problem. In some instances, such as high-end housing-estate developments in new areas, private property developers are increasingly delivering housing-related infrastructure as an added cost of the development (Kihato, 2012). Likewise, Gundeche (2012) identifies shortage of power and/or water supply as some infrastructure challenges affecting the construction industry. Therefore, for the smooth progress of the work on-site, infrastructure facilities are required; and in cases where these facilities are unavailable, a contractor must make provision for them.

2.4.7 Availability of suitable land for construction

The most important physical constraint affecting construction activity is land because land supply is primarily fixed (Ofori, 1990). Boshoff (2010) emphasises that while there is an extensive supply of public land, private land is not readily available in South Africa. Such factors as topography and soil conditions further limit the total land area within each cluster that can be developed (van der Merwe, 1997). Furthermore, there are many land-claim issues in the courts, zoning issues, and

heritage sites, all of which combine to make the price of available land prohibitive, thereby delaying development processes. Dixit et al. (2017) confirm that poor site coordination is one of the main causes of delay on construction projects, directly impacting on construction labour productivity.

2.4.8 Increases in the costs of building materials

Materials account for 60% of total project costs (Haskell, 2004). South Africa produces its strategic materials and relies on imported equipment. The CIDB (2007) reports on the building and construction sector in South Africa notes that the prices of volatile building materials such as steel, cement, sand, copper, timber, polyvinyl chloride (PVC) pipes, bitumen, and masonry increased by up to 100% between October 2000 and 2006. Stats SA (2010b) and BER (2011) reported price increases ranging from 70%–241% between 2000 and 2010. In addition, BER (2011) determined that the prices of building materials increased linearly at an average rate of 70% between 2002 and 2010; and that all building material prices increased overall up to 2008 when the material prices reached their peak. According to van Wyk (2003), significant growth in the construction industry depends on price stability in material costs, which have increased at rates higher than the inflation rate. Cockayne (2011), the CIDB (2007) and Enslin-Payne (2007) note the effects that the increase in building material prices have on the construction industry, including the inability of developers to deliver affordable housing, high tender valuations, and poor construction industry performance.

2.4.9 Poor architectural design

Adebowale and Smallwood (2018) identify the need for construction managers to take cognisance of effective management of construction projects through adequate constructability reviews of construction drawings and specifications. For the construction industry to achieve optimal productivity, accurate and complete drawings are required (Hughes and Thorpe 2014). Goodrum and Maloney (2007) identify the significant factors affecting construction project productivity, including drawings errors and slow response to queries relating to drawings. Iyer, Chaphalkar and Joshi (2008) also concur that design and drawing mistakes are significant factors that contribute to accidents on construction sites. It is suggested that designers' influence on waste and cost reduction can be maximised when designers understand the challenges and opportunities related to waste prevention and how this can be practically achieved (Osmani, Glass and Price 2008).

2.4.10 Statutes and regulations

Ofori (1990) identified statutes and regulations such as insurance provisions, standards, the defects liability period, height restrictions, and health and safety provisions as factors that constrain the level of construction activity in any country at any given time. The CIDB (2004) report states that since 1994, the South African Government has passed more than 1,000 pieces of legislation, which spawned numerous regulations, giving the impression of over-regulation. These laws have affected tender and procurement procedures, employment and labour practices, BEE, planning permissions and controls, skills development, training, and business practices. As a result, the development approvals and zoning processes of local authorities are slow and lead to unnecessary holding costs for developers (CIDB, 2004).

2.5 Chapter Summary

The chapter provided an overview of the South African construction industry. The South African construction industry is a significant contributor to the country's economy. It has been found that the construction industry contributes a substantial percentage of the GDP and provides employment to a considerable proportion of the working population in the country. The extant literature suggests that, although the contribution of the construction industry is significant, its performance is affected by a myriad of factors, including engineering drawing management, lack of infrastructure, poor site conditions, unavailability of drawings on time at the worksite, access to funding, lack of experienced and qualified workers, procurement practices, government regulations, and technological advancement.

CHAPTER THREE: SMALL, MEDIUM AND MICRO ENTERPRISES CHARACTERISTICS AND PARTICIPATION IN THE CONSTRUCTION INDUSTRY

3.1 Introduction

Globally, SMMEs are noted for their significant contribution to countries' economies in employment creation, poverty alleviation, promotion of equality, and expansion of the GDP. According to Saah (2021), South African SMMEs positively impacted economic development through job creation, contribution to GDP, and poverty eradication. The rapid growth of recent years in the number of SMMEs in South Africa enhancing economic growth has attracted research interest from several scholarly researchers and SMME experts. This chapter reviews empirical research on the South African construction SMMEs. The review includes conceptualisation of SMMEs, characteristics of construction SMMEs, contribution of the construction SMMEs, strategies that promote sustainability of SMMEs, and SMME participation in public procurement.

3.2 Conceptualisation of Small, Medium and Micro Enterprises

SMME or “small and medium business” (SMB) mean the same. On the contrary, there are some differences in the South African context, since most institutions make their determination on the term SMME (National and Credit Regulator [NCR], 2016; and Sitharam & Hoque, 2016). Mahembe, Chiumya and Mbewe (2011) made a similar call that while SMMEs have been acknowledged internationally; defining them becomes a challenging task for many scholars, as every country has its own definition. The opinions expressed by the above scholars reaffirm the position of Storey (1994), who states that no single or uniformly accepted definition exists on SMMEs. The scholar argues that SMMEs differ in size, level of capitalization, sales, and employment. This study aims to define SMMEs in the context of South Africa, thus understanding the nature of an SMME within this country. Table 2.1 summarises the definitions of SMMEs from some selected countries such as the European Union [EU], United States of America [USA], Malaysia, Brazil, Russia, China, and the Republic of South Africa.

Table 3.1: Definition of SMMEs from Different Countries

	EU	USA	Malaysia	Brazil		Russia	China	RSA
				Industrial	Commercial			
Words	SMEs	SMB	SMEs	SME	SME	SME	SMME	SMME
No. of employees								
Micro	10	0	5	Up to 19	Up to 9	0	0	0-5
Small	<50	<100	5 -50	20-99	10-49	15-100	<300	<50
Medium	<250	<500	51-150	100-499	50-99	101-250	300-2000	100-200
Turnover								
Micro	\$3m	0	RM250.000	0	0	0	0	<R150k
Small	\$13m	0	RM250.000 to< RM10	0	0	400 m RUB max	<Y30	R2m to R255m
Medium	\$67m	0	RM 10m to RM 25	0	0	1 B RUB max	Y30 to Y300m	R4m to R50m

Source: National Small Business Act (1996)

South Africa, as with any other country, has difficulty in defining SMMEs. Several scholars have defined SMMEs in several ways. The most population definition of SMMEs “includes registered entity with not more than 250 employees” (International Finance Corporation (IFC), 2009:9). In practice, SMMEs can be defined based on the number of workers or turnover rate (National Small Business Act [NSBA], (1996). Section 1 of the NSBA (1996) describes the small business in the context of South Africa as: *“a separate entity comprising of co-operative enterprises and nongovernmental organizations, owned and managed by the owner and few people, including its branches, if any, is predominantly carried on in any sector or sub-sector of the economy”* (Mahembe, 2011:24). The NSBA (1996) has further categorized SMMEs into different groups such as survivalist, micro, very small, small, and medium.

3.3 Characteristics of Construction SMMEs

It is universally accepted that SMMEs differ from other businesses. Foghani, Mahadi and Omar (2017) argued that it is imperative to identify SMMEs’ integral attributes to elucidate their strategic roles in global economics. According to Viinikainen, Heineck, Böckerman, Hintsanen, Raitakari and Pehkonen (2017), several studies have been conducted on the characteristics of successful

SMMEs. Likewise, Terziovski (2010) pointed out that SMEs are different from other enterprises regarding reactive, resource limitations, informal strategies, and flexible structure. The following are some of the characteristics of the construction SMMEs.

3.3.1 Structure of the firm

Miller (1987) sees organisational structure as the fixed distribution of work roles and administrative mechanisms to help the organisation perform, coordinate, and control its operations and resource flow. According to Walton (2016), an organisational structure is a systematic process of delegating power and authority among employers. Thompson (2013) points out that organisational structure represents the framework that describes the needs of a project and how to achieve success in organising such a project. There are many types of organisational structure: flat organisational structure (these are relatively few layers of management), tall organisational structure (these are several layers of management), functional structure (the structure in which an efficient workflow depends on the integration of various tasks in the organisation), matrix structure (a structure created to address a specific problem within a short period), and divisional structure (segregation of work into different units within an organisation) (Burton, Obel & Håkansson, 2015).

Organisational structure optimisation is a determining factor for SMME long-term development. SMMEs, by nature, are different from other types of organisations based on their structure. When designing an organisational structure, it is essential to achieve a structure strategy fit. This suggests that an organisational structure must be aligned with its strategy, decision-making system, and information network.

Rao, Toledo and Metts (2003) believe that the structure of SMMEs is primarily organic compared with the bureaucratic structure in large corporations. It is argued that SMMEs are identified based on the lack of standardised and formal working relations (Rao et al., 2003). Thus, SMMEs mainly function based on a flat company structure with fewer employees and development. Nevertheless, these characteristics allow SMMEs to adapt to environmental changes. Galetić, Načinović and Aleksić (2011) maintain that SMMEs have some specific organisational characteristics that enable them to achieve some degree of flexibility and adaptability.

3.3.2 Access to funding

The size of a business determines its access to funding (Lakuma, Marty and Muhumuza, 2019). Access to credit has for decades been of great interest to researchers in developing and developed countries across the globe. Research suggests that access to funding is one of the major problems facing the SMME sector worldwide (Mutenyoka & Madzivhandila, 2014; Chimucheka, 2013). In another study, Obaji and Olugu (2014) discovered that in developing countries such as Nigeria, Ghana, Kenya, South Africa, Zimbabwe and Egypt, the banking system provides little or no financial products to SMMEs. It has been observed that, despite several interventions from the South African government, the SMME sector is still challenged by access to finance. For example, the Small Enterprise Development Agency (SEDA) was established by the South African government to oversee the development of small businesses in the country. Furthermore, Khula Enterprise Finance and the Apex Fund were established with the aim of extending microcredit to startups. SBP (2015) argues that the South African government has allocated R508 million to these institutions to enable them to provide extended credit to SMMEs. To further underscore the importance of the SMME sector, the government established a Ministry of Small Business Development in 2014. Over the years, the Ministry of Small Business Development has assisted in the proliferation of SMMEs in various parts of the country.

However, it was discovered that South Africa still lags behind other developing economies in terms of promoting the growth and sustainability of the SMME sector, and has among the highest failure rate of startups (SBP, 2015). For instance, a study conducted by SBP shows that more than 35% of SMME owners reported their survival threatened; and 49% have exhibited either a stagnant or shrinking turnover (SBP, 2015). Thompson, Mmih and Mordi (2018) contended that the orthodoxies (Kshetri, 2011; Melvin & Boyes, 2013) state that access to finance is a key contributor to the success of SMMEs. Scholarly research (Akhmadeev & Manakhov, 2015; Valaskova, Klietnik, Svabova & Adamko, 2018) has examined different aspects of SMMEs, globally. The literature review suggests that much of the research focuses on the SMME segment (Balcerzak, Klietnik, Streimikiene and Smrčka, 2017; Kurschus, Sarapovas, and Pilinkiene, 2017). Moreover, research (Global Entrepreneurship Monitor (GEM), 2017; World Bank 2017; International Monetary Fund (IMF), 2016) affirms that SMMEs, as opposed to large enterprises, have limited access to credit facilities. Compared with large enterprises, SMMEs, globally, according to the evidence, struggle to gain access to funding. Asah, Louw and Williams (2020) claim that in South

Africa, access to finance by SMEs is determined by factors such as collateral, annual business turnover, and audited financial records. Asah et al. (2020) also pointed out that collateral and financial records, and lack of investment capital prevented SMMEs from gaining access to finance.

3.3.3 Managerial and leadership competence

It is known that the managerial skills and leadership competence of SMMEs owners have a significant bearing on their survival and growth. Staniewski (2016) argues that entrepreneurs with management skills and experience who employ employees with unique knowledge are more successful in business than others. However, a study (Green, Long, Green, Iosif, Dixon, Miller, Fassbender and Schweitzer, 2012) reveals that lack of managerial skills is a common phenomenon that affects most SMMEs in South Africa and across the world. In broad terms, skills refer to the “abilities of individuals for which there is demand within the formal economy” (Green et al., 2012). According to the Bureau of Economic (2016:8), “management or managerial skills is a critical factor for the success of any organisation.” However, in South Africa, the shortage of critical skills is a national issue, affecting many businesses. BER (2016) notes that SMMEs, especially those in the service sector, are negatively affected by the shortage of skills in South Africa.

Abor and Quartey (2010:224) support the assertion that the skills gap in South Africa has significant effects on many business activities. Abor and Quartey (2010:224) argue that the contributing factor to the lack of managerial skills in the SMME sector is that some entrepreneurs or business owners “do not see the need to upgrade their skills due to complacency.” In their study, Abor and Quartey (2010) also identified that lack of managerial expertise and knowledge have a severe impact on SMME development in South Africa. Abor and Quartey (2010) and Wennekers, Stel, Carree and Thurik (2010) found that, although several institutions in South Africa provide training and advisory services to many businesses, there is still a skills shortage within the SMME sector. They opined that the lack of managerial skills could be attributed to a lack of investment in human capital. Furthermore, research (Naude, Ambe and Kling 2013; Ambe and Badenhorst Weiss, 2012) indicates that the most significant restrictive factors impeding contractor success in public procurement include capacity or skills shortage.

In this competitive business environment, entrepreneurs require a different set of managerial skills to cope, survive and manage the firm. Kerrin Mamabolo and Kele (2017) conceptualise “skills” as the ability to perform a task. The scholars further add that skill is the proficiency in performing tasks in the entrepreneurial phases through human capital investments, and can be improved by training, practice, and development. Van Scheers (2016) identifies that lack of basic managerial skills such as business planning is one of the reasons that small businesses fail. Mohammed and Nzelibe (2014) further allude to a well-versed and good business managerial skill being vital to any individual in running and successfully managing a business.

Although extant literature suggests that SMMEs lack managerial skills and leadership competence, it not clear how these challenges impact their participation in public procurement. Findings from previous studies are inconclusive, given that they failed to provide how managerial skills and leadership competence can be acquired by SMMEs. Therefore, there is a need for further research to analyse the extent to which managerial skills and leadership competence impact the participation of SMMEs in the public procurement process.

3.3.4 Owners’ educational background

Lee, Jeon and Na (2016) argue that the educational background of SMME owners or entrepreneurs plays a role in influencing business success. Owners and managers above the age of twenty contribute to the success of small businesses. The educational background and experience of the managers largely helps the use of financial plans to impact the performance of small business start-ups (Mengel and Wouters, 2015). According to Lussier, Bandara and Marom (2016), the education, experience, and skills of business owners and managers help small businesses develop the strategies that lead to success. However, Vallabh and Mhlanga (2015) identified a lack of or low level of education among SMME owners as significant challenges affecting their businesses.

According to Vallabh and Mhlanga (2015), human capital is critically important to the long-term development of the SMME sector, particularly the tourism sector. The scholars suggest that the SMME sector is contingent on quality, available human resources to develop and deliver a competitive product that meets consumers’ changing needs, and to mitigate societal woes such as poverty and inequality (ibid). Against this background, the Small Business Academy, University of Stellenbosch Business School (2014) recommends the need for education and training to help

local entrepreneurs tackle their tasks more effectively. Contrary to the above findings, a study conducted by Mueller and Naffziger (2015) reveals that planning activity in small businesses has nothing to do with the demography, such as age, skills, education, and experience. Lekhanya (2015) concurs that inadequate entrepreneurship education is a major reason for SMME failure in South Africa. Evidence suggests that the high failure rate of SMMEs can be partially attributed to the lack of training and development (Hutchinson, Fleck and Lloyd-Reason, 2009). Abor and Quartey (2010) infer that, although several institutions in South Africa provide training and advisory services to many businesses, there is still a mass illiteracy rate among business owners. Notwithstanding the findings, there is lack of empirical evidence on how owners' educational background impacts their participation in the public procurement process.

3.3.5 Creative and innovative skills

According to Pretorius, Kruger and Millard (2005), creativity is the essence of entrepreneurship because it must identify the patterns and trends that set targets. It is safe to argue that there will be no entrepreneurship without creativity. Boldureanu, Ionescu and Bercu (2020) suggest that entrepreneurship education offers creative thinking ideas. Cacciotti and Hayton (2015) assert that innovative leadership training is required to keep pace with the needs of any business and its employees. O'Regan, Stainer and Sims (2010) suggest that innovative leadership training can significantly impact SMME performance and sustainability.

Moreover, Gachina (2016) conducting a study (Szczepańska-Woszczyna and Kurowska-Pysz, 2016), indicated that creative and innovative leadership skills are required to manage complex issues affecting SMEs. Ismail, Domil, and Isa (2014) pointed out that creativity and innovation are the most significant factors in maintaining the position of a business in a globalised and competitive environment. Subsequently, this is held as the key to SME growth. Commenting on this scenario, Dereli (2015) also affirms that for any business, including SMEs, to survive amidst global competition, maintaining competitiveness, and contributing to GDP, it must be creative and innovative in dealing with its core business functions. It can be suggested that businesses cannot reap the benefits of innovation without innovative strategy and capacity.

Unfortunately, evidence shows that a more significant proportion of SMEs finds it extremely difficult to be innovative and sustainable (Peters, 2020). Chimucheka and Mandipaka (2015)

observe that the inability of SME owners to create novel ideas to improve and support business ventures poses an immense risk to the sustainability of their businesses. Scholarly research by ; Ngibe and Lekhanya (2019), Sani, Thaheer and Zain (2018), Anggadwati and Mustafid (2014), and Govori (2013) reflects that innovativeness and creativity form the crux of the challenges that halt the existence of many manufacturing SMEs in South Africa and other parts of the world. Moreover, researchers such as Bushe (2019), Furawo and Scheepers (2018), Rungani and Potgieter (2018) and Herrington, Kew and Kew (2014) claim that the failure rate of SMEs is high because the owners and managers have not introduced creative and innovative ideas into the running of the business. Akis (2015) alleges that SMEs shy away from innovation because they lack the vision to find ways of decreasing their costs, increasing profit margins, and establishing the growth every business strives to achieve and sustain. Harmancioglu, Grinstein and Goldman (2010) note that innovation is more common among large enterprises than smaller ones.

Ncube and Chimucheka (2019) propose that entrepreneurs invest in human capital development to support innovativeness and managerial competencies required to run the business successfully. GEM (2020) also acknowledges that entrepreneurship education is the driving force behind achieving a business innovation culture, business development, and growth. Ndofirepi and Rambe (2018) advocate that creativity and innovativeness in the SME sector can be achieved only if universities and the governments provide entrepreneurial development and support by assessing entrepreneurial degree content, delivering strategies, and enhancement of the practical orientation of the subject.

3.3.6 Ownership and management of SMMEs

Unlike large enterprises and corporations, SMMEs are owned, managed, and run by the owners, often assisted by family members (Okello-Obura and Matovu, 2011). Given this, the decision-making process is reasonably flexible, informal, and dependent on the personal drive of the owner or executives. Thus, the decision-making process rests solely on the shoulders of SMME owners and managers. In their study, Chen, Hsu and Chang (2014) found that SMMEs are often owned and managed by family members. The authors further argue that SMMEs with high family ownership are more likely to internationalise as institutional ownership increases.

3.4 Contribution of Construction SMMEs

The effectiveness of public procurement is determined by the contribution of the SMME towards the economy. Globally, SMMEs are noted for their significant contribution to countries' economies in employment creation, poverty alleviation, equality promotion, and GDP expansion. To achieve effective public procurement, SMMEs should fulfil their mandates. SMMEs that cannot create jobs, eradicate poverty, and promote equality cannot effectively participate in public procurement. Therefore, governments need to support SMMEs to effectively participate in the procurement process to meet their strategic goals.

3.4.1 Employment creation

Globally, research indicates that the SMME sector contributes to job creation (Mahembe, 2011; World Bank, 2011; Abor and Quartey, 2010). The European Commission (EC) (2005) advises that SMMEs remain the engine of growth since they play a vital role in job creation. UNIDO (2020) claims that SMMEs constitute over 90% of private businesses and account for more than 50% of employment worldwide. In Asia, a survey conducted by de Sousa Jabbour, Ndubisis and Seles (2020) reveals that SMMEs directly contribute to job creation, promoting sustainable development. Another study indicates that the SMME sector contributes to 90 % of businesses, 50 % of employment, and 33 % to the GDP of developing countries (Ogubazghi and Muturi, 2014). In Turkey, statistics (TurkStat, 2019) reveal that SMMEs are the main actors in job creation. For example, about 26 million SMMEs operating in the Turkish economy have created more than 109 million jobs in the past years (TurkStat, 2019).

A study reveals that the South African SMMEs play a crucial role in creating job opportunities (O'Cass, Ngo and Siahtiri, 2012). Mbedzi (2011) concurs that the SMME sector contributes to achieving social stability through job creation to mitigate the rising unemployment rate. Arema and Mukaila (2011) also observe that SMMEs are a powerful tool for job creation. Chimucheka and Mandipaka (2015) acknowledge that South Africa's SMME sector has created many job opportunities for citizens. Abor and Quartey (2010) found that the South African SMME sector created about 61% of employment. In South Africa, it is estimated that SMMEs provide more than 61% of jobs in the country (Statistics South Africa, 2014).

Unemployment Insurance Agency (UIA) (2016) also reports that the SMME sector contributes to about 90% of employment. When commenting further on the importance of SMMEs, Aga, Francis, and Rodriguez-Meza (2015) argue that SMMEs are recognized as the nucleus of economic growth because of their ability to create more job opportunities. In a more recent study, Shafi, Liu and Ren (2020) confirm that SMMEs are the backbone of many countries because they create employment globally. Asgary, Ozdemir and Özyürek (2020) believe that Pakistani SMMEs have created more than 3.2 million jobs for their citizens.

3.4.2 Poverty reduction

Poverty is a global phenomenon also facing South Africa (Adelzadeh, 2006). For instance, a report released by Asian Development Bank (ADB) (2019) suggests that nearly 844 million people live below the poverty line. In South Africa, more than 50% of South Africans are living below the poverty datum line (Development Bank of Southern Africa [DBSA], 2005). Africa has the highest poverty rate (Chimucheka, 2013). However, studies show that SMMEs contribute to poverty alleviation in South Africa (Schans, 2013; Madichie and Nkamnebe, 2010). Chimucheka and Mandipaka (2015) discover that SMMEs have played an important role in poverty alleviation in the last decades.

Similarly, scholars such as Nkwe (2012) and Lekhanya (2010) have discovered that SMMEs have become a critical solution for improving the standard of living in South Africa because of the unsatisfactory level of poverty, especially in the rural areas. Tassiopoulos (2010) suggests that the growth of construction SMMEs in South Africa plays an essential role in alleviating poverty and improving living, especially in rural and urban areas. Nagaya (2017) observes that, given the rising poverty level, several governments, including in South Africa, acknowledge the SMME sector as the tool for poverty alleviation. Begum and Abdin (2015) also confirm that SMMEs positively alleviate poverty. Maksimov, Wang and Luo (2017) found that the efficiency of the SMME sector could be translated into the alleviation of poverty.

3.4.3 Equity redress

Inequality is a pressing challenge facing the South African government even after the demise of the Apartheid era. For instance, the Council for Higher Education (CHE) (2015) notes that in the past, organisations were built along racial and gender divides. With the pro-poor policies, South

Africa continues to be the leading country when it comes to inequality. World Bank Report (2006) states that the social security system has failed to promote equality in South Africa. However, it is suggested that SMMEs contribute to equity redress (Fatoki and Smit, 2011). The authors contend that SMMEs receive special attention due to economic and social contributions. Socially, SMMEs contribute to poverty alleviation and increased living standards in any country. In South Africa, SMMEs play a vital role in improving living standards (Fatoki and Smit, 2011). Moreover, Makwara (2019) argues that South African SMMEs help mitigate the challenge of social exclusion. Canel and Mitchell (2013) believe that SMME growth and development may lead to sustainable development, addressing social exclusion.

3.5 Measures to Promote Sustainability of Construction SMMEs

It has become clear that many challenges affect the growth, survival, and sustainability of construction SMMEs in South Africa. Against this background, this section of the chapter contains strategies to promote the growth and sustainability of the construction SMMEs.

3.5.1 Credit facilities

Mahlaka (2014) advocates that the government and financial institutions should create more avenues for SMMEs to access credit facilities. Chimucheka and Mandipaka (2015) point out that access to a loan should not be determined solely by collateral but by the ability to repay the loan. Makina, Fanta, Mutsonziwa, Khumalo and Maposa (2015) and Mazanai and Fatoki (2012) recommend that financial assistance programmes be offered as a package that includes business skills training, mentorship, and counselling. This would ensure that entrepreneurs obtain the finance they need to start and grow their businesses. This would also ensure that they develop the necessary skills and knowledge to run successful businesses. It was also suggested that the government introduce programmes to raise awareness on funding agencies and their criteria. Workshops aimed at preparing SMMEs for funding applications were proposed (Skae, 2017; Mazanai and Fatoki, 2012; Turton and Herrington, 2012).

3.5.2 Creating enabling business environments

Chimucheka and Mandipaka (2015) suggest that for the SMME sector to expand or grow, the government needs to create enabling mechanisms for them to operate. This can be achieved through the provision of infrastructure. Moreover, the legal requirements concerning the

registration of SMMEs should be flexible, clear, and simple to allow compliance. It is also suggested that the existing rigid, inflexible, and outmoded laws be amended or discarded to create a friendlier environment in which SMMEs can operate (ibid). It is suggested that the government regulations promote healthy competition among SMMEs by removing excessive regulatory requirements to enable them to deliver their mandates (Chimucheka and Mandipaka, 2015).

3.5.3 Recruitment of highly qualified human resources

In the context of human-resource management, human resources consist of workers' efforts, skills, knowledge, and insights that contribute to the overall performance of the business venture. Van Aardt, Hewitt, Bendeman, Bezuidenhout, Janse Van Rensburg Naidoo, Van Aardt, Van Der Bank and Visser (2011) concur that human resources include all workers indirectly and directly involved in the manufacturing, rendering of service, or selling of the firm's products. Therefore, for entrepreneurs to improve their human resources, they need to provide training and education to staff (Van Aardt et al., 2011). These suggestions underscore a similar view expressed by Rwigema and Venter (2004), who suggest that human capital formation and development depend on education and training, innovation, emotional intelligence, wisdom, and other skills.

3.5.4 Social networking or alliances

Research (Casson and Della Giusta, 2007; Tsai and Ghoshal, 1998) indicates that, given the central proposition that networks of relationships constitute a valuable resource, many of the insights into the social capital theory relative to entrepreneurial activity are found in the social network literature. Brass (1992) explains a social network as a set of actors and a set of linkages which exist between those actors. Similarly, Burt (2017) sees social networks as those relationships through which one receives opportunities to use financial and human capital. This relationship is one in which ownership is not solely the property of one person but is jointly held among the network members (Burt, 2017). Anderson and Jack (2002) argue that social networks are also a set of relationships that define a community's perception, whether a business community or a more general notion of community in society. Within the field of entrepreneurship, several researchers have drawn on social network analysis to explain entrepreneurs' access to resources that are not possessed internally (Bowey and Easton, 2007; Casson and Della Giusta, 2007; Ostgaard and Birley, 1994). It has been argued that, although entrepreneurs usually hold some of the resources necessary to create a business, such as ideas, knowledge, and competence to run the business, they

also need complementary resources through contacts (Ribeiro-Soriano and Urbano, 2009; Greve and Salaff, 2003; Hansen, 1995; Zimmer and Aldrich, 1987).

3.5.5 Adoption of new technologies and information resources

Chimucheka and Mandipaka (2015) point out that for SMMEs to survive in the global economy, they need to innovate. According to Nieman and Nieuwenhuizen (2009), without information, entrepreneurs or managers will not be able to make appropriate decisions. Information sources can be either internal or external. Both internal and external sources are important to entrepreneurs, allowing them to develop well-informed strategies to fight competition as well as to improve performance of their ventures. SMME owners should increase their investment in technology (Thomas, 2014; Chipangura and Kaseke, 2012). Mamman, Bawole, Agbebi and Alhassan (2019) in their study recommended that more attention should be paid to the small business sector to promote the adoption of new technology by SMMEs and help reduce the barrier of costs.

3.6 Participation of Small, Medium And Micro Enterprises in the Construction Industry

Pienaar (2016) argues that infrastructure spending in Africa is estimated to grow from US\$70 billion in 2014 to US\$180 billion per annum by 2025. It is calculated that new projects and the refurbishment of asset infrastructure will increase more than 25% from the previous year (Pienaar, 2016). The infrastructure development projects in Africa attract global construction players' attention to penetrate and participate actively in the design and procurement activities (Pienaar, 2016). Africa is playing a vital role in the current and future construction and infrastructural development investments, globally (Anugwo and Shakantu, 2016). Evidence suggests that most Southern African Development Community (SADC) construction businesses are dominated by South African contractors (Anugwo, Shakantu, Saidu and Adamu, 2018). Anugwo et al. (2018), in their study, found that South African construction SMMEs have the potential capacity shortly to become large-scale construction organisations. South Africa's public sector represents the largest procurer of construction works. Therefore, the construction industry's performance is primarily predicated on government infrastructure spending. This figure reaches about R220 billion per year (CIDB, 2017). It has further been argued that the government has consistently been the largest client of the construction industry (Windapo and Cattell, 2011). Evidence suggests that the construction sector has of recent years contributed to the increase in infrastructure development

and construction activities in South Africa (CIDB, 2007). The industry has contributed to capital accumulation, which has led to increased socio-economic activity (Langston, 2012).

Empirical evidence has further showed that in 2016 construction work accounted for approximately R305 billion (or R420 billion in nominal rands). As of the fourth quarter of 2016, the sector has employed more than 1 004 000 people within the formal sector and a further 479 000 informally (ibid). Moreover, in 2017, the industry employed about 965 000 people in the formal sector and 430 000 in the informal sector. The Statistics South Africa (2014) reports that the construction sector accounted for 10% of total employment. This industry remains one of the driving forces behind the nation's socio-economic development (Saidu, Shakantu, Damu & Anugwo, 2017).

Meyer (2016) observes that the construction contractors' business strategies and models for the affordable housing market and investments in infrastructure in South Africa and within the SADC region are the keys to positive prospects. Mayer (2016) believes that the South African government housing projects are aimed at boosting infrastructure delivery, which are important indicators and an opportunity for construction growth and market penetration for both SMMEs and large contractors. Moreover, Meyer (2016) points out that construction contractors' potential growth within the South African market is a competitive business journey. According to Tshikhudo, Aigbavboa and Thwala (2016), given the contribution of the South African construction SMMEs, the national government has prioritized them by awarding them most projects, for example, schools, refurbishment in the ministers' offices at Union Buildings, police station projects, magistrate court projects, defence force facilities, and many other projects. The CIDB (2013) also reports that construction contractors have received support from the CIDB, including registration, free training on business planning, modelling, and marketing. However, it was found that the South African construction SMME participation in the global market is at a very low level because only thirty-four (34) organisations are actively operating within and beyond the South African construction market (Anugwo et al., 2018).

3.7 Chapter Summary

The chapter reviewed existing scholarly research relating to the construction SMMEs. Extant literature suggests that construction SMEs are distinct from other businesses, including the

structure of the firm, owners' educational background and qualification, managerial skills and competencies, creative and innovative skills, ownership, and management. Moreover, the literature review shows that construction SMMEs make a significant economic contribution to the world economy through job creation, poverty alleviation, equity redress, and income generation. Additionally, the literature review contains measures to promote sustainability and participation of construction SMMEs in this competitive industry, including access to finance, creating of an enabling business environment, recruitment of highly qualified human resources, social networking or alliance, and adoption of new technologies and information resources. Besides this, extant literature reveals that, although South African construction SMMEs make a significant contribution to the South African economy, their participation in the global market is at a very low level.

CHAPTER FOUR: PUBLIC PROCUREMENT SYSTEM TO ENCOURAGE SMMEs PARTICIPATION

4.1 Introduction

Before the transition, public procurement in South Africa was geared towards large and established building and civil contractors (Ambe and Badenhorst-Weiss, 2012). During this era, emerging contractors found it difficult to participate in government procurement procedures. However, post Apartheid, the “public procurement process in South Africa was granted constitutional status which serves as a means of resolving past discriminatory policies and practices” (Bolton, 2004: 193). The new South African government initiated several changes in the public procurement framework to promote the principles of good governance. The South African government has a sizeable annual procurement spend, amounting to around 22–29 % of gross domestic product (GDP), which it has leveraged as a matter of policy to redress the relative historical disadvantages of the African, Asian, and Coloured populations. This is a significant increase from 13% of GDP according to 1996 data (Statistics South Africa, 2016). South Africa has a racially segregated, dual economy, as a legacy of Apartheid: a “mainstream” economy for 13% of the population, and an “emerging” economy made up of SMMEs for 87% of its population (Bolton, 2016; Turley and Perera, 2014; Letchmiah, 2012). A hierarchy of policy and regulation has been built, from the Constitution down to municipal laws and ordinances, to support preferential public procurement to integrate these two economies.

However, as Turley and Perera (2014) point out, there is no policy, law, or national strategy for more specialised forms of public procurement, including GP, SPP, or public procurement for innovation (PPfI). This chapter reviews literature on the South African public procurement system and the participation of construction SMMEs.

4.2 Conceptualisation and Contextualisation of Public Procurement

Globally, countries use the concept of public procurement to achieve policy objectives, namely: sustainability, innovation, combatting of fraud and corruption, and value for taxpayers’ money (Nijboer, Senden and Telgen, 2017). Procurement begins once a need has been identified. Procurement has been defined as a field of study and practice that focuses significantly on means rather than on end (Snider, 2006). According to Arrowsmith (2010), public procurement is a process of buying the goods and services required to perform specific functions. Odhiambo and

Kamau (2003) elaborated further on the definition of public procurement by stating that it involves the acquisition of goods, construction works, and services by the public sector. Similarly, Hommen and Rolfstam (2009) conceptualised public procurement as the acquisition of goods and services by government.

Lember, Kattel and Kalvet (2014) and Rolfstam (2013) argue that a good public procurement policy that encourages the government to pursue strategies such as sustainability and innovation is crucial to addressing technical developments and socio-economic challenges. Fourie and Malan (2020) claim that public procurement plays an essential role in a country's economy and public expenditure; and is regarded as an indicator of good governance because it is a central aspect of public-service delivery. Ambe and Badenhorst-Weiss (2012) contend that public procurement relates to the responsibility of government administrations to offer goods, services, and infrastructure at all levels to the people of a country. Likewise, the World Bank (2020) states that public procurement is a strategic development tool that promotes good governance and ensures effective and efficient use of public resources, which ultimately results in higher levels of service delivery. Mazibuko and Fourie (2017) comment that public procurement is a multifaceted activity that relates to a series of practices about government actions within the realm of public policy. Thus, public procurement relates to the government activity that involves purchasing the requisite goods and services to perform its functions. It can be argued that public procurement encompasses a broad spectrum of activities in the localised sphere of government towards the delivery of public services and goods.

4.3 Objectives of Public Procurement

Many countries have both implicitly and explicitly similar management objectives for public procurement (Qiao and Cummings, 2003; Jones, 2002; Thai, 2001). Common policies on public procurement are widespread between jurisdictions, notwithstanding the great variances in methodologies and operational practices. For instance, based on a collective action by the forum for Asia-Pacific Economic Cooperation (APEC) countries, their government procurement experts group has designed a set of non-binding principles which are made up of “transparency, value for money, open and effective competition, fair dealing, accountability, and due process” (APEC, 1999). Additionally, member states have decided on the applicability of individual elements to

them, taking into consideration the specific characteristics of their economies and the costs and benefits of adopting specific measures.

Arrowsmith, Treumer, Fejø and Jiang (2011) contend that the primary objective of public procurement is to acquire goods or services to fulfil a particular function on the best possible terms. Moreover, Deloitte Access Economics (2015) suggests that the core objective of procurement policies across different countries is to achieve value for money. Deloitte Access Economics (2015) identifies the critical success factors to be considered when procuring value for money, including transparency, quality, competition, compliance, risks, sustainability, budget constraint, the whole of life cost, supplier capability, and technical fitness for purpose. According to Ssenoga (2006), the common policies on public procurement are based on the following objectives, namely:

- **Public confidence:** This objective of public procurement relates to attributes or principles such as accountability, transparency, equity, and fairness in public procurement processes.
- **Efficiency and effectiveness:** These involve the utilisation of monies to achieve value for money and efficiency of delivery of procurement outcomes.
- **Policy compliance and consistency:** The outcomes of procurement underpin this in terms of other policy objectives and expectations of the public sector, including environmental challenges, training and apprenticeships, international obligations, and especially business and regional employment impacts.

Similarly, the United Nations Commission on International Trade Law [UNCITRAL] has outlined some principles of public procurement, including cost-effectiveness, competition, effectiveness, transparency, eradication of abuse, mitigation of risk, accountability, fairness, and equitability and integrity. These principles will be discussed in detail in the subsequent section. According to UNCITRAL, all these principles are important through all the stages of public procurement. They must also be viewed from the perspective of the various role players. It has been argued that these public procurement objectives or principles are consistent with generic public management (Ssenoga, 2006). However, while some of the public procurement objectives seem to be simple, experience suggests that their implementation involves challenges and policies that are in conflict, if not mutually incompatible.

4.4 Review of Legislative Framework on Public Procurement in South Africa

As mentioned above, prior to the transition, public procurement in South Africa was geared towards large and established building and civil contractors (Ambe and Badenhorst-Weiss, 2012). During this era, emerging contractors found it difficult to participate in government procurement procedures. However, post-1994, the public procurement process was granted constitutional status to address past discriminatory policies and practices (Bolton, 2006). The new South African government initiated several reforms in public procurement to promote the principles of good governance. South Africa is among the few countries to have public procurement subject to its Constitution and acknowledged as a tool for addressing past discriminatory policies and practices. The country has established a procurement regime that gives preferential allocation of contracts to specific groups of people, such as previously disadvantaged people (Bolton, 2014; Ambe and Badenhorst-Weiss, 2012; Watermeyer, 2003).

According to Selomo and Govender (2016), South African public procurement reforms are underpinned by the promulgation of legal frameworks such as the Constitution of South Africa Act 108 of 1996, the Public Financial Management Act (PFMA) 1 of 1999, the Municipal Finance Management Act (MFMA) 56 of 2003, the Prevention of Unfair Discrimination (PEPUD) 4 of 2000, the Construction Industry Development Board Act (CIDB) 38 of 2000, the Broad-Based Black Economic Empowerment Act (B-BBEE) 53 of 2003, the Preferential Procurement Policy Framework Act (PPPFA) 5 of 2000, and the Supply Chain Management (SCM). However, it has been argued that, while there is a vast array of regulations, in court rulings, policy documents, circulars, and practice notes to regulate public procurement processes, there remains broad scope for procurers to design their systems and practices in line with the principle of ‘good governance’ (Pillay and Mafini, 2017; Bolton, 2016).

4.4.1 Constitution of the Republic of South Africa Act 108 of 1996

The legislative foundation of the post-Apartheid government’s transformational imperatives is Section 217 of the Constitution, which mandates that national legislation be enacted to provide a framework within which to implement preferential procurement policies. According to Nkwe, Singh and Karodia (2015), Section 27(1) stipulates that when a state organ in the national, provincial, and local sphere of government contracts for goods and services, it must be done per principles such as fairness, equity, transparency, competitiveness, and cost-effectiveness. Fourie

and Malan (2020) claim that these fundamental principles of good governance and public procurement are the starting point for a legislative framework concerning public procurement in the South African context.

Section 27(1) does not prevent or limit an organ of the state from implementing procurement policies for allocating contracts to specific categories of people. Besides this, it does not restrict an organ of the state or government departments from protecting or advancing the interests of the previously disadvantaged people. Section 27(2) offers much broader use of procurement for horizontal purposes, which provides for the implementation of procurement policies providing for “categories of preference” in the allocation of contracts. Section 27(3) states that national laws must prescribe a framework in which the policy referred to in Subsection (2) can be implemented. From the discussion, the Constitution provides protection particularly for the HDI. Table 4.1 provides a summary of the primary and secondary objectives of public procurement as provided for in the Constitution.

Table 4.1: Public Procurement Objectives in South Africa as per the Constitution

Objective		Reference
Primary	Procurement system is to be fair, equitable, transparent, competitive, and cost effective.	Section 217 (1)
Secondary	Procurement policy may provide for: a) categories of preference in the allocation of contracts; and b) the protection or advancement of persons, or categories of persons, disadvantaged by unfair discrimination.	Section 217 (2)

Source: Watermeyer (2012)

From the discussion above, the five fundamental principles or pillars of public procurement (referring to an equitable, fair, transparent, competitive, and cost-effective system) form the basis of the entire legislative framework regulating government procurement in South Africa. Such principles are echoed in other legislation on public procurement. These Acts give effect to Section 217(3) of the Constitution, which requires national legislation to prescribe a framework within which the preferential procurement policy must be implemented (Ambe and Badenhorst-Weiss, 2012).

4.4.2 Public Financial Management Act 1 of 1999

The PFMA 1 of 1999, as amended, requires public officials to conduct their procurements within the regulatory framework of the Constitution and the Preferential Procurement Policy Framework Act (UNIDO, 2017; Letchmiah, 2012). Section 2 of the Act outlines the objectives, including transparency, accountability, and prudent management of funds, expenditure, assets, and liabilities. Watermeyer (2011) states that the PFMA allows the National Treasury to make legislation that applies to all applicable institutions under the Act to conduct their procurement in a fair, equitable, transparent, and competitive manner. Moreover, Section 38 of the Act requires accounting officers to report unauthorised, irregular, and wasteful transactions to the National Treasury. The Act promotes accountability and responsibility within the South African public service in connection with resources.

In the interests of efficient and effective financial management and of leveraging government procurement expenditure to attain socio-economic benefits, Section 38(1[a] [iii]) of the PFMA and Treasury Regulation 16A 9.1(c) were promulgated. This allowed for institutionalising through the establishment of procurement departments, and the provision for public entities to have their databases of registered suppliers given preference in the procurement process. Furthermore, Section 38(1) (g) imposes a duty on accounting officers to “immediately report” unauthorised, irregular, or fruitless and wasteful expenditure to the relevant tender board (Vabaza, 2015).

Section 112 of the PFMA further provides for the establishment of SCM systems in the public sector, overseen by the SCM Office in National Treasury (Naude *et al.*, 2013; Raga and Taylor, 2010; Letchmiah, 2012). Raga and Taylor (2010) make the point that the efficient and effective management of finances in public procurement necessitates a uniform and standardised supply chain from the strategic planning phase to the acquisition phase, to the inventory and asset control phase, to the finished project, and finally, to obsolescence planning. This is because “efficiency” is to organs of state what the “profit motive” is to private enterprise (Adediran and Windapo, 2016; Ambe and Badehorst-Weiss, 2012).

Section 112(ii) makes the requirement that SCM systems assess bids on “value for money,” and this could imply sustainable public procurement, as well as innovation procurement when considered across the entire life cycle of the product, the purchase price being only one of the cost elements in the supply chain and throughout the life cycle (Turley and Perera, 2014). As Vabaza (2015) contends, what constitutes price does not only mean monetary value. Further scope is provided for innovation in the PFMA, by means of the National Treasury circular entitled “implementation of SCM” and Practice Note 11, which provide for the consideration of unsolicited offers—offers made outside the standard competitive bidding process—if the product or utility is “unique, innovative and provided by a sole provider” (Bolton, 2016). The National Treasury Circular further institutionalises SCM through the formation of a three-tiered committee structure: (1) Bid Specifications Committee, (2) Bid Evaluation Committee and (3) Bid Adjudication Committee. The third tier, the Bid Adjudication Committee, functions as a mechanism for aggrieved bidders and can overrule the recommendations of the Bid Specifications Committee and the Bid Evaluation Committee (Vabaza, 2015).

The PFMA rests on the above five Constitutional pillars, describing the features of an effective procurement system as “fair, equitable, transparent, competitive and cost-effective”. If one of the five pillars of procurement collapses, the entire procurement system will be compromised (Turley and Perera, 2014). Therefore, the five pillars must underlie all public procurement frameworks, such as policies, guidelines, and processes. These five pillars are briefly discussed below.

i. Value for money

Value for money also constitutes an essential feature of public procurement. It is suggested that public procurement must meet the value for the money spent by the procuring entity (Horn and Raga, 2012; National Treasury, 2014). It is essential to obtain the best quality and value for money. This principle of public procurement underscores the importance of the public procurement models in “public value, public value management, and best value.” Fourie and Malan (2020) contend that using price as a single indicator in public procurement is often unreliable. Hence, government entities cannot automatically justify the best value for money based on accepting the lowest price offer. Best value for money refers to the best available outcome when all applicable costs and benefits over the procurement cycle have been considered (Fourie and Malan, 2020).

From the perspectives above, the government and procurement entities must ensure that resources are utilised in procurement according to their intended purposes. To achieve value for money in public procurement, resources must be monitored by internal control and internal audit bodies, audit institutions, and parliamentary oversight committees. It is believed that compliance with the provisions of the PFMA by accounting officials will result in the procurement of goods and services at reasonable prices. This can lead to the optimisation of the quality of public service delivery.

ii. Open and effective competition

Corruption in public procurement represents the greatest restrictive factor facing SMMEs in South Africa. To this end, it is suggested that the public procurement practices be open to public scrutiny. This principle of the public procurement process is not unique to South Africa. For instance, in Brazil, public procurement regulations provide that the government procurement processes be open to everyone. China also operates a procurement system that includes open tendering. According to Fourie and Malan (2020), the principle of open and effective competition requires

transparent policies, guidelines, procedures, and practices, access to all parties so that they can compete openly and fairly.

In South Africa, Section 217 of the Constitution states that the government, when contracting for goods and services, should do so according to a fair, transparent, equitable, competitive, and cost-effective system. Research shows that competitive bidding leads to competition among suppliers, guaranteeing lower awarding prices due to the lowest cost bidders' selection (Baldi, Bottasso, Conti and Piccardi, 2016). Furthermore, it has been argued that competitive bidding minimises information asymmetries and encourages bidders to publish their production costs, promote transparency, reducing corruption and political favouritism (Baldi *et al.*, 2016; Tadelis, 2012).

iii. Ethics and fair dealing/transparency

This pillar of public procurement requires all stakeholders to act within ethical standards based on mutual respect and trust (Fourie and Malan, 2020). In the context of public procurement, transparency is defined as decisions that relate to enforcement in a manner that follows procedures. In other words, transparency implies that information is accessible to those affected by the decisions and their enforcement. The principle of transparency is the principal factor of the Model Laws and Information on the public procurement process (Horn and Raga, 2012). A transparent procurement process helps to ensure good economic governance. Moreover, a study suggests that a transparent procurement process provides a more efficient allocation of resources through competition, quality procurement, and cost savings (Oyegoke, 2012). Transparency in construction procurement is necessary in the quest to ensure excellence in the construction business.

Hui, Othman, Omar, Rahman and Haron (2011) postulate that transparency helps to reduce manipulation and abuse within the procurement process. Osezua and Julius (2013) observe that a transparent procurement process ensures that budgeting is conducted with integrity and openness. Williams and Ehiabhi (2021) also advocate that transparency in construction procurement helps provide feedback on diverse issues. Hyacinth and Yibis (2017) suggest that public authorities demonstrate professionalism in public procurement. Efforts to promote transparency in public procurement should eliminate favoritism, especially at the evaluation stage.

The procurement system and processes should be transparent to ensure the participation of SMMEs. Transparency in governance, and public procurement, in particular, has received much

attention from legislature and civil societies globally in preventing corruption. Transparency in public procurement ensures that the actions of the stakeholders that could otherwise be concealed from others are instead made easily discernible and verifiable. Transparency in public procurement should satisfy the needs of all stakeholders through the disclosure of important information, audits, and accountability.

iv. Accountability and reporting

Accountability is another important pillar of public procurement, in which individuals and entities are responsible for their actions and decisions (Fourie and Malan, 2020). Similarly, Sibanda, Zindi and Maramura (2020) state that the principle of accountability requires the SCM officials to account for, justify, and accept responsibility for their actions. However, the Auditor-General [South Africa] (AGSA), (2019) reports that accountability in municipal financial management and performance in the South African municipalities has deteriorated. To ensure compliance with this principle, public officials, procurement authorities, and other stakeholders in the public procurement process should be accountable, and if possible, exposed to sanctions as a remedy for any behaviour that contravenes the public procurement rules. Moreover, to enhance accountability in public procurement, the principles of competition, publicity, use of commercial criteria and transparency should be encouraged.

4.4.3 Municipal Finance Management Act 55 of 2003

The MFMA replaced an antiquated local government finance system that concentrates mainly on compliance with rules and procedures. MFMA was promulgated to help mitigate the deficiencies in budgeting, accounting, and reporting, and to provide a technique which improved efficiency in the utilisation of public funds. The approach to implementing MFMA reforms is two-phased. Firstly, the capacity of municipalities must be accommodated. Thus, municipalities with limited capacity are given sufficient time to comply with certain aspects of the Act. In contrast, those municipalities with high capacity are required to implement the provisions of the Act more rapidly. Secondly, the implementation programme prioritises issues relating to financial management, irrespective of the municipal capacity.

Mazibuko and Fourie (2013) claim that the MFMA prescribes secure, sound, and proper management of the fiscal affairs of municipalities. This is accomplished through the establishment

of norms and standards and other requirements for promoting transparency and accountability per budgetary and financial affairs of municipalities. Moreover, the MFMA ensures sound management of municipal revenues, expenditure, assets, and liabilities. Besides this, it provides prudent management and handling of financial issues within municipalities.

4.4.4 Preferential Procurement Policy Framework Act 5 of 2000

The PPPFA is a procurement policy that aims to achieve secondary objectives simultaneously with the procurement's primary goal. The PPPFA gives effect to Section 217 of the Constitution by providing a framework for implementing procurement policy under Section 27(2) of the Constitution. Section 27(1) of the Constitution contains the primary objectives, which require that the public procurement system be "fair, equitable, transparent, competitive and cost-effective" (Nkwe, Singh and Karodia, 2015). The secondary objectives are to provide for the categorisation of preference in the award of contracts, and to provide the protection and advancement of people from disadvantaged backgrounds. Ambe and Badenhorst-Weiss (2012) postulate that the Act promotes historically disadvantaged individuals (HDIIs) through the allocation of preference points in tendering concerning goods and services.

According to Bolton (2016), the procurement process is carried out in three main stages:

- The planning stage – wherein the government contract is communicated to suppliers through advertisements
- The evaluation and award stage – wherein the most appropriate procurement methods are considered (i.e., invitation of price quotations, open/competitive bidding, and closed/limited bidding) including unsolicited offers, as well as award criteria and functionality criteria. Scores for quality/functionality are evaluated during the award stage, and all bidders are to be informed of the pre-qualification criteria, and whether they meet the minimum qualifying score for functionality to proceed to the award stage.
- The contract performance stage – wherein the contract performance conditions are considered.

Regulation 1(k) of the PPPFA defines functionality as: "the measurement according to predetermined norms, as set out in the tender documents, of a service or commodity that is designed to be practical and useful, working or operating, considering, *among other factors*, the quality, reliability, viability, and durability of service and the technical capacity and ability of a

tenderer”. This definition provides scope within the PPPFA. Bolton (2016) advocates that for the government to use its power as the largest procurer to stimulate innovation through offering a federal market for innovative goods and services, the phrase “among other factors” may be interpreted to include innovation-related criteria. Ideally, innovation must be sought at the level of technical specification rather than as minimum qualifying criteria; under the present PPPFA, however, innovation-related criteria only serve as functionality criteria. The Bid Evaluation Process is depicted in Table 4.2.

Table 4.2: Bid Evaluation Process

Basic Compliance
<ul style="list-style-type: none"> • Evaluate tender submission for compliance with all submission requirements
Step 1: Functional Analysis
<ul style="list-style-type: none"> • Evaluate submissions against functional criteria • Rate each submission against each criterion • Apply weightings and calculate total functional score • Eliminate bidders below functional threshold
Step 2: Price And Preference Analysis
<ul style="list-style-type: none"> • Calculate price points out of 80 or 90 • Apply preference points according to B-BBEE level contribution • Add price points and preference points
Recommended Bidder
<ul style="list-style-type: none"> • Select tender with highest total points (Price points + Preference Points)

Source: Porteous and Naudé (2012) (cited in Turley and Perera, 2014)

These legal frameworks apply to the procurement activities in the localised sphere of government as defined in Section 239 of the Constitution; but not necessarily to state-owned enterprises as seen in the cases of *TBP Building & Civils (Pty) Ltd v East London Industrial Development Zone (Pty)* and *Cae Construction CC CK 2000/035940/23 v Petroleum Oil and Gas Corporation of SA (Pty) Ltd*. The Courts held that the Constitution binds state-owned enterprises but not the procurement laws (Bolton, 2014; Anthony, 2013; Bolton, 2010).

4.4.5 Broad-Based Black Economic Empowerment Act 53 of 2003

The B-BBEEA provides a legal framework for promoting Broad-Based Black Economic Empowerment (B-BBEE). The B-BBEE is a government policy that aims to advance economic transformation and improve Black people's participation in socio-economic and political activities (DTI, 2007). The B-BBEE is similar to affirmative action policies implemented by countries such as the United States of America (USA), and the United Kingdom (UK). The B-BBEE promotes economic empowerment of all Blacks, including women, youth, people with disabilities, and rural dwellers.

Here, "Black people" is a generic term that includes Africans, Indians, and Coloureds. According to Krüger (2011), the B-BBEEA was introduced by the African National Congress (ANC) government to help eradicate the social ills brought by the Apartheid government. The Act broadens participation in the economy, especially for the marginalised people. Article 2 of the Act outlines the objectives, which include:

- Promote the economic transformation to improve participation of Blacks in the economy
- Achieve a substantial change in the radical composition of ownership and management structures
- Encourage Black women to own and manage existing and new enterprises; and increase their access to economic activities, infrastructure, and skills training
- Promote investment programmes to increase the broad-based and meaningful participation of Blacks in economic activities to achieve sustainable development;
- Empower rural and local communities to gain access to economic activities, land, and infrastructure
- Help Black people gain access to finance.

A "B-BBEE unit" was created within the Ministry of Trade and Industry to facilitate the issuance of Codes of Good Practice, which provide a framework for measuring Black economic empowerment. The codes include qualification criteria (for preferential procurement) in the adjudication of contracts and licenses; a certificate with a generic BEE scorecard that contains indicators about a company's B-BBEE contributor level status (from excellent to non-compliant).

These indicators give weightings a certain number of points out of 10 or 20 to a company for "indirect empowerment efforts," which are then tallied up and added to the 80 or 90 points in the

formulae for calculating price and preference; contracts valued under R1 million are allocated 80 points for price and 20 points for B-BBEE compliance. Contracts valued above R1 million are allocated 90 points for price and 10 points for B-BBEE compliance. Potential suppliers are required to submit original (or certified copies) of their valid B-BBEE Status Level Verification Certificates during bidding obtained from BEE Verification Agencies under the auspices of the South African National Accreditation System (SANAS) (UNIDO, 2017; Horne, 2017; Turley and Perera, 2014; Anthony, 2013; Letchmiah, 2012). According Opawole, Jagboro, Kajimo-Shakantu and Olojede (2019) the Codes of Good Practice were intended to level the playing field by providing clear and comprehensive criteria for the measurement of Black economic empowerment, and thus to target the South African economy's weakest point: inequality.

According to Strydom, Christison and Matias (2009), the Black Economic Empowerment (BEE) scorecard is intended to incentivise firms in the private sector to contract with BBE firms in lieu of potentially lucrative government contracts as well as licenses and concessions and financial support from state-owned enterprises. As Raga and Taylor (2010) point out, the B-BBEEA expands the framework provided in the PPPFA by giving a tenderer's B-BBEE contributor level status weight in a tender pitch, thus accelerating indirect empowerment through preferential procurement (Letchmiah, 2012; Raga and Taylor, 2010). Furthermore, the B-BBEE with which all organs of state, including state-owned enterprises, must comply in procurement decision-making also includes a set of qualification criteria for the issuance of licenses, the sale of state assets, and the forming of public-private partnerships. Before 2003, however, it only considered the representation of HDIs in senior management and directorships (Turley and Perera, 2014). The seven elements for which points may be awarded in the B-BBEE scorecard: ownership, management control, employment equity, skills development, preferential procurement from BEE suppliers, enterprise development, and residual elements are depicted in Table 4.3 (Hiam, Eshghi, and Eshghi, 2017; Shakantu and Kajimo-Shakantu, 2007).

Table 4.3: The B-BBEE Scorecard

Core Component of B-BBEE	Indicator	Conversion Factor	Raw Score	Weighting	Total Score
Direct Empowerment Score					
Equity Ownership	% share of economic benefits	2		20%	
Management	% Black persons in executive management and/or executive board and board committees	2		10%	
Human Resource Development and Employment Equity Score					
Employment Equity	Weighted employment equity analysis	2		10%	
Skills development	Skills development expenditure as a proportion of total payroll	2		20%	
Indirect Empowerment Score					
Preferential Procurement	Procurement from Black-owned and empowered enterprises as a proportion of total assets	20		20%	
Enterprise Development	Investment in Black-owned and empowered enterprises as a proportion of total assets	20		10%	
Residual 10%					
To be determined by sector/enterprise					
Total Score out of 100%					

Source: Hiam *et al.*, (2017)

A set of construction codes of good practice has been developed, in conjunction with the codes of good practice for B-BBEE, which, however, take precedence over the general B-BBEE codes of good practice in the construction procurement process. The construction codes differ from the general B-BBEE codes. They apply different weightings to the seven elements in the scorecard, and they distinguish between general contractors and built environment professionals. The construction codes also seek to align the construction sector's preference policies and targets for transformation, which are mainly focused on black ownership, with the preference goals of the BBEE Act, which are far broader in scope (Construction Monitor, 2018; Anthony, 2013).

4.4.6 Procurement and Supply Chain Management

The implementation of SCM policy is the responsibility of the SCM Office in the National Treasury, the Provincial Treasuries, and the Minister of Finance. Government expenditure and, by implication, public procurement, is overseen by the National Treasury, particularly the Office of the Chief Procurement Officer established in 2014; and while provinces have the procedural autonomy to implement their policies, they must do so guided by treasury regulations (Bolton, 2016; Vabaza, 2015; Turley and Perera, 2014). Section 112(i) of PFMA requires each municipality to implement its SCM policy; and specifies the five pillars as the founding principles (Turley and Perera, 2014).

In South Africa, SCM remains a vital tool for managing public procurement. It is an integral part of prudent financial management within public service management. The SCM operates strictly within the legal framework set out by the government. The purpose of SCM is to add value to public procurement (PP) processes, starting from the demand of goods and services through the acquisition, managing, and disposal stage. Furthermore, SCM aims to administratively link the flow of information, activities, and processes, upstream and downstream. In doing so, SCM seeks to mitigate PP, contract management, and inventory management deficiencies. The National Treasury requires that departments conduct public information sessions to provide clarity on the technical specifications of advertised tenders. The National Treasury further mandates that government contracts above the R500 000 threshold be advertised in the Government Tender Bulletin, local newspapers, departmental websites, and notice boards; and that all organs of state provide a mechanism for dealing with the complaints of unsuccessful bidders (Vabaza, 2015).

However, research (De Lange, 2011; Pauw, 2011) suggests that, ever since the SCM was introduced into the South African public sector, it has been marred by several irregularities and deficiencies. The irregularities and deficiencies can be attributed to non-compliance with relevant laws. Tshamaano (2012) argues that non-compliance with SCM prescripts remains high. Other reasons for the deficiencies include non-payment of service providers, political interference in the tender processes, poor criteria estimates, and unstable tender processes. Figure 4.1 shows the framework SCM.

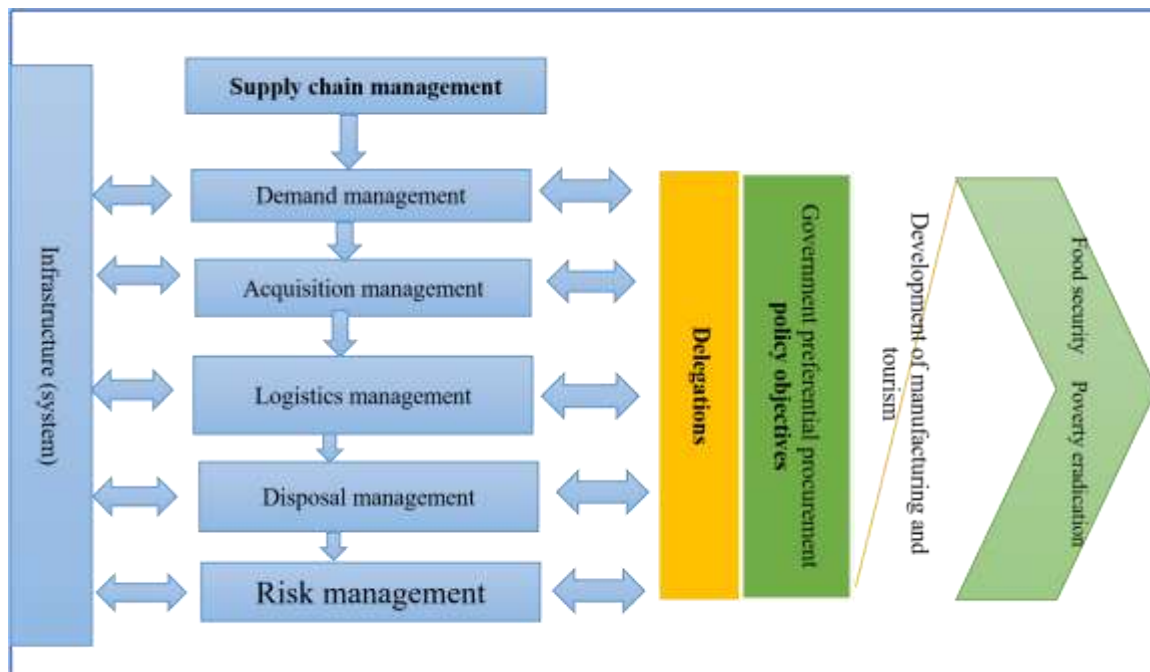


Figure 4.1: Framework of supply chain management

Source: SCM: A Guide for accounting officers/authorities issued by the National Treasury in February 2004 (cited in Vabaza, 2015)

a. Phase1: Demand management

This is the initiation phase in which needs are identified, and planning takes place for the sourcing of goods and services, mainly through advertising requests for tenders in the Government Tender Bulletin.

b. Phase 2: Acquisition management

These are the three sourcing strategies used by departments in the second *acquisition* phase:

- ✦ Invitation of price quotations — this applies to low-value tenders aimed at suppliers registered on the departmental suppliers' database, and utilises the 80-20 preference points system;
- ✦ Open/competitive bidding, wherein a request for proposals (RfP) is advertised to suppliers for bids above R500 000. Such utilises the 90-10 preference points system
- ✦ Closed/limited bidding, which applies in case of emergency or when a product or service is highly specialised or there are only a limited number of suppliers.

c. Phase 3: Logistics management

This phase is concerned with inventory and stock levels.

d. Phase 4: Disposal management

This phase is seen when the auctioning or letting, sale or destruction of obsolete goods takes place.

e. Phase 5: Risk Management

The fifth phase is embedded in all phases of SCM as *risks* must be ascertained throughout the supply chain.

f. Phase 6: Supply chain performance management

The sixth phase measures supply chain performance through the Management Performance Assessment Tool (MPAT) to meet departments and municipalities' procurement needs (Naude 2013; Vabaza, 2015). The MPAT measures performance from a financial and a project management standpoint. Figure 4.2 depicts the management PMPAT.

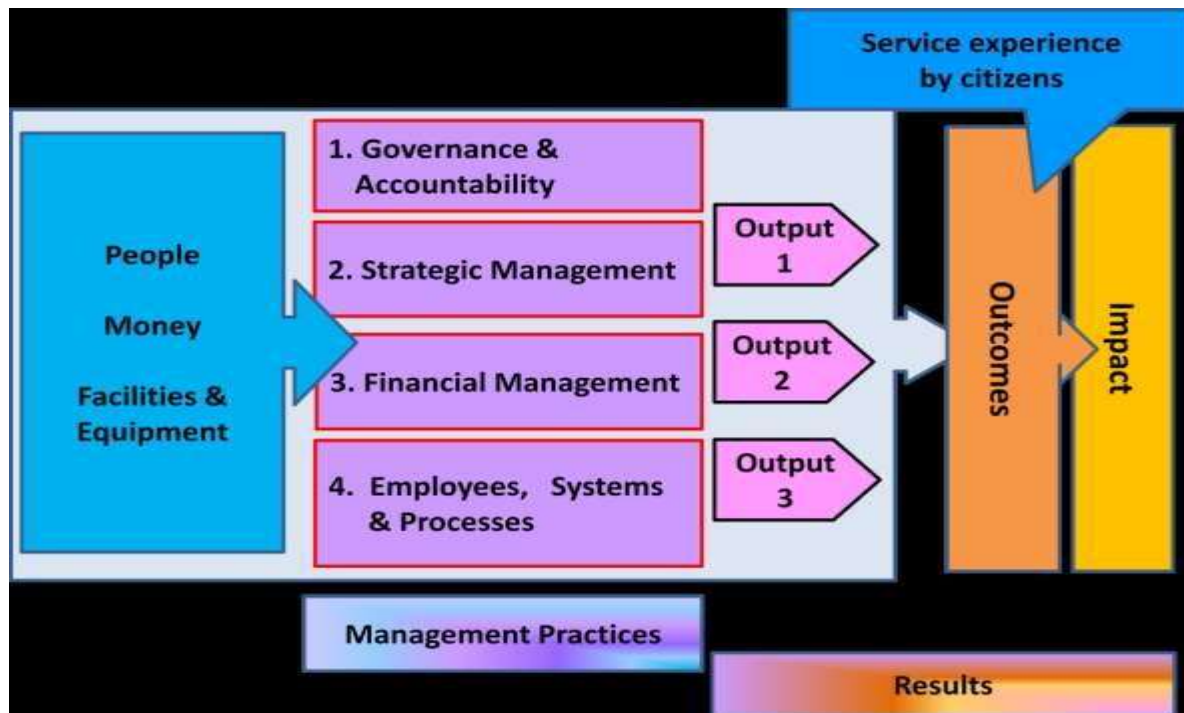


Figure 4.2: MPAT process in government

Source: Performance Assessment Tool (PAT) Framework Document, 2011 (cited in Vabaza, 2015)

Adediran and Windapo (2016) integrated various SCM models, including the Construction Industry Institute’s “partnering continuum,” the Best Practice in Partnering Group’s “partnering positioning matrix,” and the Strategic Forum for Construction’s “supply chain maturity assessment grid”. The researchers developed a conceptual model showing that targeted procurement strategies draw contractors into supply chain relationships in which they learn on their feet how to be independent, enhancing their growth performance. Kajimo-Shakantu (2007) points out that preferential procurement policies help to nurture small construction firms, enabling them to grow sufficiently to take on larger contracts.

4.5 SMME Perceptions of Public Procurement

SMMEs in South Africa have varied perceptions of the preferential public procurement system. The present position of SMMEs in participating in public procurement is also not clear. Generally, there is a widespread perception that SMMEs are the engines of growth and development. However, some schools of thought suggest that most SMMEs cannot achieve their objectives because of government regulations and unhealthy competition. To this end, Watermeyer (2000)

argues that the process of procurement should have measurable targets, and be transparent and competitive.

Empirically, scholars have agreed that SMME sustainability is affected by a host of factors such as limited supply capabilities (Smith and Hobbs, 2001), attitude and motives of the owners (Morrissey and Pittaway, 2004), and the inability to bid for large contracts (Morand, 2003). Throughout the literature review, there is a limited study on how SMME perceptions towards public procurement help achieve effective public procurement. Against this background, this study suggests that governments, procurement agencies, and SMMEs acquire positive perceptions of SMMEs. Such would improve perceptions of SMMEs in enhancing effective public procurement.

4.6 Factors Limiting SMME Participation in Public Procurement

As already discussed above, it is required that public procurement be conducted in a fair, equitable, transparent, and competitive manner. The principles of openness and competitiveness, in particular, suggest that public procurement practices be opened to public scrutiny. This suggests that firms, irrespective of their size, be allowed to participate in the public procurement process. However, it seems that SMMEs lag behind in terms of participation in public procurement. Literature suggests that SMME participation is affected by a host of factors (Mutenyoka and Madzivhandila, 2014; Chimucheka, 2013). The factors are discussed as follows.

4.6.1 Limited sources of funding

Extant literature indicates that access to finance has been of great interest to researchers, globally, for decades. Research suggests that access to funding is one of the most significant problems facing SMMEs worldwide (Mutenyoka and Madzivhandila, 2014; Chimucheka, 2013). Obaji and Olugu (2014) discovered that in developing countries such as Nigeria, Ghana, Kenya, South Africa, Zimbabwe, and Egypt, the banking system provides little or no financial products to SMMEs. Studies have also shown that in South Africa, access to finance remains the most critical issue facing not only the construction industry but the SMME sector (Brijlal, Enow and Isaacs, 2014; Can't and Wild, 2013; Basu, Modak, Dan and Upadhyay, 2011; Ibrahim and Galt, 2011; Zolin and Schlosser, 2011). For instance, a survey conducted by SBP (2015) shows that more than 35% of the SMME owners reported having their survival threatened; and 49% have exhibited either a stagnant or shrinking turnover. Besides this, Fin Mark Trust (2006) found that more than 75% of applications for bank credit by new SMMEs in South Africa were rejected for various reasons.

Sarakunze (2015) avers that sufficient credit had possibly been available; however, the terms and conditions under which it could be accessed were not favourable for the SMME sector.

From the discussion, it can be argued that, although there is no specific study on how access to finance affects SMME participation in public procurement, SMMEs could possibly require a substantial amount of finance to participate effectively in public procurement. However, it is still not clear how access to funding impacts construction SMME participation in public procurement. Therefore this study will address the gap in existing research concerning how access to funding affects construction SMME participation in public procurement.

4.6.2 Insufficient amount of or lack of collateral security

Collateral security in the form of assets such as fixed property registered in the business owner's name, mortgage bonds, stocks, vehicles, shares, and movable property comprise the security that SMME owners must provide to the lenders or financial institutions when the loan has been approved. The collateral security serves as a repayment source should the loan not be repaid. According to Badulescu, Badulescu, Saveanu and Hatos (2018), the value of collateral security provided by the SMME owner determines the credit rationing behaviour of funding institutions. In South Africa, collateral is one of the key requirements by funding institutions when evaluating funding applications (Fatoki, 2014).

Obaji and Olugu (2014) argue that securing credit by SMMEs requires borrowers to pledge collateral against the loan. The condition of pledging collateral could affect SMME participation in public procurement. For instance, in Malaysia, a study conducted by Haron, Said, Jayaraman and Ismail (2013) revealed that most financial institutions were reluctant to disburse funds to SMMEs because of lack of collateral, size, and business records. According to Mthimkhulu and Aziakpono (2015), the lack of access to finance is due to inadequate collateral on the part of the entrepreneur and the absence of credit history. From the literature review, it is clear that, although SMMEs do not have sufficient collateral security to secure credit from financial institutions, there is a paucity of research confirming the extent to which SMME participation in public procurement is influenced by collateral security.

4.6.3 Lack of business plans

Evidence suggests that SMMEs fail to thoroughly articulate their firms' business plans when such is required by funding institutions (United States Agency for International Development (USAID), 2010). This often happens when the business owner or manager is not deeply involved in preparing the business plan. In South Africa, one of the core mandates of SEDA is to appoint consultants to develop business plans for its SMME clients. The failure on the part of the SMME owners to articulate their business plans is due to inadequate levels of schooling. This situation makes it difficult for funding institutions to assess the creditworthiness of individual borrowers, and as a result, SMMEs are credit rationed. When this happens, it can affect SMME participation in public procurement.

In their study, Peters and Naicker (2013) discovered that most SMMEs are unable to access external funds due to the inability to produce an acceptable business plan to meet the standards required by financial institutions. Similarly, National Credit Regulator (NCR) (2011), in its report, indicated that in South Africa, only formal SMMEs (those businesses that are duly registered and have bank accounts) have access to loans from a financial institution such as banks, capital markets, or other suppliers of finances. NCR (2011) further noted that informal SMMEs in South Africa are completely excluded from the formal financial market because they do not have the necessary documents to source funds. Another study reveals that inadequate business plans and audited financial statements further worsen the negative risks perception of SMMEs by funding institutions, profitability and growth of borrowers not being easy to ascertain (Hwarire, 2012).

4.6.4 Public procurement regulations

Research suggests that South Africa is one of the few countries with rigid regulations frameworks that threaten the survival and growth of many businesses, including the SMMEs of the country (Smit and Watkins, 2012; Fumo and Jabbour, 2011) According to Fumo and Jabbour (2011), SMME owners in South Africa lack understanding of government regulations, hence they are unable to compete with large firms. In their studies, Smit and Watkins (2012). and Abor and Quartey (2010) confirm that SMME failure in South Africa can be attributed to legislative challenges. According to Abor and Quartey (2010), the high start-up costs for SMMEs, together with licensing and registration requirements, have imposed significant and often pointless burdens

on SMMEs. Moreover, Abor and Quartey (2010) express that, in South Africa, it takes more than 176 days to obtain the relevant licences, and the application involves 18 simultaneous procedures.

James (2016) also claims that the delays in obtaining export permits and licences hinder the investment and efficiency of foreign-owned SMMEs in South Africa. Schwab and Sala-i-Martin (2014) confirm that government bureaucracy or red tape is a key obstacle to entrepreneurial development in South Africa. Agwa Ejon and Mbohwa (2015) found that an unfavourable regulatory environment is one of the most serious issues collapsing many SMMEs in Africa. According to OECD (2017), a burdensome regulatory environment has been found to reduce the rate of entrepreneurial activity. Simodisa (2015) argues that South Africa has several regulations that undermine entrepreneurship by hindering access to critical resources such as talent and capital, creating an unstable and unpredictable business environment, and eroding the rewards of success. Shane (2014) suggests that compliance with the government regulatory framework is a greater encumbrance for SMMEs than for large firms; and regulation hinders SMME formation, growth, and job creation. Kamara (2017) observes that the high costs of starting SMMEs, including licensing and registration requirements can impose excessive and unnecessary burdens on SMMEs.

In South Africa, organised business has argued that the labour market regulations are overly rigid (Agwa-Ejon and Mbohwa, 2015). Scholars have explained that an unfavourable regulatory environment is negatively affecting many businesses in South Africa, including SMMEs. According to the OECD (2015), South African labour laws and other regulatory frameworks have been found significant regulatory obstacles to business growth. It is further argued that SMMEs tend to be subject to relatively high labour costs, which in South Africa is the result of labour laws well-intentioned to benefit a certain class of people.

Anthony (2018) claims that South African public procurement legislation permits all forms of public procurement. However, when it comes to a competitive bidding process, a conversion to e-procurement is more complex and challenging. It is also argued that, despite several reforms, in public procurement and the employment of SCM as a strategic tool, South Africa continues to face enormous challenges in its public procurement practices (Ambe, 2016). It was further discovered that the systems of procurement and provisioning were highly fragmented because tender boards

were exclusively responsible for procurement. Provisioning, on the other hand, was largely underwritten by norms and standards within the logistics system driven by National Treasury (Ambe, 2018). Effective and efficient financial management within government was continuously questioned. Research shows that practitioners who were tasked with the responsibility of the implementation of public procurement regulations and policies are hindered by the lack of operational guidance on how to implement consistent procurement practices, including how to apply appropriate departmental policies (Gurría, 2016).

4.6.5 Lack of managerial skills and leadership competency

Staniewski (2016) argues that entrepreneurs with management skills and experience who employ employees with unique knowledge are more successful in business than others. Skill has been described as the ability to do something. In broad terms, skills refer to the abilities of individuals for which there is demand within the formal economy (Gallie, Zhou, Felstead and Green, 2012). According to the Bureau of Economics Research (2016:8), “management or managerial skills is a critical factor for the success of any organisation.” However, in South Africa, the shortage of critical skills is a national issue affecting many businesses. BER (2016) notes that SMMEs, especially those in the service sector, are negatively affected by the shortage of skills in South Africa.

Abor and Quartey (2010:224) argue that a contributing factor to the lack of managerial skills in the SMME sector is that some entrepreneurs or business owners “do not see the need to upgrade their skills due to complacency.” Wennekers, Stel, Carree and Thurik (2010) found that, although several institutions in South Africa provide training and advisory services to many businesses, there is still a skills shortage within the SMME sector. The above-mentioned researchers opined that the lack of managerial skills could be attributed to a lack of investment in human capital. Furthermore, research (Naude *et al.*, 2013; Ambe and Badenhorst-Weiss, 2012) indicates that the greatest restrictive factor impeding contractor success in public procurement includes capacity or skills shortage.

Van Scheers (2016) identifies that lack of basic managerial skills such as business planning is one of the reasons for the failure of small businesses. Mohammed and Nzelibe (2014) further allude to

having competent business managerial skills as vital to any individual who wants to run and successfully manage a business.

4.6.6 Low level of education

Lee, Jeon and Na (2016) argue that the educational background of business owners or entrepreneurs plays a role in influencing business success. The educational background and experience of the managers largely assists financial plans to impact the performance of small business start-ups (Mengel and Wouters, 2015). According to Guzmán and Lussier (2015), the education, experience, and skills of business owners and managers help small businesses develop the strategies that lead to success.

However, Vallabh and Mhlanga (2015) identify a deficiency or low level of education among SMME owners as a significant challenge affecting their businesses. Lekhanya (2015) concurs that inadequate entrepreneurship education is a major reason for SMME failure in South Africa. According to Vallabh and Mhlanga (2015), human capital is critically important to the long-term development of the SMME sector. Scholars suggest that the SMME sector is contingent on quality, available human resources to develop and deliver a competitive product that meets consumers' changing needs, and to mitigate societal woes such as poverty and inequality (ibid). Against this background, the Small Business Academy, University of Stellenbosch Business School (2014) recommends the need for education and training to help local entrepreneurs tackle their tasks more effectively.

Contrary to the above findings, a study conducted by Mueller and Naffziger (2015) reveals that planning activity in small businesses has nothing to do with the demography, such as age, skills, education, and experience. From the perspectives above, it can be argued that there is a mixed reaction among scholars concerning the impact of business owners' educational background on the success of the business. Therefore, this study aims to address the gap in research by determining whether SMME owners' educational background affects their participation in public procurement.

4.6.7 Non-compliance with supply chain management laws

In South Africa, every department or entity is required by law to develop a sector-based SCM policy following the SCM framework (Ambe and Badenhorst-Weiss, 2012). Similarly, National Treasury (2005) reports that SCM is regulated by several policies and legislation. However,

evidence suggests that the most severe challenge affecting SMMEs is the non-compliance with SCM prescripts (Pillay and Mafini, 2017). It has been found that most SMMEs have limited business opportunities because of the non-compliance with the regulatory documentation required as set out in the SCM policy (Sitharam and Hoque, 2016). Issues regarding noncompliance with SCM policy and regulations occur for several reasons. Sitharam and Hoque (2016) provide the following as reasons for non-compliance with the SCM policy: non-alignment of public procurement laws with SCM policy, unclear specifications, political interference, and limited bid information. Smart Procurement (2011) reports that, although several reforms have been made in the South African public procurement and adoption of SCM as a strategic instrument, there still exist some challenges in public procurement practices, such as non-compliance with SCM-related regulations and policies.

Matthee (2006) believes that some of the factors related to non-compliance with SCM policies and procedures include the inability to use a competitive process for quotation and bids, and the wrong utilisation of a preference point system. For Van Zyl (2006), the challenges related to non-compliance with the SCM rules and procedures are lack of qualified and professional bid committees, selection of unqualified suppliers, and inappropriate procurement processes concerning the thresholds.

4.6.8 Ethics and conflict of interest

Ambe (2019) articulates that in public procurement, all parties are expected to adhere to a set of ethical principles and norms. Besides this, they are expected to demonstrate some level of integrity and to conduct themselves in the most reasonable, fair, and ethical manner (Badenhorst-Weiss, and Tolmay, 2016). Rottig, Koufteros and Umphress (2011) identify ethical behaviours related to public procurement as loyalty, integrity, equity, transparency, confidentiality, fairness, due diligence, and respect for the rule of law.

Unfortunately, unethical behaviour and conflict of interest serve as constraints to SCM implementation. According to Ambe and Badenhorst-Weiss (2012), most often, there is a power struggle between chief financial officers and senior officials, which threatens SCM implementation. Although the National Treasury's guide to accounting officers provides a standard approach towards the SCM process, in most cases, there is non-compliance with the

guidelines. This phenomenon has resulted in the utilisation of various techniques and a lack of standard practice. It has been argued that unethical conduct in public procurement practices prohibits the government from procuring goods and services at reasonable prices.

According to Manyaka and Sebola (2013), unethical conduct by most public officials has provoked widespread discourse on good governance. Zitha and Mathebula (2015) argue that unethical behaviour in public procurement can be linked to corruption, fraud, and bribery, which negatively impact service delivery. In a more recent study, Ebekozi (2019) confirms that unethical procurement practices in construction projects affect economic development and social services. Adil, Baptista Nunes and Alex Peng (2014) raise the concern about the increase of unethical practices among the actors in the construction industry. The lack of professional ethics in the construction industry serves as the avenue for corruption in public procurement.

4.6.9 Lack of monitoring and evaluation of SCM

Monitoring and evaluation (M&E) are critical aspects of SCM. Business Day (2011) discovers that large amounts of taxpayer money have been spent on goods and services which do not conform to the provision of public procurement laws and SCM policies. Nkwanyana and Agbenyegah (2020) claim that SCM emerged as a tool to help mitigate irregularities of the previous procurement models within the public sector. However, since its inception, extant literature exposes several irregularities and deficiencies still manifesting in the public procurement process, particularly within the public sector. The anomalies and deficiencies can be attributed to the lack of M&E of SCM. Mbanje and Lunga (2015) lament the increase of the regular M&E of SCM. De Lange (2011) points out that the lack of M&E of the SCM policy and model results in irregularities, deficiencies, and non-compliance.

4.6.10 Lack of accountability, fraud, and corruption

Accountability represents a central pillar of public procurement (Soudry, 2007). The absence of a transparent and accountable government will channel resources through the public procurement system that run the danger of being entangled with corruption and abuse of resources (Jeppesen, 2010). According to Sibanda, Zindi and Maramura (2020), accountability requires SCM practitioners to account for, report, explain and take responsibility for their actions. Trammell, Abutabenjeh and Dimand (2019) comment further by stating that public entities in South Africa

must be accountable when they procure, maintain or dispose of assets. Mhelembe and Mafini (2019) lament that, although the South African SCM system has been hailed as a positive step towards transforming the public service, accountability concerning municipal financial management and performance in the localized sphere of government has deteriorated. For instance, a report released by the Auditor-General [South Africa] (AGSA) (2019) suggests local government with material failure of compliance findings on SCM rose from 72% to 81%. This failure can be attributed to accountability.

De Lange (2011) avers that in 2010/2011, the Auditor-General discovered about R26, 4bn in unauthorised, irregular, and fruitless expenditure in reviewing the activities of the South Africa government departments. Georgieva (2017) also argues that South Africa scored 45 points out of 100 in the 2016 corruption perceptions index reported by Transparency International. The analysis of the figures released by Transparency International from 2011 to 2017 suggests that corruption in South Africa is on the rise. The Afrobarometer report on corruption, which was released on 13 September 2017, indicates that since 2008, South Africa has been among the worst-performing countries when it comes to corruption. In the 2017 corruption index report, the country was ranked 71 out of 180 countries and scored 43% out of 100%. (Transparency International, 2017). The results contradict the narratives of countries like Botswana, Malawi and Mozambique, where the citizens expressed the view that their governments are trying to curb corruption (Georgieva, 2017). Despite government legislation on tender and procurement, more than 34% of public institutions, especially departments, have awarded contracts to themselves and close friends and family members. Several reasons were cited for South Africa's corruption: misuse of resources, misappropriation of the fund, bribery, fraud, procurement irregularities, and unethical behaviour (Georgieva, 2017; Serfontein and De Waal, 2015; Manyaka and Nkuna, 2014).

The impact of fraud on project costs is huge and has led to the introduction of several measures in specialist legislation, policies, and government regulations. Because contracts were awarded to ineligible suppliers, new contractors were affected by such fraud and corruption. Bowen *et al.* (2007) point out that stiff competition, procedural unfairness among bidding contractors, and the challenges of contractual obligations in the construction industry have engendered a proneness to unethical conduct among contractors. Figure 4.3 shows the main types of economic crime experienced by South Africans.

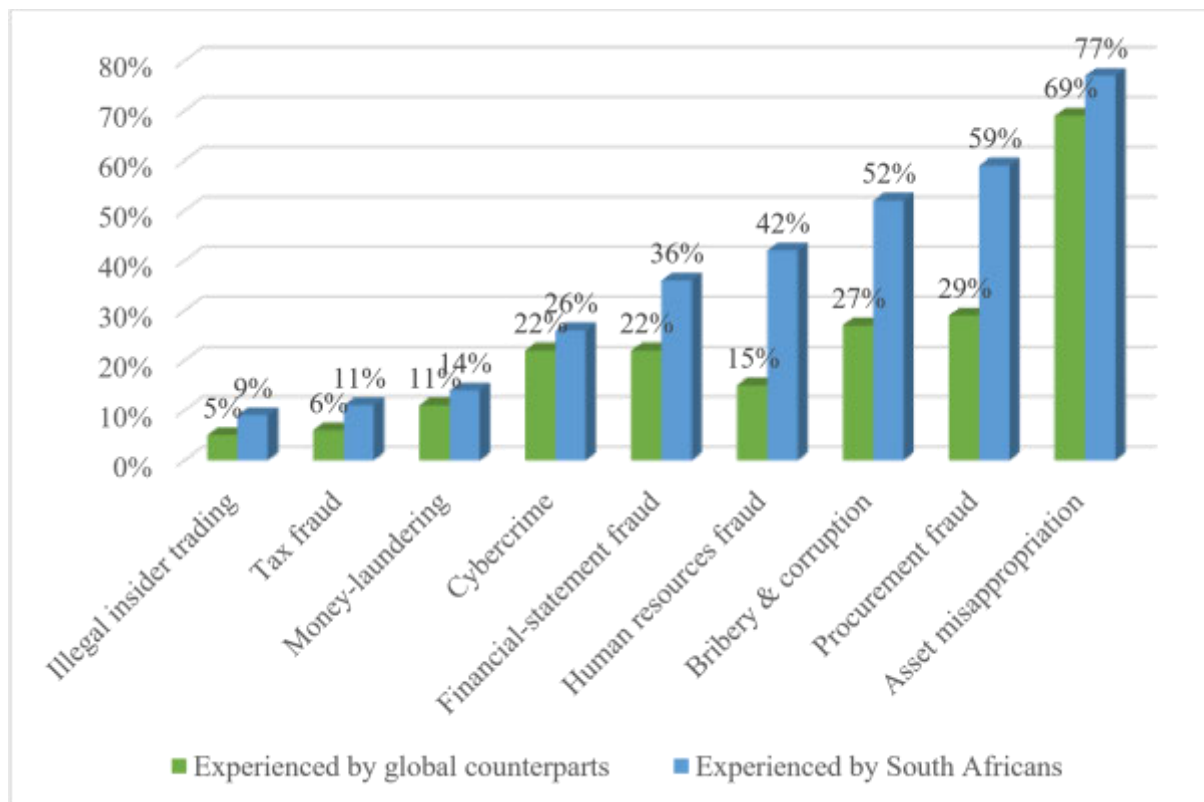


Figure 4.3: Main types of economic crime
Source: IRMSA Risk Report (2017)

De Lange (2011) comments that over 20% of the government's procurement budget cannot be accounted for each year. According to De Lange (2011), the typical irregularities in the South African public procurement process include misappropriation of funds, non-compliance with SCM policy and regulations, the appointment of unqualified personnel, and fraud and corruption. Zitha and Mathebula (2015) also confirm that the unethical conduct involved in the South African public procurement includes fraud, bribery, corruption, and nepotism. These unethical conducts may lead to uncompetitive bidding, lack of supporting documents for contracts awarded, the awarding of contracts to family and friends, and the non-disclosure of relevant information.

4.6.11 Inadequate planning and linking demand to the budget

Demand management constitutes an integral part of the SCM process in South Africa. It clarifies the decision-making process by allowing government departments to procure goods and services

at the right time, place, and cost. Unfortunately, many government departments still faced challenges with planning and linking to demand budget (Ambe and Badenhorst-Weiss, 2011). The scholars argue that cost-effective public procurement is dependent on the knowledge and skills to ensure that purchasing requirements are reliability assessed, suitable contract strategies are adopted, contracts are well managed, and opportunities are given to securing the best contracts at the right time and place. It has been argued that some departments cannot evaluate the needs of those requiring their services nor can accurately monitor, control, or report on their expenditure (Luyt, 2008).

4.6.12 Access to procurement-related information

Studies reveal that access to information is one of the key factors determining the success of a business (CIDB, 2017; BER, 2016; Herrington and Kew, 2013). However, it was observed that most SMMEs faced the challenge of accessing appropriate procurement-related information (Ocloo, Akaba and Worwui-Brown, 2014). According to BER (2016), most micro businesses in South Africa still “battle to cope with the rapid changes in information technology.” According to Herrington and Kew (2013), poor access to technology limits the business productivity and efficiency of SMMEs in South Africa. On the contrary, in its reports, the CIDB (2017) indicates that the lack of access to procurement information comes about because most government officials do not want to provide such information to the SMME owners.

Similarly, in his study, Mdadane (2018) discovers that the unavailability of information on procurement opportunities is due to procurement-related practices such as bribery, corruption, and fraud. This finding reaffirms previous studies, which revealed that procurement information is made available to contractors who have affiliations with government officials or politicians (Pillay and Mafini, 2017). Pillay and Mafini (2017) discovered that contractors have difficulty accessing government information because of the fragmented nature of the sector.

4.6.13 Use of preferential points

The CIDB (2017), in its report, indicated that the current preferential procurement environment is a key constraint of the construction industry as it encourages historically disadvantaged professionals to establish firms rather than join established companies. The CIDB (2017) further notes that the fragmentation has reduced the depth and breadth of expertise that can be consolidated

within medium and large companies through access and experience on both specialised and diverse projects. The preferential method of procurement in use in South Africa contributes to unhealthy competition, impeding the development of small enterprise capabilities and sustainability (CIDB, 2012).

4.6.14 Fronting

South Africa is among the few countries globally to practise a decentralised procurement system. Thus, government procurement of goods and services is somewhat decentralised to departments, provinces, and municipalities. When considering the cases of tender fraud and poor service delivery at all levels of government, it is imperative to determine whether these officials understand what comprises best value for money. Evidence suggests that a centralised system of governance and procurement leverages scales by reducing costs. On the other hand, decentralisation depends on local knowledge in building relationships (Fawcett, Ellram and Ogden, 2007).

Scholars such as Monczka, Handfield, Giunipero and Patterson (2016) advocate that centralisation produces benefits, including eliminating duplication of procuring effort and better management of specialised expertise of those people who purchase. By contrast, decentralisation results in better responsiveness to buying needs, in-depth knowledge and understanding of local needs, and better decision-making. Governance and procurement experts have argued that the South African procurement system tends to concentrate too much on the decentralised system. This procurement system is less efficient in management of contracts than the centralised system. It has been argued that the centralised approach to public procurement produces better value for money than the decentralised approach (OECD, 2020). In a more recent study, Chiappinelli (2020) discovers that the centralisation of the procurement process allows government departments to award large contracts to contractors, which helps in achieving lower rebates. However, decentralization of the procurement process results in lower rebates only when procurement practitioners and authorities have weak competencies. Similarly, Guccio, Pignataro, and Rizzo (2014) remark that local governments are less efficient than the central government.

4.6.15 Quality management

Early writers such as Tannock, Karasachol and Ruangpermpool (2002) and Parkin and Parkin

(1996) have identified some common barriers facing SMMEs aiming to implement total quality management (TQM) effectively: cultural, management awareness, financial and human resource issues. Compared with large enterprises, SMMEs have been slow to adopt the concept of TQM. The Construction Monitor (2018) reports that access to work, especially for targeted enterprises, is important for transformational imperatives within the construction economy. According to Pillay and Mafini (2017), the over-reliance on unqualified people in South Africa has resulted in poor quality services and abysmal performance. The CIDB's Drivers of the Cost of Public Sector Construction (2017) reports that the late interim payments and delayed payment of final accounts – often up to 90 days after invoice submission – affect the performance of contractors (CIDB, 2008).

Hellriegel, Jackson, Slocum, Staude, Amos, Klopper, Louw and Oosthuizen (2008), in their study, state that threats of substitute commodities are one of the quality management issues facing SMMEs all over the world. The authors suggest that all competitors produce substitute commodities in a perfectly competitive market. The introduction of substitute products in the competitive market by another firm can affect the demand for already existing commodities that serve the same purpose (*ibid*). In another scenario, the unhealthy competition among the competitors in the same market will affect the quality of products offered by firms (Hellriegel *et al.*, 2008).

4.7 Effective Public Procurement

Effective public procurement can be used to achieve societal needs. It is suggested that effective public procurement is a potential catalyst for innovative solutions to pressing societal challenges (OECD, 2018). Effective public procurement is measured in terms of SPP, GPP, and IPP. Most countries have developed policies at some level regarding green, sustainable and IPP procurement (OECD, 2018). Moreover, OECD (2018) refers to the comparison between the 2014/16 and 2018 surveys suggesting that there is an upwards trend in the development of strategies and policies addressing GPP, SPP, and particularly responsible business conduct. GPP, IPP, and SPP procurement have gained status as addressing societal, environmental, and social challenges through public procurement activities (Sönnichsen and Clement, 2020). Findings reveal that elements within these procurement policies, GPP and SPP, can facilitate and develop circular public processes (EU Commission, 2017).

4.7.1 Green public procurement

Over the last few years, policymakers in both industrialised and emerging economies have devoted considerable attention to the concept of GPP (United Nations Environment Programme (UNEP), 2013). The concept of “GPP” is considered as the set of procurement policies held, action taken, and relationships formed in response to concerns linked with the natural environment (Bag, 2017). The European Commission (EC) (2008) defines GPP as the process whereby public authorities attempt to purchase goods, services and works with reduced environmental impact throughout their life cycle when compared with goods, services and works with the same primary function that would otherwise be procured.

GPP is considered a suitable tool to facilitate a shift in operations from conventional to environmentally friendly under some particular premises, such as the level of previous knowledge of the public authorities regarding environmental issues, the existence of an appropriate external environmental consultancy, the extent of public expenditure and any previous successes on the part of public authorities in any environmental management project (Testa, Iraldo, Frey and Daddi, 2012; Michelsen and de Boer 2009). In a similar study, Parikka-Alhola (2008) postulates that the integration of green criteria (energy saving criteria) in public tenders could produce environmental benefits. For example, the selection of greener energy supplies in the public sector could save 60 million tons of greenhouse gases (Parikka-Alhola, 2008). Mutenda and Kholopane (2018) advocate the integration of green criteria in local government procurement. Such would provide opportunities for: improved efficiency, reduced resource use, reduced greenhouse gas emissions, cost savings, and enhanced environmental and social outcomes.

Given the positive impacts of GPP on economic development, many countries have begun to apply this concept to their procurement systems. For example, the Chinese government launched the GPP in 2006. Policymakers in China became very interested in GPP which is frequently referred to as SPP. The GPP allows for harnessing the large volumes and values involved in public spending to pursue strategic objectives, including policy coherence with overarching government priorities. China hopes to overcome the manifold challenges that are barriers on its path to eco-civilization through the application of GPP. Pursuing GPP is well aligned with China’s development goals and plans. The implementation of the GPP model demonstrates the central government’s commitment

to promoting a sustainable, low-carbon economy in China, mandating government at all levels to contribute to achieving national development goals and promoting eco-civilization.

In South Africa, the concept of GPP is gaining momentum from academic scholars and supply-chain practitioners. Although much has been written on the concept of GPP around the world, little has done in the South African context, especially in the public sector. Even the few studies that exist on GPP in South Africa and other jurisdictions did not specifically address the possibility of using GPP to target several environmental objectives simultaneously in one and the same procurement auction.

Kaumbuthu and Wanyoike (2015) postulate that the concept of GPP has become a unique tool for many organisations worldwide because of the environmental concerns raised regarding sustainability and climate change. Against this background, several organisations, both private and public, are consciously including environmental and social considerations in their procurement processes. In European nations, for example, the recognition of the significant role played by environmental impacts and in promoting market awareness was firmly established in the Green Book of Integrated Products Policy (Testa *et al.*, 2012).

The term GPP is a subset of SPP and is concerned specifically with greening the procurement process, that is, mitigating the environmental consequences of goods and services and works throughout their life cycle (Turley and Perera, 2014). Scholars such as Lundberg and Marklund (2018), Yeo, Shin and Lee (2016), Scoones, Newell and Leach (2015) and Kagendo (2012) indicate that green comes in many shades. Therefore, there is no singular, agreed-upon end-state. Rather, “green” is a process with its own inherent political tensions such as whether to impose a carbon tax on polluters or “leave the oil in the soil” as Norway has recently chosen to do (Cockburn, 2019). Nikolaou and Loizou (2015) argue that the GPP could play an important role in encouraging firms to be environmentally friendly by implementing certain environmental management practices. The UNEP (2013) reports that the GPP will contribute to natural environment preservation and economic growth.

4.7.2 Sustainable public procurement

According to Brammer and Walker (2011), the concept of SPP has recently acquired salience in policy circles internationally. SPP has been broadly defined as the integration of social, economic,

and environmental risks into the public procurement processes where the procurement decision-making assesses “value for money” across the entire life cycle of the product or services that is procured, rather than assessing on a short-term basis (Erridge and Henningan, 2012; Walker and Brammer, 2009). In SPP, the procurement process takes into consideration and seeks to minimise any negative ecological or sociological externalities throughout the supply chain of the goods or utilities procured. Price Waterhouse Coopers (PWC) (2009) describes SPP as a process of acquiring goods and services that considers the environmental impact that such purchasing has on people and communities.

The largest item of government expenditure is infrastructural development, which tends to consume vast amounts of raw materials and produce large quantities of waste and pollution. These improvements on the built environment such as, for example, electrification, water reticulation, sanitation, and spatial integration of urban landscapes have the potential of infrastructure “lock in”, where unsustainability is embedded into the built environment from the beginning to the end of its life cycle (Turley and Perera, 2014). Turley and Perera (2014) offer a wide array of practical recommendations for the design of an SPP process. These range from: supply-side policies such as subsidies and tax incentives for environmentally friendly products and services; the inclusion of sustainability in the technical specifications and functionality criteria; and the creation of an expert civil service dedicated to SPP. The development of guidelines and best practices, particularly for sustainable infrastructure, can perhaps be adapted from existing international guidelines such as the Green Product Groups and Criteria from the European Union and the Green Roads Rating System from the United States.

According to Shan, Hwang and Zhu (2017), SPP is now widely recognised as a strategic lever to drive innovation and improve the sustainability performance of both public and private sector organisations across the globe. SPP implementation is already benefiting from transformations occurring in the way that procurement is conducted, with greater professionalisation of procurement practices, leading to more strategic and transparent processes. SPP offers the following social benefits: it improves working conditions, increases minority employment, and allocates procurement contracts more fairly. SPP enhances access of SMEs to procurement practices, stimulates local economies and creates jobs, promotes local entrepreneurship and

innovation. SPP also adds value to the development of goods, services and works for local, national and export markets, and supports rural economic development (Gomes and da Silva, 2005).

From the economic perspective, SPP provides the following benefits: SPP generates more and better jobs, raises production standards, and creates economies of scale for sustainable goods and services. SPP allows producers to compete globally, creating demand for sustainable goods and services, supporting new, efficient industries and sectors, and fostering innovation (Gomes and da Silva, 2005). Moreover, research shows that sustainable procurement policy frameworks in the United States have, consistent with the constitution, helped to eliminate discrimination and provide equal opportunities (McCrudden, 2004). It can be suggested that SPP has great potential to drive innovation, creating or reinforcing a positive image for public authorities at home and abroad.

4.7.3 Innovative public procurement

In the South African legislative and policy framework for public procurement, there are no explicit provisions made for IPP, neither in the procurement process nor the SCM framework. There are allusions to innovation as “functionality criteria” in Regulation 1(k) of the PPPFA: or in the case of closed or limited bids (where procurement may be directly negotiated with a sole supplier); or in the case of emergencies (Bolton, 2016). Nearly all countries throughout the world, including South Africa, operationalise PPfI cautiously and indirectly, within decentralised public procurement systems (excluding China and the United States). This comes, arguably, consequently post-1980s New Public Management reforms (Lember, Kattel and Kalvet, 2013). The decentralised architecture of public administration has resulted in the erection of institutional silos, leaving each department to select the sector or technology upon which to expend public funds; whereas innovation has historically relied on inter-departmental collaborations across the entire innovation value chain (European Commission, 2018; Lember *et al.*, 2013). Exemplar institutions include: the Defense Advanced Research Projects Agency (DARPA) and the Advanced Research Projects Agency-Energy (ARPA-E) in the United States; the Swedish Governmental Agency for Innovation Systems in Sweden; and Yozma venture capital in Israel (European Commission, 2018). According to Dreschler and Kattel (2009), an innovation-based economy which is smart, sustainable, and inclusive, with not only a rate but also a direction, requires a capable, long-term-oriented, experimental, public sector rather than individual entrepreneurs; or the decentralised,

fragmentary, public administration promulgated by the New Public Management (Kattel and Mazzucato, 2018; Mazzucato, 2013).

Perhaps, as a developing country, South Africa would benefit from Kattel and Lember's (2010) recommendation that developing countries with limited policy and administrative capacity should seek to embed innovation procurement policy within their existing industrial policy, incrementally building up capacity rather than directly transferring innovation procurement policies from developed countries. Developing countries have often made the error of copying policies from developed countries, especially the countries of the Anglosphere, and its financial institutions, without modification, and without the experimental scope and institutional capacity to absorb failure and try something else. Indeed, the structure of South African public procurement markets, in relation to the wider economy, has not been studied in-depth, and there was therefore no basis for the expectation that replacing traditional industrial policy with "no policy" innovation policy would be efficacious in helping South Africa catch up with the developed world. Besides this, it has not been settled what exactly engenders innovation in the private sector (Lember *et al.*, 2013; Kattel and Lember, 2010; Lynn, Jr., 2009).

Kattel and Lember (2010) argue that IPP is built on evolutionary economics, and sees market failures as deliberately created by entrepreneurs to gain competitive advantage. Technological innovation which is key to "catching up" is an artificial comparative advantage, driven by externalities and unpredictable spillovers and path dependencies as opposed to the trade and competition assumed by neoclassical economists to pressure companies to innovate. PPfI requires coordination and cooperation between stakeholders, rather than competition, for knowledge transfer to take place. However, an ideological commitment to competition has tended to obscure that it was the use of this very mechanism by the developed world such as the United States, Japan, and Korea that led to their competitiveness and industrial growth.

While some countries such as Australia, Brazil, China, the United States of America, and Japan have embarked on public procurement programmes aimed at stimulating innovation, or embedded innovation policy within their procurement systems, legislation has often lagged relatively in terms of procurement innovation (Mazzucato, 2016; European Commission, 2015; OECD, 2013). Many countries have opted instead for indirect, "soft public procurement" in which the government

announces future public spending or future government contract opportunities and attracts innovators seeking government contracts. This preference for indirect procurement has been mainly due to the complexity of public procurement for innovation (PPfI) and the low policy and administrative capacities of developing countries to coordinate PPfI (Bolton, 2016; Kattel and Lember, 2010). IPP is seen as a return to state-led industrial development, in which governments use the power of public expenditure to create federal markets for suppliers and their innovative products, for example those new, risky, costly, and perhaps, not immediately profitable, and utilities; and in so doing create multiplier effects and spillover into the wider economy. Contrary to regular forms of public procurement, innovative public procurement involves purchasing innovative solutions, systems and designs which do not yet exist, and may require further investment in research and development (R&D). Furthermore, PPfI makes it possible for governments to leverage their purchasing power as the first, and often, the sole buyer to direct innovation to towards energy-efficient, ecologically friendly goods and services with the highest “social profit”. Since public procuring entities are also not necessarily incentivised by cost-cutting, which may lead to lower ecological or labour standards, PPfI can then be used to disseminate quality and standards throughout the economy (Kattel and Mazzucato, 2018; Bolton, 2016; Scoones *et al.*, 2015; Kattel and Lember, 2010).

The obstacles to PPfI have been non-regulatory rather than regulatory. Kattel and Lember (2010) mention an aversion within the current public-procurement culture to ideas and programmes of state-led innovation. Bolton (2016) concurs that, although procurement is constitutionalised in South Africa, and its use for secondary considerations such as society and the environment is mandated by Section 217, there is, however, no prohibition on, or promotion of, innovation procurement in the legislation. In South Africa, procuring entities are given wide scope to design their own innovation procurement process within the boundaries of the Constitution as amended.

According to Kattel and Mazzucato (2018), the existing policy toolboxes lack the dynamicity and adequacy to tackle the “big challenges” such as renewable energy and pollution control, and water and food security, which require cross-sectoral, procedural, and regulatory coordination and cooperation. Furthermore, innovation policies have also been affected by an “orientation failure” which prioritises short-term value extraction over long-term value creation rooted in economic policy choices and recent economic history. The late 1990s were characterized by the increasing

and disproportionate growth and dominance of the financial sector. This financialisation, which took place within the context of the New Economy, accompanied the “marketisation” of the public sector through new public management reforms. These reforms, which became conditions for World Bank loans in certain parts of the world such as Latin America, were concerned with efficiency and the reining in of costs in public institutions.

This was to be achieved through decentralisation, outsourcing, privatisation of state assets and state functions, and the introduction of various budgetary and performance systems such as, for example, performance pay packages for managers (European Commission 2016; Simcoe and Toffel, 2015; Lundberg and Marklund, 2013). During this time the horizontal goals of public procurement shifted from industry-support, or innovation stimulus, towards short-term efficiency and business-friendliness (Lember *et al.*, 2013). Arguably, this focus on visible performance at the project level has made it difficult to coordinate at the higher cross-sectoral, cross-organisational level necessary for innovation procurement. However, the concomitant rise in inequality, the subsequent 2007 financial crisis, and ensuing world-wide recession, has caused a re-evaluation among policymakers. These events inspired a neo-Keynesian reorientation towards state-led industrial development, and the expansion of public services. It became clear that, to give up on the state, or government intervention was premature (Kattel, and Mazzucato, 2018; Scoones *et al.*, 2015; Turley and Perera, 2014; Lember *et al.*, 2013; Mazzucato, 2013).

4.8 Public Procurement Practices in some Selected Countries

This section of the chapter reviews public procurement practices in some selected countries such as Australia, Brazil, China, Germany, India, the United States of America, Russia, and South Africa. The purpose of reviewing public procurement practices from other jurisdictions is to decide which lessons South Africa can learn from them as far as public procurement is concerned. These countries were selected for the comparative analysis because they have similar procurement processes. Moreover, these countries were selected because they have economic indicators similar to South Africa. Additionally, these countries are the major trading partners of South Africa.

4.8.1 Australian public procurement model and practices

The laws governing public procurement vary across state and local governments in Australia, with several of them producing best practice guides (Transparency International, 2017). The public

procurement system in Australia, as in any other country, is regulated by legal frameworks. At the federal level, the Performance and Accountability Act 2013 contains a framework that regulates the expenditure of public entities and corporate Commonwealth entities. However, at the local government level, this law regulates the spending of public monies, which is more prescriptive than at the federal level, with greater use of whole-of-government purchasing arrangements (Jubasz, 2016). This legislation in most of the states in Australia creates a central body to design and implement procurement policy and conduct procurement. Additionally, the state governments establish the legislative framework for local government procurement (ibid).

Besides this, the Freedom of Information Act 1982 also governs the public procurement system in Australia. This legal framework provides access to information in the government's possession (Jubasz, 2016). The Auditor-General Act of 1997 also regulates the public procurement system in Australia, which empowers the Auditor-General to audit government contract performance. The Public Works Committee Act of 1969, on the other hand, allows the parliamentary committee to scrutinise proposed public works programmes (Jubasz, 2016). The lobbying code of conduct also regulates the public procurement processes in Australia to deal with lobbyists.

4.8.2 Brazilian public procurement model and practices

Brazil is experiencing rapid growth and stable democracy, along with the other BRICs. In Brazil, government expenditure accounts for a more significant portion of the country's economy and has grown considerably in the past few years. Kucharski (2019) argues that, on average, public spending accounted for 15% of GDP in countries within the OECD, and an even higher portion of the developing world's output. Evidence suggests that in Brazil, procurement costs top \$14 billion each year. According to the Minister of Planning, the federal government expenditure rose from R\$ 40.6 billion in 2007 to R\$ 72.6 billion in 2012 (ibid).

Just as in any other country, the procurement system in Brazil is regulated by laws. Brazil's Constitution and other laws regulate the procurement system in Brazil. Article 37 of the Brazilian Constitution states that public procurement shall be conducted through open and competitive bidding in a manner that ensures the promotion of equality, economy, and efficiency (World Bank, 2012). Unlike other countries, Brazil has adopted a procurement system commonly known as 'COMPRASNET,' in which the federal government organisations can register their procurement needs (Mota and Rodrigues Filho, 2011). COMPRASNET is an e-procurement system that

automatically informs registered suppliers on government tenders and new projects. This system allows the procurement office to use a federal catalogue to describe the goods or services required (ibid). The scholar argues that the COMPRASNET was introduced to ensure uniformity in the procurement process by decentralizing federal governments' buying process. Somasundaram and Damsgaard (2005) concur that e-procurement is not a new concept since it appears in many countries. By contrast, Somasundaram (2004) argues that e-procurement is not common in many countries, and that different standards exist. Scholars such as Bof and Previtali (2007) and Gichoya (2005), however, contend that the risks involved in e-procurement might even be higher than those in the private sector, given the fact that socio-economic challenges influence the administrative, political, and structural contexts in a significant way (Ribeiro, Vaz and Matheus, 2011).

4.8.3 Chinese public procurement practices

Since the mid-1990s, the government of China has developed a broad legal framework to bring public procurement under a comprehensive administrative and legal framework (Rothery, 2003). Before 1990, the Asian Development Bank (ADB) and the World Bank introduced a tendering and bidding system to China to implement projects. The tendering and bidding system was the first system in China to promote competition and transparency in the public procurement process (ibid). China's modernization in public procurement reflects the fundamental transition from a state-controlled to a market-based economy. The central pillar of the government procurement system in China is the building of a legal framework. China's public procurement system is controlled by several regulations, including the Tendering Law of 2000 [TL] and the Government Procurement Law [GPL] of 2003.

China operates both centralised and decentralised public procurement systems, whereby existing procurement entities compete with centralised procurement institutions. Centralised procurement entities are responsible for minimising the circumvention and distortion of procurement policies, rules, and laws that often result in corruption. Moreover, a centralised public procurement system has certain loopholes, drawbacks, and weaknesses. Firstly, it is argued that with centralised public procurement, it is easy to circumvent the procurement requirements. Secondly, it could be argued that centralised procurement has provided another "handy tool" for local government to reinforce regional blocks, undermining the goal of establishing the unified national public procurement market.

Arrowsmith *et al.* (2011) assert that China adopts several methods or models in its public procurement system, which could be seen as a significant progression compared with the TL. The government of China operates a procurement system that includes principles such as openness, competition, sole sourcing, and request for quotation approved by the Minister of Finance [MOF]. Openness was identified as the major government procurement method, which ensures that there is fairness and accountability. Arrowsmith *et al.* (2012) explain that the technique of selective tendering in procurement allows the government to select the tenders based on the unique nature of procurement subjects and the percentage of costs. The competitive negotiation addresses technical complexity, urgent need, and the impossibility of counting contract value. China's government allows for sole-sourcing procurement under the condition of only one possible supplier (Wang, 2009).

Apart from these procurement methods, the Chinese government, in 2006, launched another method of procurement system known as GPP. At about this time, policymakers in China and thereabouts became very interested in GPP (UNEP, 2013). Tian (2010) explains that the GPP approach harnesses large volumes and values to pursue strategic objectives. While both GPP and SPP have a strong environmental focus, they can also cover social and economic/financial considerations. In China, policymakers have introduced the concept of GPP into procurement practices to help address the myriad challenges that are barriers on its path to eco-civilization through the application of GPP (Zhu, Geng and Sarkis, 2013).

According to State Council (2011), GPP is aligned with China's development goals and plans. The implementation of the GPP model demonstrates the government's commitment to promoting a sustainable and low-carbon economy (Gong, and Zhou, 2015). Gong and Zhou (2015) further argue that the GPP can promote green competitiveness and foster sustainable consumption and production. Comprehensive legal frameworks support China's GPP. To better understand the quantitative impacts of scaling up GPP in China, the "system dynamics model" was developed (China Council for International Cooperation on Environment and Development, 2013). According to Cao, Yan, and Zhou (2010), the system dynamics model [SD] is a flexible modelling approach that maps out a set of variables, their relationships, and the types of influence they have on one other. The benefit of the SD is that it helps capture how highly complex systems can evolve, unlike in a computable general equilibrium model (CGE), where they would be hidden in a set of

rigidly defined equations (Ho, Dickinson and Chan, 2010). Such helps the modeller integrate environmental variables that a CGE model cannot easily capture.

4.8.4 American public procurement practices

The United States [US] procurement market is one of the largest worldwide, guided by several procurement laws. According to Yukins (2017), the patterns in modern US procurement can be traced back to the Revolutionary War, when the Continental Congress several times organised and reorganised the procurement system to supply the Continental Army. Over the last decades, many modern procurement reforms have been launched through the annual authorising legislation for the U.S. Department of Defense. One of such procurement reforms was the procurement preference scheme. The US introduced the procurement preference scheme in the 1930s (McCrudden, 2004; Watermeyer, 2003). Moreover, in the 1940s, the “Executive Order Programmes” was introduced to prohibit discrimination against African American contracts. These schemes variously referred to as set-asides or reserved procurement strategies or supply-side schemes, were designed to encourage market participation of ethnic-minority business enterprises in government contracts (Watermeyer, 2003).

In the US, public procurement is seen as a tool for political struggle, perceived corruption, and government inefficiencies (Roman and Thai, 2013). As with any other country, public procurement in the US is controlled by laws. However, municipal public procurement preceded state and federal governments (Page, 1980). For instance, in 1910, Oklahoma was the first state to have established a central purchasing bureau (Page, 1980). To achieve the technical superiority of bureaucracy, in the 1980s the concept of centralisation was introduced into the US public procurement process. The 1990s saw the development of “yellow state” and “contract state.” These developments have set public procurement on a transformation path. The federal government's public procurement system and contracting capacity are regulated by Article 1 and Section 8 of the United States Constitution. The public procurement system in the US is based on four principles: transparency (fair and equitable treatment), sound management (appropriate use of resources, and a professional standard of knowledge, skills, and integrity for public procurement authorities), elimination of misconduct (integrity in public procurement, encouragement of close cooperation between stakeholders, and monitoring of public procurement), accountability and control (definition of the

chain of responsibility, empowerment of civil society organisations, and fair and timely handling of complaints) (Roman and Thai, 2013).

4.8.5 Russian public procurement practices

Russia represents the most rapidly emerging and growing market, globally (BRIC Partner Portal). According to Taylor (2013), Russian healthcare markets are estimated to be growing at 11% annually. Soon the demand for Russian medical services and pharmaceuticals industries is expected to increase significantly (Snapshot report on Russia's healthcare infrastructure industry, (Roman and Thai, 2013). Given the substantial public spending on healthcare, the growing economy, and the market's sheer size, Russia attracts increasing interest from various related industries. However, Ernst and Young (2012) argue that Russia is faced with diverse challenges, including corruption, bureaucracy, and lack of transparency. Larjavaara (2004) stresses that the healthcare sector is not an exception to corruption in Russia. The Russian Healthcare System Overview (2010) reports that lengthy and costly registration of medical equipment makes it difficult for foreign firms to register their products. Larjavaara (2004) concurs that the Russian public procurement market has not been adequately regulated. Yakovlev (2010) expresses the same opinion that the procurement regulations do not sufficiently explain how to eliminate corruption and bureaucracy in public procurement.

However, Russia's membership of the World Trade Organization has led to significant changes in procurement legislation to ensure high levels of transparency and efficiency. In 1992, the Presidential Decree was passed to make the procurement system highly competitive. Furthermore, in 1997, another decree was passed to help eliminate corruption, and a budget cut introduced in the organisation of procurement products for the state needs, to be based on UNCTRAL principles. To increase the efficiency and transparency of public procurement and to reduce corruption, the Federal Law of 94 was passed, placing orders to supply products, production performance, rendering services to satisfy public and municipal needs (Kudryavtseva and Novikova 2013). This has led to high competition among enterprises allowing them to participate in procurement (Yakovlev 2010). Additionally, since January 2014, significant reforms have occurred in Russia, focusing on the procurement system (Smirnov, 2013).

Unlike other countries, there is no specific model for development of public procurement systems. In Russian, three important procurement methods exist depending on the purchase value: verbal

quotes from one competitive supplier, request for quotation to three suppliers, and formal tendering.

4.8.6 Malaysian practices

In 1995, the Malaysian Ministry of Finance, the Department of Public Works, and the South African government jointly established the Public-Sector Procurement Reform Task Team. The task team was mandated to study international models of preferential procurement that the South African government could adopt. The task team chose Malaysia as the leading comparative model (Letchmiah, 2012; Raga and Taylor, 2010; Shakantu and Kajimo-Shakantu, 2007). For this reason, South Africa's Preferential Procurement Policy was introduced in 1996 to create an enabling environment for private businesses. Malaysia's procurement model is based on the NEP model – affirmative action policies were introduced in 1971 to benefit the economically weak majority. Since the year 1970, the NEP has aimed to achieve the redistribution of income and to alleviate poverty by eliminating discrimination in public procurement. The NEP requires that 30% of the annual value of government contracts be set aside for contractors from the Malay majority, the Bumiputras, and other indigenous groups (Letchmiah, 2012; Morand, 2003).

In 2002, the government of Malaysia had introduced an e-procurement system to ensure the efficiency and effectiveness of public procurement (Schedler, 2007). The introduction of the e-procurement system has brought great benefits to the Malaysian government by helping the government save costs and time associated with the public procurement process (Nawi, Roslan, Salleh, Zulhumadi and Harun, 2016). The e-procurement further resulted in reorganisation, improved contract fulfilment, and increased spending under management (Tiago, 2009).

4.8.7 Canadian public procurement practices

Canada is a federal parliamentary democracy and constitutional monarchy. Statistics revealed that in 2015, the government spent about 13.3% of total GDP on public procurement. Canada, as with any other democratised country, is governed by a set of public procurement regulations that are applied at all levels of governance, namely: the Financial Administration Act (R.S.C., 1985, c. F-11), the Government Contracting Regulations (SOR/87-402), the Treasury Board Contracting Manual (2010, as amended), the Public Works and Government Services Canada Act (S.C. 1996, c. 16) and the Standard Acquisition Clauses and Conditions (SACC) Manual (1998, as amended).

In addition, two legal systems co-exist, namely, common and civil law. Civil law (Quebec) is the primary legal framework regulating public procurement in Canada.

Canada is one of the few countries with a well-regulated public procurement system. Globally, Canada's Procurement Review (Lacelle, 2004) and the "Gershon Review" in the United Kingdom (Cabinet Office, 2003) have both produced policy statements advocating a similar approach that emphasises commodity management and collective purchasing as key activities of public procurement officials. These developments and the push to make public procurement a more proactive service are in stark contrast to the reactive mode familiar in most unfavourable depictions of procurement practices across many countries (Prier and McCue, 2009).

Canada is a member of the World Trade Organization's Plurilateral Agreement on Government Procurement (WTO-GPA) (Erridge and Fee, 2001). Countries such as Canada, the European Union, and Japan joined GPA in January 1996, and China was accepted as an observer in February 2002. The provisions of the WTO-GPA were implemented in the domestic legislation of Canada as well as other member states. The European Union prepared directives, and Canada incorporated the provisions of the WTO-GPA at the federal level only, limiting the participation of suppliers on state and local tenders (Prier and McCue, 2009). The WTO-GPA is based on principles such as openness, transparency, and non-discrimination, which apply to the parties' procurements covered by the agreement, to the benefit of parties and their suppliers, goods, and services.

Canada has enacted several laws and rules for procuring certain supplies and services by national governments, which were prepared to give foreign parties market access on a reciprocal basis. Canada has implemented the North American Free Trade Agreement (NAFTA) and the WTO agreement on government procurement at the federal level. This agreement was designed to foster increased trade and investment. The Agreement contains an ambitious schedule for tariff elimination and reduction of non-tariff barriers and comprehensive provisions on the conducting of business in the free trade area (Erridge and Fee, 2001). Since 1994, the main legal instrument regulating U.S. and Canadian trade has been NAFTA (Arshoff, Henshall, Juzwishin and Racette, 2012). Between 1989 and 1994, trade between these two countries was regulated by the Canada-U.S. Free Trade Agreement. This initial agreement was replaced by NAFTA when Mexico became a party. Since the original bilateral U.S.Canada agreement went into effect, trade between Canada

and the United States has reportedly tripled in dollar amounts. Chapter 10 of NAFTA addresses government public procurement.

It was reported that the Government of Canada allegedly spent about Can\$20 billion or approximately US\$18.7 billion a year on goods and services. Evidence further suggests that provincial governments reportedly spend an almost identical Can\$18 billion on goods and services. These developments in Canada saw several reforms in the public procurement system. In June 2010, Prime Minister Harper asked Canada's provinces to modify their procurement laws to allow U.S. suppliers of goods and services the benefits of the government procurement provision of NAFTA. The extent to which provincial procurement markets are closed to U.S. firms is unclear because many provincial and municipal restrictions are in the form of policies or are inserted into individual tenders rather than into written laws. Also, in June 2010, the Federation of Canadian Municipalities voted 189 to 175 to bar bids from companies whose countries impose trade restrictions against Canada. This was a non-binding resolution but indicated that many Canadian municipalities believed that Canadian firms should have been allowed to bid on goods and services funded by the ARRP even though Canada's provinces are not listed in the AGP, and NAFTA does not cover subcentral entities or grants to subcentral entities by national governments. The actions of the Federation of Canadian Municipalities received widespread media coverage in Canada but were seen by the federal government of Canada as being more of an expression of disapproval than an effort that would ultimately have a significant impact upon U.S. suppliers. Canada has introduced a new public procurement system known as the Government Electronic Tendering Service through MERX for most contracts for goods and services. The federal government uses this public procurement system to post tender notices and awards and make available solicitation documents and attachments.

4.8.8 South African public procurement practices

Post-1994, the ANC government has initiated a series of budget financial reforms on procurement. The aim was to modernise the management of the public sector, to make it more people-friendly and sensitive to meeting the needs of the communities it serves (Ambe and Badenhorst-Weiss, 2012). The procurement reform processes were embedded in specific regulations, especially the MFMA, PFMA, and PPPFA. The reforms were because of certain deficiencies identified in the current practices relating to governance, interpretation, and implementation of the PPPFA and its

associated regulations (National Treasury, 2005). South Africa has borrowed liberally from the public procurement contractual arrangements of other international jurisdictions, including Canada's use of public works, financed through government contracting, to address its mistreatment of the aboriginals; Malaysia's use of government procurement to address ethnic inequality; and the United States' use of affirmative action to address discrimination against African Americans (Letchmiah, 2012; McCrudden, 2004).

The first experiment with preferential procurement policies in South Africa since establishing the Public-Sector Procurement Reform Task Team was the Malmesbury prison infrastructure project in the Western Cape in 1996. This project channelled 30% of the total contract value into the local community of Malmesbury and proved to be more effective than other construction-based poverty alleviation programmes in the community. This innovative approach was developed by the Procurement Reform Task Team and has been labelled affirmative procurement, or targeted procurement (the preferred term in the construction industry) (Anthony, 2013; Letchmiah, 2012). According to Bolton (2004), the use of affirmative procurement in the construction industry has helped increase the participation of historically disadvantaged enterprises, contributing to the greater formalisation of this target group and its integration into supply chains in the construction sector (Pillay and Mafini, 2017; Adediran and Windapo, 2016; Letchmiah, 2012). The most frequently used targeted procurement strategies in the construction industry include:

- ✦ Unbundling – enforcing the use of multiple contractors in construction procurement; or the allotment of a heterogeneously divisible contract to allow the participation of many small businesses in the performance of the contract (which has come under criticism for giving the appearance, but not the reality, of competition);
- ✦ Subcontracting – also referred to as structured outsourcing, subcontracting allows small businesses or emerging contractors to partake in the multiple downstream business opportunities that flow from the prime contractor at the top of the supply chain;
- ✦ Preferencing – in which preferential or discriminatory selection rules are put in place, detailing the categories of preference in the allocation of contracts, so that persons or businesses disadvantaged by unfair discrimination in the past do not have to compete on an equal basis with firms or persons that have enjoyed unfair advantages in the past;

- ✦ Third Party Management – large firms, contractors, and consultants must mentor emerging contractors and SMEs in executing their contracts as prime contractors. They are also expected to monitor the progress of their work. Additionally, they must provide construction management support to emerging contractors;
- ✦ Incentives for key performance indicators – when a specified target (key performance indicator) has been set, contractors who achieve the KPIs are awarded incentive payments (Adediran and Windapo, 2016; Ambe and Badenhorst-Weiss, 2012; Letchmiah, 2012; Morand, 2003; Ashenfelter *et al.*, 1997).

Furthermore, Adediran and Windapo (2016) identified the use of targeted procurement strategies in the construction industry as having a direct influence on the growth performance of emerging contractors or historically disadvantaged SMMs; which is predicated on their increased participation in tendering processes and winning of government contracts; mediated by their level of integration in the supply chain, or their linkages with historically empowered firms (Pillay and Mafini, 2017). Prior to the promulgation of the Affirmative Procurement Policy in 1996, the market share of Black-owned businesses across all sectors in South African society had been a dismal 2.5% in 1995, and less than 0.5% in 1993; this was due to historical socio-economic constraints that unrestrained market forces and the private sector alone could not resolve. In 1996, however, public sector procurement constituted 13% of South Africa's GDP (Letchmiah, 2012).

4.9 Comparative Analysis between Countries

Several differences and similarities have emerged out of the review of the public procurement models from the different countries. Unlike countries such as Canada, Malaysia, Brazil, and South Africa, Australia adopts a unique and integrated public procurement system based on government policies and models. In Brazil, the public procurement system is regulated by government policies. Since 2002, the legal procurement framework has been based on a two-pronged structure, namely: procurement law and reverse auction law. Unlike other countries, Brazil has adopted a procurement system commonly known as 'COMPRASNET,' in which federal government organisations register their procurement needs. COMPRASNET is an e-procurement system that automatically informs registered suppliers by e-mail, and the supplier may download the bidding documents. This system allows the procurement office to use a federal catalogue to specify the description of the good or service required.

China operates both centralised and decentralised public procurement systems whereby existing procuring agencies are put in a position to compete with centralised procurement institutions established by local governments so far as a decentralised procurement is concerned. China's modernization in public procurement reflects the fundamental transition from a state-controlled to a market-based economy. The central pillar of the government procurement system in China is the building of a legal framework. China adopts several methods or models in its public procurement system provided by the GPL, which could be a major progression compared with the TL. The government of China operates a procurement system that includes open tendering, selective tendering, competitive negotiation, single-source procurement, request for a quotation, or any other method approved by the Minister of Finance. Moreover, China adopts green public procurement, a public procurement approach that harnesses the large volumes and values involved in public spending to pursue strategic objectives, including policy coherence with overarching government priorities.

In the context of Russia, there is no specific model developed to address issues associated with the public procurement system. However, three important procurement methods exist depending on the value of the purchase: verbal quotes from one or more competitive suppliers; request for a quotation sent to at least three suppliers; and formal tendering.

In Malaysia, the government has e-procurement which is common to all countries. The introduction of the e-procurement system has brought great benefits to the Malaysian government by helping the government to save costs and, at the same time, to become more efficient in the procurement process of goods online.

As with China, Malaysia, and South Africa, Canada has introduced a new public procurement system known as the Government Electronic Tendering Service through MERX for most contracts for goods and services. The federal government uses this public procurement system to post tender notices and awards, and to make available solicitation documents and attachments.

In South Africa, procurement reforms were introduced post-1994, embedded in some specific regulations. The reforms came about through certain deficiencies identified in the current practices relating to governance, interpretation, and implementation of the PPPFA and its associated regulations. The country adopts a mix of public procurement systems from different countries. For

instance, South Africa has borrowed liberally from other international jurisdictions' public procurement contractual arrangements, including Canada's use of public works, financed through government contracting, to address its mistreatment of the aboriginals.

4.10 Lessons for South Africa

There are several lessons for South Africa as far as public procurement is concerned. From the Australian perspective, South Africa could adopt public procurement models such as the theory of PV, the PVM approach, and BV. Concerning the adoption of PV, The South African government, local governments, and other state institutions must ensure that public procurement creates value for the citizens. Additionally, adopting the PVM approach will help the South African government enhance the creativity of public managers. When successfully implemented in South Africa, the PVM approach will help improve the proactive and strategic role of the public sector workers to achieve their mandates. The South African government could adopt the best value approach to promote accountability in local governments.

There are several lessons South Africa could learn from Brazil as well as from Australia. As discussed previously, the Brazilian government has launched a procurement model called COMPRASNET. South Africa could adopt this model in its public procurement system to speed up its procurement processes and achieve a centralised public procurement regime. In the context of China, the South African government needs to adopt the GPP model, which should be aligned with the country's development goals and plans. Regarding the case of the United States of America, there were several lessons that South Africa has already learned from the country. For instance, the procurement preference schemes which the United States introduced in the 1930s are like the preferential procurement scheme operated by the South African government. Also, the South African government borrowed from the United States the concept of affirmative action to address discrimination in its public procurement processes or systems. Again, South Africa has learned several lessons from Malaysia as far as public procurement is concerned.

4.11 Review of Existing Public Procurement Theories

There are different theoretical frameworks that underpin public procurement. These include but are not limited to traditional public administration (TPA), new public management (NPM), public value (PV), best value (BV), and public value management (PVM). After the review of these theoretical frameworks, the most appropriate theory that underpins the study is the BV.

4.11.1 Traditional public administration approach

This approach to public procurement perceives politicians as solely responsible for defining public value. However, it views public managers as those responsible for maintaining organisational performance in core operations (Moore 1995). The TPA approach is underpinned by the ideas of Max Weber. The model draws on the model of bureaucracy, which relates to the twin principles of hierarchy and meritocracy (Robinson, 2015). The TPA approach was part of governmental wide-ranging bureaucratic reforms commonly used in the United Kingdom and Prussia. The TPA model aimed to reduce the patrimonial systems of administration, which are characterised by patronage and favouritism in government procurement (Robinson, 2015).

According to Osborne (2006), the TPA approach has several unique features: centralised control; rules and guidelines, separation of policymaking from implementation, and adoption of hierarchical organisational structure. Scholars, such as McCourt (2013) and Bayart (2009), argue that the TPA model worked well in several economies, notably in Singapore and China where their leaders focus on building a high quality and efficient civil service.

According to Evans and Rauch (1999), the quality of bureaucracy which is a dominant feature in the TPA model is associated with economic growth in the statistical analysis released by World Bank in its 1997 World Development Report. The report identified merit-based appointments and career stability for public servants as key elements in the effectiveness of public administration. Conversely, Roll (2014) articulates that several public bureaucracies were perceived as bloated, inefficient, and self-serving, shaped fundamentally by underlying political economy factors. Against this background, many reforms were initiated in the public services across many countries to reduce government spending and to minimise the size and scope of government. However, these reforms did not depart completely from the Weberian model of a centralised and hierarchical public service (Nunberg and Nellis, 1995). Based on the criticisms levelled against the TPA model, the New Public Management (NPM) approach was introduced.

4.11.2 New public management approach

The NPM model places more emphasis on private sector management practices over policy-making and management roles in defining public value (Hood 1995). According to Islam (2015), the NPM was introduced in the 1980s and 1990s to replace the traditional approaches, due to their inadequacy in public management. The NPM model consists of several novel approaches to public

administration and management that emerged in several OECD countries in the 1980s. The model emerged because of reactions to the limitations of the TPA model in adjusting to the demands of a competitive market economy. According to Robinson (2015), injecting principles such as competition and private sector management lay at the heart of the NPM approach. Osborne (2006) states that the permanent features of the NPM model include: lessons from private-sector management; the introduction of entrepreneurial leadership in public sector organisation; performance management and appraisal; cost management; and competition and contracts for resource allocation and service delivery in the public services.

Scholars such as McCourt (2013) and Dunleavy and Hood (1994) have suggested that theoretical foundations of the NPM model are the principal-agent theory and the bureaucratic theory. The scholars argue that healthy competition, delegation, performance, and responsiveness help to determine the bureaucratic behaviour, and to generate enhanced outcomes. The NPM model contributes to the changing in the public sector ethos and approach, through the cultivation of new management practices, marketisation and outsourcing of core services to private entities (McCourt, 2013; Dunleavy and Hood, 1994).

NPM approaches were further adopted in non-OECD countries to implement reforms within the public sector (Pollitt and Boukhaert, 2004). Despite the universality of this model, only a few governments in developing countries have adopted it (Hood, 1990). The prominent examples are semi-autonomous tax agencies in Africa and Asia, several of which have generated impressive results in terms of revenue targets and in reducing corruption (McCourt, 2005). NPM has brought radical transformation in organisational culture without increase in cost. However, in practice, the NPM reforms in developing countries were adopted very selectively (Cheung, 2011; Hope, 2005; Sarker, 2006). Despite the contribution of this model, several commentators have criticised its weak capacity and political support (Nunberg, 1992). It has argued that the NPM approach may result in centralised decision-making by public officials, instead of encouraging decentralisation in public sector organisations.

4.11.3 Theory of Public Value

As a result of the criticisms against the NPM model, the PV was introduced. The proponent, Moore (1995), argues that the PV explains why the public sector was established to create public value.

The concept of PV reaffirms the collective model's underpinning the belief that local government cannot be reduced to simple individual costs-benefits analyses or models based on the rationality of consumer choices or models (Alford and Flynn, 2009; Moore, 1994, 1995). The introduction of the PV reflects the thinking and feelings of people towards the society to which they belong. In a broad perspective, the definition of PV interfaces with the need to develop models and tools to encourage dialogue on shared values between the parties, to manage conflicting values, and to define the mandate of the public sector in transforming social contexts (Meynhardt, 2009).

The PV model suggests that public managers, in defining the implementing of a successful strategy, must align the elements such as “task environment”, “authorising environment” and “operating environment” as much as possible which, due to their nature, is difficult to accomplish (Moore, 2007). Despite the relevance of this model, there are two sharp criticisms levelled against it. The first criticism is the broadness of the concept of PV, which is not considered well-defined. The second criticism is the relationship between politics and public value. The criticism has resulted mainly from a presumed overlap of political and public management roles, in choosing which actions to take to maximise PV. It was argued that this action would lead the manager also to assume the decision-making power conferred by the citizens upon the person who was elected democratically (ibid).

4.11.4 Public value management approach

The PVM model was the extension of the PV model. Van Veenstra and Janssen (2012) postulate that PVM emerged because NPM failed to achieve its intended purposes and outcomes. PVM focuses on the use of information technology in the public procurement process. PVM is considered the new paradigm for the public sector, which focuses on redefining the approaches to addressing the challenges of accountability, efficiency, and equity (Stoker, 2006). PVM focuses on defining what constitutes a “public value”. The model suggests that public value emerged from deliberative processes, where principled public servants seek the mandate for their actions (Davis and West, 2009). From this standpoint, a public value may be perceived as a narrative (Alford and O'Flynn, 2009), leadership/management style (Stoker, 2006), method of defining public service goals (Kelly, Mulgan and Muers, 2002), or conceptual model (Benington, 2009) in which a dialogical emphasis is placed on public participation.

This procurement model views politicians and public sector managers as part of the definition and creation of public value. The proponents such as O’Flynn (2007), Stoker (2006), Mulgan & Muers (2002), and Moore (1995) maintain that the responsibility of the public sector managers involves managing government appointees and citizens. However, Moore (1995) opines that most public officials are constrained by their proper purposes, thus search for more effective ways to desired objectives. The inability to improve the creativity of public officials results in the loss of a key ingredient that assists the private sector to remain dynamic, responsive, and value-creating (Moore 1995). O’Flynn (2007) considers the PVM approach as involving considerable change. This is because PVM offers innovative ways for public officials to think about government activities, policymaking, and service delivery. Moore (1995) postulates that this model explains the proactive and strategic role of public sector managers to assist them in achieving their mandates.

The PVM is a unique approach acknowledging the government’s special role as the guarantor of public value (Bryson, Crosby and Bloomberg, 2014). Given this perspective, PVM encourages citizenship, and democratic and collaborative governance. For instance, the Australian government has adopted this model to enhance public services, especially in the disability services sector, where new disability schemes, stakeholder expectations, and legal frameworks have been changing rapidly (Greve, 2015).

4.11.5 The Best Value approach

Bovaird and Halachmi (2001) suggest that the compulsory competitive tendering (CCT) model has failed to deliver the expected financial savings or improved quality. As a result, most governments in several jurisdictions, such as in the UK and Australia, have abandoned it in favour of BV. In Australia and UK, BV legislation requires all public sector organisations first to consult their constituents before negotiating (Local Government Victoria, 2004; Bovaird and Halachmi 2001). The purpose of BV is to instil the spirit of continuous improvement and accountability into the public sector procurement system. According to Moore (1995), the assumption underlying the BV is consistent with the PV model. The BV model assumes that procurement practices are similar to a post-Toyota approach (Just-in-Time), where in addition to the price, the supply chain is actively managed to produce value (Moore, 1995). O’Flynn (2007) postulates that the BV model creates more opportunities for maximising public value and stakeholder participation.

The BV model plays a unique role in public procurement as it helps identify qualified contractors based on their previous performance. Moreover, it reduces wasteful communication and information and creates a “win-win” situation for all stakeholders, mainly clients, and contractors (Hasnain and Thaheem, 2016). Additionally, it has been argued that the BV helps examine the factors that form part of public procurement to improve the performance of the contractors in the long term (Cheng and Li. (2004). Another unique benefit of the BV is that it increases competition and transparency by making it difficult for the contractors to mislead clients when submitting proposals (Herbsman, Tong Chen and Epstein, 1995). This enables procurement entities to select vendors with the best quality at an accurate price.

The BV approach underpins this study because it ensures innovative solutions, high-quality results at a fixed price and stable specifications, as substantiated by Bruno, Gelderman, Lambrechts and Semeijn (2018). Also, the BV approach is the most appropriate theoretical framework that underpins the study because it is a catalyst for change in traditional tendering. Furthermore, the BV approach was adopted because of its flexibility, allowing the tenderer to set the primary boundary conditions as requirements in the tender documents. It additionally formulates the objectives, which must be achieved through the product to be delivered. Besides this, the BV is the most suitable theoretical framework that supports the study because the procuring entities focus on procuring the highest value and subsequently on obtaining this at the lowest price.

4.12 Proposed Conceptual Model for Effective Public Procurement

A conceptual model represents interrelated items or variables and propositions that provide a systematic view of phenomena by indicating relationships among variables (Kerlinger, 1986). From a statistical perspective, a conceptual model assists the researcher in identifying the research approach, analytical tools, and procedures for the research inquiry. To achieve this objective, relevant theories and empirical research are linked to detect overlaps, contradictions, and refinements (Adom *et al.*, 2016). The researcher must demonstrate the significance and problem of the study by defining the key variables or constructs and networks of relationships between them (Pahl-Wostl, 2009).

Using the findings from existing research, a proposed conceptual model for effective public procurement showing the relationship between dependent and independent variables is depicted in Figure 4.4.

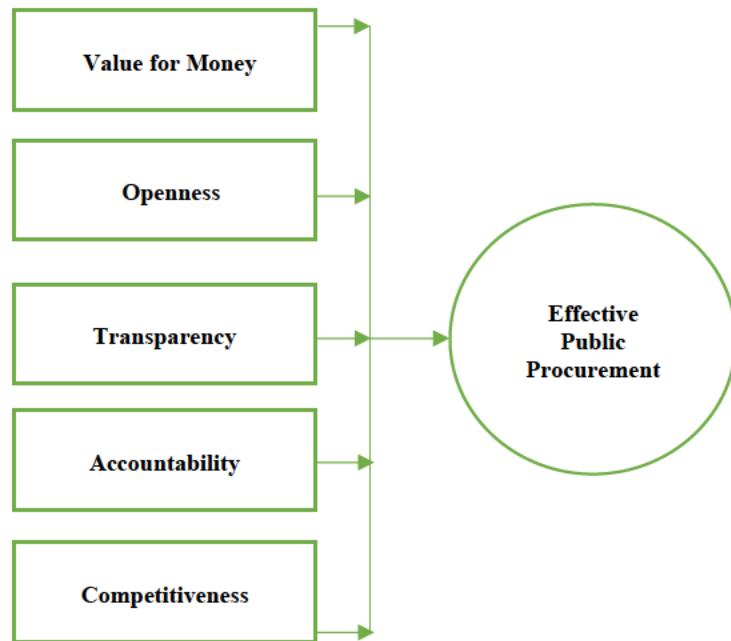


Figure 4.4: Hypothesized conceptual effective public procurement model

4.11.1 Features of the model

Mohd Nawi, Deraman, Bamgbade, Zulhumadi and Mehdi Riazi (2017) observed that an effective public procurement system such as the adoption of e-procurement reduces transactional costs, resulting in a better decision and in better value in the procurement output. OECD (2020) suggests that effective public procurement serves as an instrument for good governance. Given the economic downturn over the last decades, many governments and institutions have renewed their focus on effective public procurement, based on integrity, to ensure the requisite delivery of public services, and to sustain the citizens' trust in their administration (OECD, 2020). Hence, governments are increasingly acknowledging the role of effective public procurement in improving public sector productivity through cost-saving initiatives, and by applying the principles of economies of scale. Moreover, tapping into effective public procurement is considered a strategic policy lever towards achieving socio-economic and environmental goals (OECD, 2020).

According to OECD (2017), public procurement increases the efficiency and effectiveness of government spending. The value obtained from effective public procurement in many countries directly impacts the health of citizens, which in turn affects a plethora of aspects, such as their ability to contribute to GDP (OECD, 2017). Concerning the environment, green, sustainable, and IPP can minimise the CO2 emissions of public transport, thereby increasing the citizens' health and creating a market that can make low-emission propulsion more accessible to other consumers (OECD, 2017). This implies that effective public procurement has the potential of creating both environmental and social benefits for countries.

Effective public procurement is now widely recognised as a strategic lever to drive innovation and improve sustainability performance within public and private sector organisations worldwide. Evidence shows that the components of effective public procurement, such as GPP and SPP, have helped reduce disposal and liability costs, conserve resources, and enhance public image, improving the firm's economic position (Ochieng and Oteki, 2016). According to Kennard (2006), effective public procurement helps reduce costs by adopting a broader approach to whole-life costing. Also, it improves internal and external standards through performance assessments. The following are features of an effective public procurement system.

i. Value for money

From the perspective of the BV, public procurement creates more opportunities for maximising public value and stakeholder participation. The BV is consistent with the PV model, which assumes that procurement practices are like a post-Toyota approach, where in addition to the price, the supply chain is actively managed to produce value. These assumptions underpin the importance of value for money, forming a central pillar in public procurement. It is a requirement that an effective public procurement meet the value for the money spent by the procuring entity (Horn and Raga, 2012; National Treasury, 2012). The principle of the best value for money refers to the “best available outcome when all applicable costs and benefits over the procurement cycle have been considered” (Molver and Noeth, 2017). To meet this requirement of public procurement, the government and procurement entities must ensure that resources are utilised as per the intended purposes. In addition, the study recommends that the management of public funds be monitored by internal control and internal audit bodies, supreme audit institutions, and parliamentary committees.

ii. Openness

Corruption in public procurement remains the greatest restrictive factor facing South African SMMEs. Against this background, it is a requirement that the public procurement practices be opened to public scrutiny. This principle of the public procurement process is not unique to South Africa. To ensure an open procurement system, the government must empower civil society organisations, media, and the wider public to scrutinise the public procurement process. Moreover, the stakeholders, including SMMEs, should have access to information on the key terms of major contracts. In addition, the report from the internal and external auditors must be made widely available to all stakeholders, including construction SMMEs, thus enhancing public scrutiny.

iii. Transparency

An important objective of an effective public procurement system is to achieve transparency (Ambe and Badenhorst-Weiss, 2012). In the context of public procurement, transparency relates to enforcement in a manner that follows procedures. The principle of transparency is the principal factor of the model laws and information on the public procurement process (Horn and Raga, 2012). A transparent procurement process helps to ensure good economic governance. Furthermore, a transparent procurement process provides a more efficient allocation of resources through competition, quality procurement, and cost savings (Oyegoke, 2012). Transparency in construction procurement is necessary for the quest to ensure excellence in the construction business.

To ensure construction SMME participation in public procurement, the procurement system and processes should be transparent. As substantiated by Hu *et al.* (2011), transparency helps to reduce manipulation and abuse in the procurement process. Moreover, Osezua and Julius (2013) suggest that a transparent procurement process ensures that budgeting is conducted with integrity and openness. Hyacinth and Yibis (2017) indicate that public authorities should demonstrate professionalism in public procurement. Efforts to promote transparency in construction procurement should eliminate favoritism, especially at the evaluation stage. Besides this, the methods of awarding contracts should enable bidders and tenders to evaluate objectively.

iv. Accountability

Accountability is another vital feature in public procurement – individuals and entities should be responsible for their actions and decisions. Sibanda, Zindi and Maramura (2020) state that the

principle of accountability requires the SCM official to account for, justify, and accept the responsibility for their actions. However, Auditor-General [South Africa] (AGSA), (2019) reports that accountability in municipal financial management and performance in the South African municipalities has deteriorated. To ensure compliance with this principle, public officials, procurement authorities, and other stakeholders in the public procurement process should be accountable, and if possible, exposed to sanctions as a remedy for any behaviour that contradicts the public procurement rules. Moreover, to enhance accountability in public procurement, the principles of competition, publicity, use of commercial criteria, and transparency should be encouraged.

v. Competitiveness

Section 217 of South Africa's Constitution stipulates that the government should act according to a fair, transparent, equitable, competitive, and cost-effective system when contracting for goods and services. Research shows that competitive bidding leads to competition among suppliers, guaranteeing lower awarding prices due to the lowest-cost bidders' selection (Baldi *et al.*, 2016). Furthermore, it has been argued that competitive bidding minimises informative asymmetries, and encourages bidders to publish their production costs, promote transparency, reducing corruption and political favouritism (Baldi *et al.*, 2016; Tadelis, 2012). Therefore, the model proposes that to ensure fair competitive bidding, construction SMMEs must be allowed to participate in the public procurement.

4.11.2 Hypothesis Development

Hypothesis development details the rationale behind the proposed hypotheses. This study proposes 5 hypotheses. Each construct has hypothesized relationships between the different variables in the conceptual model presented in Figure 4.1.

H1: Value for money has a direct influence on effective public procurement.

H2: Openness has a direct influence on effective public procurement.

H3: Competitiveness has a direct influence on effective public procurement.

H4: Accountability has a direct influence on effective public procurement.

H5: Transparency has a direct influence on effective public procurement.

4.12 Chapter Summary

The chapter reviewed the literature on the public procurement system in South African and other jurisdictions. The literature review revealed that there is no single piece of legislation that exists in South Africa that seamlessly applies to all aspects of public procurement. Instead, several Acts and pieces of legislation regulate procurement practices. Evidence suggests that South Africa is among the few countries to have public procurement subject to its Constitution, and acknowledged as a tool for addressing past discriminatory policies and practices. It has established a procurement regime that gives preferential allocation of contracts to some specific groups of people, such as those previously disadvantaged. The Constitution, PPPFA, PFMA, MFMA, and B-BBEE are the primary laws under which preferential procurement, ‘affirmative procurement’ or ‘targeted procurement’ was implemented. The literature indicates that globally, public procurement is underpinned by five pillars: accountability, openness, transparency, competitiveness, and value for money. Besides the legal frameworks, the literature review demonstrates that effective public procurement is determined through GPP, IPP, and SPP. The GPP represents the process whereby public authorities attempt to purchase goods, services and works with a reduced environmental impact throughout their life cycle compared with goods, services and works with the same primary function that would otherwise be procured. It is argued that the integration of green criteria in local government procurement provides opportunities for improved efficiency, reduced resource use, reduced greenhouse gas emissions, cost savings, and enhanced environmental and social outcomes. On the other hand, SPP represents the process whereby the public procurement system considers and seeks to minimise any negative ecological or sociological externalities throughout the supply chain of the goods or utilities procured. SPP is now widely recognised as a strategic lever to drive innovation and improve the sustainability performance of public and private sector organisations across the globe. Moreover, the literature suggests that IPP is built on evolutionary economics and sees market failures as deliberately created by entrepreneurs to gain a competitive advantage. IPP is seen as a return to state-led industrial development in which governments use the power of public expenditure to create federal markets for suppliers and their innovative products.

The following chapter describes the research design and methodology adopted.

CHAPTER FIVE: RESEARCH DESIGN AND METHODOLOGY

5.1 Introduction

This chapter presents the justification for the research design and methodology adopted. The chapter justifies each research approach adopted to address the research objectives. The chapter commences with the discussion of the research philosophy adopted. It discusses the research design suitable for the study. Furthermore, it addresses the research method that was employed. It provides a summary of the study location, study population, and sampling strategies. Moreover, it explains how the sample size was determined. It also gives an account of the research instrument adopted to collect the data from the respondents. In addition, the justification for conducting a pilot study has been provided. The next section of the chapter explains how data quality control was ensured. It also discusses the data-analysis process. The last section highlights the limitation of the research.

5.2 Research Philosophy

Frankis and Flowers (2009) contend that, when undertaking research, the investigator must first consider the various research paradigms and matters of ontology and epistemology. This assertion underscores the importance of the research philosophy. The scholars point out that research philosophies determine how research is undertaken, from the design to the conclusions. However, the researcher must understand the philosophy underpinning the study before determining the methodologies to be adopted (Flowers, 2009).

Saunders, Lewis, and Thornhill (2009) see research philosophies as the system of beliefs and assumptions concerning knowledge development. Pring (2015) also confirms that a research philosophy is a school of thought leading to the development of knowledge and nature of knowledge concerning a chosen phenomenon. There exist different kinds of research philosophies: positivism, critical realism, interpretivism, constructivism, postmodernism, and pragmatism. The above research philosophies can be classified under various paradigms: epistemology, and ontology (Saunders *et al.*, 2009). As far as this study is concerned, constructivism was adopted.

5.2.1 Constructivism

Adom, Yeboah and Ankrah (2016) observe that the social constructivism is an efficient tool that yields several benefits when adequately adopted in various research fields. According to Honebein (1996), constructivism is an approach that assumes that people construct their understanding and

knowledge of the world through experiencing social events, and reflecting on those experiences. Thus, constructivism is based on the belief that individuals construct knowledge of a social phenomenon through experience. The constructivist philosophy contends that learning does not just occur from the traditional method of teachers standing in front of the class and lecturing. Kalender (2007) advises that constructivism is based on the premise that learning occurs only when the learner discovers the knowledge through the spirit of experimentation and action. Kim (2005) claims that knowledge is constructed through two processes, including accommodation and assimilation. The former involves framing the individual's mental representation of the external world to fit their new experiences. The latter represents the process whereby the individual incorporates the new experience into an already existing framework of old experiences, without changing that framework (Kim, 2005).

Abdal-Haqq (1998) asserts that constructivism is an epistemology, a learning theory that provides an explanation of the nature of knowledge and how people learn. Constructivists focus on the “cultural embeddedness of learning, using the methods and framework of cultural anthropology to describe how learning and cognition are distributed in the” (Duffy 2006:11). As a learning theory, constructivism is relevant to this study, the investigator wanting to provide in-depth knowledge of effective public procurement. The social constructivism philosophical paradigm was chosen because it helps generate knowledge on a social phenomenon, as in this case. Therefore, this philosophical paradigm helps to expand existing knowledge on the South African public procurement system. Constructivism was adopted in this study because it can assist readers, governments, and public procurement experts to construct their understanding and knowledge of effective public procurement. Constructivism was adopted because it allows the researcher to interact with the participants, thus understanding their perception and knowledge of the subject matter, as in this case.

5.3 Research Strategy

Research strategy represents the method adopted when collecting data to help draw realistic deductions (Creswell, 2009). For Sekaran and Bougie (2013), a research strategy represents a comprehensive plan for conducting the research. Likewise, Hayes, Bonner and Douglas (2013) contend that the research strategy allows the researcher to plan and systematically complete the

study. There are various research strategies – the descriptive, explanatory, exploratory, action research, and survey research. This study is underpinned by a descriptive research.

5.3.1 Descriptive research

Siedlecki (2020) refers to descriptive research as an investigation that describes people, events, and situations. With this type of investigation, the researcher does not manipulate all variables – only the variables in the study. Grove, Burns and Gray (2012) observe that descriptive research is used for the following research type: it describes the characteristics of the study population and identifies problems in existing research or within an organisation. Descriptive research provides adequate information about the subject matter being investigated.

The descriptive research was conducted because it enables researchers to describe a particular phenomenon accurately, as in this case. Moreover, a descriptive study was conducted because it offers researchers an opportunity to utilise sophisticated statistics to explain and make meaning of the data collected. In addition, descriptive research was employed in this study because it is commonly conducted through questionnaire administration, and its data analysis involves quantification.

5.4 Research Approaches

There are various kinds of research approach, including the deductive and the inductive approaches. The deductive approach to research was adopted.

5.4.1 Deductive approach

The deductive approach has its origin in positivist research, which is common in the natural sciences (Saunders *et al.*, 2009). The deductive approach is usually used in research to develop theories subject to rigorous testing. Bell, Bryman and Harley (2018) believe that the deductive approach relates to an objective examination of knowledge, law, and theoretical considerations to develop a set of hypotheses. Wilson (2010) also believes that deductive research develops hypotheses based on existing theories.

The deductive approach helped formulate the theoretical framework and then to test it. Furthermore, the deductive approach enabled the researcher to use previous scholarly studies, as suggested by Ihuah and Eaton (2013). Moreover, the deductive method was used because it is more

suitable for quantitative research, as in the case of this study. The deductive approach helped test the correlations between variables in the study. Besides this, the deductive research was the most suitable for this study as it allows researchers to work “from the ‘top-down’, from a theory to hypotheses to data to or contradict the theory” (Creswell and Plano Clark, 2007:23).

5.5 Research Method

Three research methods exist – the qualitative, the quantitative, and mixed methods research. The quantitative research method was selected. This method of research is firmly rooted within scientific research. Quantitative researchers (Connolly, 2007; Bryman and Bell, 2001; Gorard, 2001) argue that quantitative research focuses on collecting and analysing numbers and figures. Allen (2017) observes that quantitative research aims to generate knowledge and understand a phenomenon. Social scientists commonly use this research method to identify phenomena that affect people. Quantitative research was conducted because it saves time and resources. Furthermore, the quantitative research method was the most appropriate for the study because it uses numerical statistical analysis, allowing researchers to either reject the hypotheses or determine the effect size. The study adopted the quantitative research method because it uses sophisticated statistical tools which allow the researcher to compare the effects of independent variables on more groups by analysing changes to the dependent variable. As suggested by Creswell (2005), this method of investigation allows the researcher to analyse data from a sample and then draw conclusions about an unknown population. Compared with other research methods, quantitative research was more suitable for this study in the sense that the findings can be generalised. Besides this, quantitative research was chosen because it produces objective data that can be communicated through statistics and numbers.

5.6 Location of the Study

The study took place in KwaZulu-Natal (KZN), Gauteng, and the Western Cape. The study was conducted among institutions such as Department of Public Works (DPW), CIDB, the Business Chamber, the Business Council Procurement Institute, the Built Environment Council and the Progressive Professionals Forum (PPF). The DPW is a state-owned enterprise that aspires to be a world-class public works department. The department aims to promote the government’s economic development objectives, good governance, and raising of living standards and prosperity (Nxesi, 2017/18). In pursuit of the primary objective of the department, the DPW seeks to: manage

efficiently the life cycle of immovable assets under its custodianship; provide expert advice to all three spheres of government and state-owned entities on immovable assets; contribute to the national goals of job creation and poverty alleviation; and provide strategic leadership to the construction and property industries. The department has offices across all the provinces; however, the study was conducted in Durban and Pietermaritzburg. These offices were selected for convenience and for access to sufficient information.

The CIDB is a statutory body established under the executive authority of the Department of Public Works and Infrastructure (DPWI). In line with the Construction Industry Development Board Act 38 of 2000, the CIDB is mandated with the following primary functions: provide strategic leadership to construction industry stakeholders; develop effective partnerships for growth, reform and improvement of the construction sector; promote sustainable growth of the construction industry and the participation of the emerging sector in the industry; determine, establish and promote improved performance and best practice of public and private sector clients, contractors and other participants in the construction delivery process; promote the uniform application of policy throughout all spheres of government; promote uniform and ethical standards, construction procurement reform, and improved procurement and delivery management; and develop systematic methods for monitoring and regulating the performance of the industry and its stakeholders (CIDB, 2021/22).

The South African Business Chamber was established as the voice and pre-eminent business chamber organisation in offering superior value to all stakeholders. The Chamber lobbies for and represents the collective interests, domestic and foreign, of South African businesses. Its primary goal is to effectively protect and promote the interests of business (Keith, 2011). The Business Chamber functions as an intermediary between individual firms and local role players, including the local government. The Business Chamber plays a vital role in ensuring collaboration with local government through conveying resources, knowledge and experience to the local economy; assisting in the de-politicising of the economic development process and projects; assisting with achieving consensus between partners; facilitating the increased understanding of the local economy, and in including impoverished and informal groups to ensure a pro-poor focus (Flint, 2014; Swinburn, 2006).

The Procurement Institute is the world's largest procurement and supply professional organisation. The Institute has a global community of 103,000 in 150 different countries, including senior business people, high-ranking civil servants and leading academics. It offers corporate solutions packages to improve business profitability. Moreover, the Procurement Institute helps organisations worldwide to excel in procurement and supply. Although the Institute has offices in various countries, the study was conducted at the South African branch.

The Built Environment Council is a statutory body established under the Council for the Built Environment Act 43 of 2000. The Council is located in Pretoria, which coordinates six councils for the Built Environment Professions – Architecture, Landscape Architecture, Engineering, Property Valuers, Project and Construction Management, and Quantity Surveying. The Built Environment Council has the following mandate: promote and protect the interests of the public in the built environment; promote and maintain a sustainable built environment and natural environment; promote ongoing human resources development in the built environment; facilitate participation by the built environment professions in integrated development in the context of national goals; promote appropriate standards of health, safety and environmental protection within the built environment; promote sound governance of the built environment professions; promote liaison in the field of training in the Republic and elsewhere; and promote the standards of such training in the Republic.

The PPF was launched in August 2013 in Johannesburg, South Africa. It was established because it was felt that the intellectual power base of South Africa is grossly under-utilised; the middle class is not contributing as much as it is capable of, and as often as it should towards building our country and developing its people; diversity of opinions are more effective in an inclusive framework; the other professional bodies are more developmental and inward focussed and are therefore restricted concerning the role that they can play in society at large; there are several reasons for the choice of these institutions. The PPF is a non-racial, non-sexist, and non-xenophobic organisation of progressive professionals, academics, intellectuals and patriotic entrepreneurs subscribing to the values of the Freedom Charter and the Constitution of South Africa and who are the think tank and resource base of South Africa in the realisation of the country's developmental goals through policy, research and advocacy. The primary objectives of the PPF are to: provide a platform for all professionals to stimulate intellectual debate on the

progressive agenda; enable continuous interactions between various progressive formations and professionals; leverage and harness the capacity of professionals to engender an inclusive economic growth; seek mechanisms to ensure that the public discourse in the country is balanced and progressive, thereby promoting the patriotism of its citizens; and to influence policy through well-researched submissions and focused advocacy.

5.7 Target Population

A target population represents the individuals that a researcher is interested in (Trochim, 2006). For Sekaran and Bougie (2013), population refers to a group of people, events, situations, or things the researcher wants to investigate. Therefore, in this study, the target population represents the respondents from which the research wants to draw inferences. The target population of the study was approximately 400, including employees, managers, directors, and government officials in the participating organisations. Table 5.1 describes the categories of the study population.

Table 5.1 Categories of the Study Population

Category of the population	Size of the population
Public Works Sector	150
CIDB	100
Business Chamber	30
Business Council	30
Procurement Institute	50
Built Environment Council	20
Progressive Professionals Forum	20
Total Population	400

Source: Owner's Compilation

5.8 Sampling Techniques

Sampling refers to the process of choosing a certain portion of an aggregate or totality based on which a judgement or inference about the aggregate or totality is made (Haque, 2008). In other words, sampling involves obtaining information from the study population by examining only one aspect of it. Sampling techniques can be classified into two categories: probability and non-probability sampling. The study utilised only the probability sampling technique.

5.8.1 Probability Sampling

Etikan, Alkassim and Abubakar (2016) argue that the probability sampling provides a known non-zero chance of selection from each population element. The simple random sample is considered a special case in which a population has a known and equal chance of selection. Thus, probability sampling allows each element of the population an equal opportunity of being included in a survey. Probability sampling applies various techniques such as systematic, stratified, cluster and simple random sampling. However, the stratified sampling method was utilised to select the respondents for this study.

Etikan and Bala (2017) suggest that stratified sampling helps to draw a representative sample from a non-homogeneous group. Stratified sampling is more useful in selecting a representative sample of the population. Stratified sampling is used to divide the study population into strata, in which a sample is then drawn from each stratum (Sekaran and Bougie, 2013). Odoh (2015) also confirms that stratified sampling allows the researcher to segregate the study population into various sub-populations. This sampling technique allowed the researcher to subdivide the population in the participating organisations into different groups. Thereafter, simple random sampling was used to select a representative sample from each subgroup (Bryman 2014; Wilson, 2011). This helped to ensure that each unit of the population was adequately represented in the study (Wilson, 2011).

The usefulness of stratified sampling in this study is that it helped to ensure the representativeness of the sample. Thus, the stratified sampling technique was chosen because it ensures that every unit of the population is adequately represented in the study. Besides that, stratified sampling was chosen because it helps in eliminating bias that is associated with the selection of the sample. Moreover, stratified sampling was selected due to the categorisation of the population into the various organisations. Also, stratified sampling was most appropriate for this study because it allows the researcher to segregate the population into mutually exclusive and exhaustive subgroups. This allowed every unit of the population to be classified into one subgroup. In addition, a stratified sampling technique was used because it ensures a similar variance of the data collected from each subgroup.

5.9 Sample Size

A sample size represents a fraction of the sample frame chosen for inclusion in specific research (Sekaran and Bougie, 2013). This implies that the sample size is obtained from the sample frame but not the study population. A sampling frame is the source material or device from which a sample is drawn. According to Teo, Tsai and Yang (2013), the sample size may significantly impact the model fit in structural equation modelling (SEM) analysis and model testing. The SEM was used to evaluate the structural component of the proposed model in the study, owing to its enhanced sensitivity in the sample size coupled with its reduced stability when estimated from a small sample size (Tabachnick and Fidell, 2013). Determining an adequate sample size in the use of SEM is a subject of debate (Leedy and Ormrod, 2010). While some studies suggest large sample sizes, others argue that less than a hundred cases could be used to achieve a satisfactory result (Teo et al., 2013). However, it is suggested that the sample size for SEM should be at least 200 cases (Tabachnick and Fidell, 2013). In this study, to determine the sample size, the 95% confidence level was chosen, with the margin of error at 5%. Given the total population, a sample size of 250 was selected but 229 were used for the analysis. Table 5.2 presents detailed information on the sample size in each of the organisations.

Table 5.2: Distribution of the Sample Size in the Various Organisations

Category of the population	Size of the population
Public Works Sector	40
CIDB	60
Business Chamber	30
Business Council	30
Procurement Institute	50
Built Environment Council	20
Progressive Professionals Forum	20
Total Population	250

In this study, certain criteria were used to select the samples for the study. A vital inclusion criterion used was that the scope of the study was limited to the employees, managers, directors, business owners and government officials in the participating organisations. In addition, the study included only participants who had more than two years of working experience in each of the

selected organisations. Besides that, the study was limited to participants who had adequate knowledge and experience of an effective public procurement policy.

The following recruitment procedures were employed to select the respondents. Firstly, written approval was obtained from the participating organisations and from the University of KwaZulu-Natal Research and Ethics Committee. Secondly, the respondents were contacted via email for participation in the study. Thirdly, the consent form was sent to the respondents to seek their voluntary participation in the study. Lastly, the questionnaire was sent to the respondents who agreed to participate in the study.

5.10 Questionnaire Survey Instrument

The questionnaire was the primary data-collection instrument used in this study. Questionnaires contain a set of items designed to elicit useful information from the respondents in a study in relation to the subject matter under investigation (Sekaran and Bougie, 2013). There are two main kinds of questionnaires, namely, open and close-ended questions. In this study, the latter questionnaire type was designed and administered to the respondents. The questionnaires were constructed in both the English language and isi-Zulu. The questionnaire was constructed from literature reviews which relate to the subject matter. The self-constructed questionnaire was validated prior to the data collection. The questions were brief, clear, simple, and precise. Ambiguous questions that were most likely negatively to affect the response rate were discarded. Also, statisticians were consulted on the questionnaire designed.

The questionnaire survey questions were constructed based on the following objectives:

1. To determine the level of performance of the existing procurement models in the construction industry
2. To identify the factors that influence sustainable public procurement for SMMEs in the construction industry
3. To evaluate the challenges to the adoption of sustainable public procurement practices in the construction industry
4. To develop a sustainable public procurement model for SMMEs in the construction industry
5. To determine the goodness of fit of the hypothesized model.

5.11 Reliability and Validity

Reliability and validity are the essential tools for measuring data quality in quantitative research. Sekaran and Bougie (2013) state that reliability determines the consistency of the measuring instrument when adopted. Sürücü and Maslakçi (2020) contend that reliability assesses the stability of the measurement tool and research findings repeated over time. To determine the reliability of the questionnaire, the investigator first conducted a pilot study among 10 respondents. This helped determine the consistency, ease of understanding, and question sequence appropriateness. Furthermore, the reliability of the pre-test was determined using Cronbach's alpha (α). The Cronbach's coefficient alpha assesses the internal consistency of a scale. The internal consistency determines the extent to which all the items in a test measure the same concept, and hence it is linked to the inter-relatedness of the items within the test. Research (Bland and Altman, 1997, DeVellis, 2003) suggests various reports concerning the acceptable alpha values, ranging from 0.70 to 0.95. For this research, the Cronbach's alpha value of 0.700 and above was considered reliable, while the score below 0.70 was deemed not reliable.

On the other hand, the validity concerns the degree to which the research instrument assesses what it is designed to measure (Sekaran and Bougie, 2013; Robson, 2011). The content validity was adopted to determine the validity of the measuring instrument. Bollen (1989) argues that the content validity measures whether the expressions in the research instrument reflect the phenomenon to be measured. Thus, content validity assesses whether each item in the research instrument serves its intended purpose. Furthermore, factor analysis was computed to evaluate the validity of the questionnaire. Factor analysis is a multivariate statistical tool for reducing several variables into a smaller set of variables (Thompson, 2004; Gorsuch, 1983).

There are different types of factor analysis, including exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and principal components analysis (PCA). However, EFA and CFA were used in this study. The EFA was first computed and then followed by CFA. EFA is a statistical analysis technique that operates by evaluating the factorial structure of measuring an instrument through data reduction (Byrne, 2010; Laher, 2010; Matsunaga, 2010). EFA was used to determine the coherence of subsets of data independent of one another in this study. Moreover, it helped to reduce the number of variables in the study.

To achieve a reliable EFA, the adequacy of the sample sizes was determined. Kaiser Meyer Olkin (KMO) was employed to measure the sample adequacy, which ranges from 0 to 1, reaching 1 when each variable is perfectly predicted without experiencing any error, where: ≥ 0.80 (meritorious); ≥ 0.70 (middling); ≥ 0.60 (mediocre); ≥ 0.50 (poor); < 0.50 (unacceptable) (Williams, Onsman and Brown, 2010). According to the rule of thumb, the KMO score must be greater than 0.70 (Bucci, Luna, Vilorio, García, Parody, Varela and López, 2018). The Bartlett's test should be significant with significance values less than 0.05. The eigenvalues explain the total variance that the value is greater than 1.0 which interprets as common criteria for factors to be used. In the event that the eigenvalues are lower than 1.0.

5.12 Pilot Study

Maldaon and Hazzi (2015) contend that a good pilot study provides the road map for the study. Before the survey, the questionnaire was pretested through a pilot study. A pilot study aims to guide the planning of a study (Thabane, Ma, Chu, Cheng, Ismaila, Rios and Goldsmith, 2010). It is a risk-mitigation strategy aimed at minimising the failure of a large-scale investigation. Cope (2015) states that a pilot study helps identify the potential problems that require a solution prior to a large-scale investigation. Eldridge, Lancaster, Campbell, Thabane, Hopewell, Coleman and Bond (2016) advocate that a pilot study helps determine the feasibility of a particular research. Doody and Doody (2015) also agree that a pilot study can be conducted to determine the methods, feasibility, and procedures of the investigation.

The pilot study was conducted among 10 participants from public works, CIDB, and Procurement Institute. These participants were excluded from the final sample. The pilot study lasted for five days, from 23 July 2020 - 28 July 2020. Having completed the pre-testing, the researcher considered all the participants' views and suggestions in the final draft of the research instruments. For example, the initial questionnaire does not include questions/items on effective public procurement and principles of public procurement. The Cronbach's alpha and factor analysis were used to test the reliability and validity of the questionnaire. Table 5.3 and 5.4 demonstrate the results of the pilot study.

Table 5.3: Reliability: Cronbach's Alpha Coefficient

Variables	Number of Items	Number of Items Deleted	Cronbach's Alpha
Level of performance	21	2	0.824
Access to finance 1	3	1	0.921
Human resource management	15	N/A	0.799
Regulatory framework	7	N/A	0.724
Supply chain management	13	N/A	0.811
Quality management	7	N/A	0.712
Openness	4	N/A	0.800
Accountability	8	N/A	0.744
Transparency	6	N/A	0.913
Competitiveness	4	N/A	0.704
Value for money	10	N/A	0.846

The information from Table 5.3 shows that the Cronbach's alpha scores range from 0.704 (for competitiveness) to 0.921 (for access to finance). Statistically, the instrument used to collect the data was reliable, hence it can be adopted by a researcher in a similar study. Table 5.4 shows the results of the KMO and Bartlett's Test.

Table 5.4: Validity: Kaiser-Meyer-Olkin and Bartlett's test

KMO Measure of Sampling Adequacy	0/921
Bartlett's Test of Sphericity: Approx. Chi-square	9369.074
df	862
sig	0.000

As reflected in Table 5.4, the results of the measure of sampling adequacy (MSA) were 0.921 (outstanding). This implies that the data set complied with the requirements of sampling adequacy and sphericity for EFA to be performed.

5.13 Measurement Scale

The Likert scale is a set of statements that enables the respondents to indicate the level of their agreement or disagreement with a given statement on a metric scale (Likert, 1932). Thus, a Likert

scale provides a range of responses to a statement or series of statements (Croasmun and Ostrom, 2011). Researchers often prefer to use a 5-point Likert scale, ranging from 5 = strongly agree to 1 = strongly disagree with a 3 = neutral type of response (Jamieson, 2004). However, scholars have argued about the optimal number of choices in a Likert-type scale (Cohen, Manion and Morrison, 2000; Symonds, 1924). The authors prefer scales with 7 items or an even number of response items. This implies that the optimal reliability is with a 7-point scale. By contrast, Guilford (1954) believes that the optimal number of categories is a matter of empirical determination depending upon the situation. Mattel and Jacoby (1971) also expressed a similar view that the number of scale points used for the items does not affect the reliability and validity of the research instrument. Nevertheless, this study employed a 10-point scale in which 1 = 10%, 2 = 20%; 3 = 30%; 4 = 40%; 5 = 50%; 6 = 60%; 7 = 70%; 8 = 80%; 9 = 90%; and 10 = 100%. According to Preston and Colman (2000), respondents prefer the 10-point scale, closely followed by the 7-point and 9-point scales. The points scale was adopted because it is more useful when developing a conceptual model, as in this case.

5.14 Data Analysis

Data analysis consists of several steps to ensure the coding and categorisation of data. Data analysis can be either bivariate, multivariate, or univariate. The bivariate analysis seeks to establish a relationship between two variables, while multivariate analysis provides a concurrent analysis of three or more variables (Hair et al., 2010; Bryman and Bell, 2011). The univariate analysis focuses on one construct at a time and often in the form of a histogram, the measure of central tendency, dispersion, and frequency tables. The multivariate, bivariate, and univariate analyses were adopted because the research considered several research variables. The data was analysed using the Statistical Package for Social Sciences (SPSS), version 27, and analysis of moment structures (AMOS), version 27.

According to Ong and Puteh (2017), SPSS performs the comparison and correlational statistical tests in the univariate, bivariate, and multivariate analysis for parametric and non-parametric statistics. Gogoi (2020) opines that the SPSS explores technical data relevant to social science. Bala (2016) contends that the SPSS provides a simple solution for the investigator to examine the complex statistical data in a descriptive method by presenting data in numerical forms. On the other hand, AMOS is a statistical software package for social sciences analyses applying structural

equation models (SEM) or covariance structure models. The SPSS was used to compute descriptive and inferential statistics, while AMOS was used for the SEM.

i. Frequency distribution

A frequency distribution is the tabular representation of a survey data set used to organise and summarise the data (Lavrakas, 2008). It is a list of either qualitative or quantitative values that a variable takes in a data set, and the relevant number of times each value occurs. Frequency distribution tables were used to display the data set which emerged from the field study. Frequency was used in this study because it is an important area of statistics that deals with the number of occurrences (frequency) and percentages. Thus, frequency provides an adequate description of the number or percentage of respondents who respond to a particular statement.

ii. Mean

Mean is the arithmetic average of a set of given numbers. Mathematically, it is the summation of each observation divided by the total number of observations. The formula for calculating the mean score is stated as follows:

$$\bar{X} = \frac{\sum X}{n}$$

where: \bar{X} = mean;

\sum = summation;

X = each observation;

N = total number of observations.

In this study, the mean is useful as a comparison between the groups.

iii. Standard deviation

The standard deviation (SD) compares the extent to which the data set value for a variable is spread around the mean value (Saunders et al., 2009). Moreover, it shows the dispersion of individual observations about the mean. It characterises the typical distance of an observation from the distribution centre or median value (Barde and Barde, 2012).

iv. Reliability – Cronbach's alpha coefficient

As already described above, the reliability of the measuring instrument was determined using the Cronbach's alpha coefficient, developed by Lee Cronbach (1951) to assess the internal consistency of a scale (Tavakol and Dennick, 2011). The alpha coefficient explains the degree to which all the

items in a test measure the same concept, and hence it is linked to the inter-relatedness of the items within the test. It is suggested that it range between 0.70 and 0.95. The Cronbach's alpha coefficient of 0.700 and above was considered reliable in this study.

v. Validity – Factor analysis

Validity means that the measurement is accurate. In other words, validity establishes the accuracy of any prescribed variable (Muijs, 2010). There are four types of validity: face validity, criterion validity, content validity, or construct validity. However, the content validity was employed to determine whether the research instrument really does measure the concept said to be measured in the study. As described above, EFA was used to reduce the number of variables in the study. Moreover, KMO was employed to measure the adequacy of the sample size.

vi. Confirmatory factor analysis

Confirmatory factor analysis (CFA) determines whether a hypothetical factor structure fits the covariance structure observed for the variables measured (Floyd and Widaman, 1995; Jöreskog, 1967, 1971). Similarly, Joseph, Marko, Torsten and Christian (2012) confirm that the CFA is used to verify the factor structure of a set of observed variables. Thus, CFA is driven by theory, consolidating itself as a statistical tool for testing explicit hypotheses in a given theoretical model. CFA was used to determine goodness-of-fit indexes.

vii. Normality tests

Elliott and Woodward (2007) explain that normality tests are supplementary to the visual assessment of normality. There are various tests for assessing normality, including the Kolmogorov-Smirnov (K-S) test (Öztuna, Elhan and Tüccar, 2006), the Lilliefors corrected K-S test (Elliott and Woodward, 2007; Altman and Bland, 1996), the Shapiro-Wilk test (Elliott and Woodward, 2007; Altman and Bland, 1996), the Anderson-Darling test (Elliott and Woodward, 2007), Cramer-von Mises test (Elliott and Woodward, 2007), the D'Agostino skewness test (Elliott and Woodward, 2007), the Anscombe-Glynn kurtosis test (Elliott and Woodward, 2007), the D'Agostino-Pearson omnibus test (Elliott and Woodward, 2007), and the Jarque-Bera test (Elliott and Woodward, 2007). The K-S and Shapiro-Wilk tests were conducted using the SPSS Explore procedure. The K-S test is used for large sample sizes greater than 50 ($n \geq 50$), whereas the Shapiro-Wilk test is used for small sample sizes ($n < 50$ samples), although it can also be applied

to larger samples. The K-S test was used to compare the distribution of random samples. Moreover, the K-S test was used to check normal distribution of the results. On the other hand, the Shapiro-Wilk test was employed to test the normal distributions.

viii. Structural equation modelling

Structural equation modelling (SEM) is a statistical tool that is employed to confirm theoretical models (Kaplan, 2000). It analyses the explanatory correlations simultaneously between multiple variables, whether latent or observed. It tests the effects of moderation, mediation, moderation-mediation and indirect effects (Vieira, 2009). SEM compares diverse competing models (Ahmad, Waqas, Waheed and Farooq, 2017). Moreover, it helps to display the mean, standard deviation, variance, and covariance of observed data to determine hypotheses in the conceptual model. The SEM not only performs the confirmatory test of the psychometric structure of measurement scales; it can also be used to analyse explanatory relationships simultaneously between multiple variables. The SEM was employed to test the link between the variables in the proposed model.

5.15 Chapter Summary

The chapter discussed the empirical conducting of the study. The constructivist philosophical paradigm was used to assist the respondents in constructing understanding and knowledge of the research phenomenon. Moreover, the descriptive research was conducted to help describe the research subject matter accurately. In addition, the study employed the deductive research to help develop hypotheses based on an existing theory. The study adopted the quantitative research method to generate knowledge and create understanding on effective public procurement. The study was conducted in some selected organisations within South Africa, including the National and Provincial Treasuries, the National and Provincial Public Works sector, the National and Provincial Transport sector, the CIDB, the DTI, the Department of Economic Development, the Procurement Institute, the National Productivity Institute, SEDA, MBF, PPF, the Business Council, the Contractor Forum, the Business Chamber, Contractor Incubators, DBSA, the Black Economic Council, the ANC, PRASAA, and ESKOM. The target population was 400; however, 250 was selected as the sample size, per stratified sampling. The primary data collection used was the questionnaire. A pilot study was first carried out among 10 respondents from the Department of Public Works to determine the reliability and validity of the questionnaire. The data was analysed with the help of SPSS and AMOS. The former was used to compute descriptive and

inferential statistics, while AMOS was used to compute the SEM. The following chapter presents the results of the study.

CHAPTER SIX: DATA PRESENTATION AND ANALYSIS

6.1 Introduction

The previous chapter described the research design and methodology adopted. This chapter presents and analyses the results of the study. The response rate was credible because much effort was devoted to the data-collection process. The results are presented in accordance with the stated objectives of the study, namely: to determine the level of performance of the existing procurement models in the South African construction industry; to identify the factors that influence effective public procurement for SMMEs in the South African construction industry; to evaluate the challenges to the adoption of effective public procurement practices in the South African construction industry; to develop an effective public procurement model for SMMEs in the South African construction industry; and to determine the goodness of fit of the hypothesised model. As described above, SPSS and AMOS were to analyse the data.

6.2 Descriptive Analysis

The demographic background of the respondents is presented in this section. To understand the nature of the data, descriptive statistics were used to analyse the data. The data was presented in the form of percentages, means, and standard deviations.

9.2.1 Response rate

Hair *et al.* (2010) recommends a sample size of not less than 100 and a minimum of 5 times the number of variables as an appropriate sample size for factor analysis. Kline (2015) suggests a sample size of 200 as acceptable for structural equation modelling (SEM). The instrument applied for the data collection was the questionnaire. Two hundred and fifty (250) questionnaires were distributed to the respondents. Of 250, only 230 questionnaires were retrieved from the respondents. However, 1 of the questionnaires was incomplete, hence was not captured in the study. The 229 questionnaires accounted for a 91.6% response rate.

9.2.2 Demographic statistics

Table 6.1 shows the demographic statistics of the respondents. There were 94 women (41%) in the sample. As presented in Table 6.1, 38.9% of the respondents were 31-40 years old, another 33.6% were 41-50 years old, and 17.5% were 20-30 years old. Most respondents were African (50.2%), followed by Indian (17.9%), Coloured (16.6%), and White (15.3%). The findings implied that most of the workforce in the participating organisations was African. Most respondents had a master's degree (28.8%), followed by those with honours/BTech (27.1%) and bachelor's degrees (18.3%).

Table 5.1 suggests that 28.8% of the respondents had 2-5 years of work experience in their organisations; 25.8% of the respondents had 11-15 years of work experience; 23.6% had 6-10 years of work experience; and 21% had less than 2 years of work experience. The analysis above shows that the median work experience for respondents was from 6-10 years (23.6%). The findings suggest

that 24% of the respondents were owners of SMMEs, followed by 23.1% (workers), 13.1% (managers), and 10% (partners). The findings indicated that respondents were from CIDB (23.1%), which was then followed by the Procurement Institute (18.3%), the Department of Public Works (12.7%), the Business Council (12.2%), the Business Chamber (10.9%), and the Built Environment Council (10.9%), respectively.

Table 6.1: Demographic Distribution

Gender	Frequency	Per cent (%)
Male	135	59
Female	94	41
Age		
20-30 years	40	17.5
31-40 years	89	38.9
41-50 years	77	33.6
51-60 years	21	9.2
61 years and above	2	0.9
Population Group		
African	115	50.2
Indian	41	19.9
Coloured	38	16.6
White	35	15.3
Level of Education		
Diploma	18	7.9
Postgraduate Diploma	19	8.3
Bachelor’s Degree	42	18.3
Honours/BTech	62	27.1
Master’s	66	28.8
Doctorate	19	8.8
Other	3	1.3
Work Experience		
< 2 years	48	21.0
2-5 years	66	28.8
6-10 years	54	23.6
11-15 years	59	25.8
16-20 years	2	0.9
Positions		
Owner	55	24.0
Partner	23	10.0
Manager	30	13.1
Worker	53	23.1
Construction manager	10	4.4
CFO or Head of SCM	15	6.6
Procurement experts	14	6.1
Built Environment professional	8	3.5
Accounting officer	9	3.9
Member of middle management	12	5.2
Organisations		
Public Works Sector	29	12.7
CIDB	53	23.1
Business Chamber	25	10.9
Business Council	28	12.2
Procurement Institute	42	18.3
Built Environment Council	25	10.9
Progressive Professionals Forum	17	7.4
Other	10	4.4

6.3 Descriptive Statistics and Normality Test

As described in the previous chapter, descriptive (means and standard deviation) and normality tests (K-S and Shapiro-Wilk tests) were used to make meaning of the data.

9.3.1 Level of performance of the existing procurement models

Respondents were required to provide their perception of the level of performance of public procurement. Table 6.2 shows the descriptive result and normality test for the responses. The analysis revealed that the item “*The GPP focuses primarily on recycling*” with a mean score of 3.84 had the highest level of performance. The statistics showed that the item “*The public procurement system in place encourages electronic submission of bids*” had the lowest performance. As shown in Table 6.2, the K-S and Shapiro-Wilk tests indicated a non-normal distribution at 0.000 for all the variables. The maximum likelihood estimation with robust standard errors and chi-square was used to account for the non-normal distribution of data.

Table 6.2: Level of Performance of the Existing Procurement Models

Innovative Public Procurement		Mean	Std.dv	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
				Stat	Df	Sig	Stat	Df	Sig
IPP1	There exist innovative-friendly regulations on the public procurement system in South Africa	3.33	1.733	.244	229	.000	.841	229	.000
IPP2	The innovative public procurement system ensures simplification and easier access for tender procedures	3.55	1.846	.162	229	.000	.924	229	.000
1PP3	There exist high-level strategies and practices to ensure innovative public procurement	3.56	1.883	.181	229	.000	.923	229	.000
1PP4	The procurement entities provide training schemes, guidelines, and good practices networks to support public procurement	3.56	1.795	.199	229	.000	.915	229	.000
1PP5	The procurement entities ensure that there is a subsidy for additional costs of innovative public procurement	3.38	1.659	.153	229	.000	.922	229	.000
1PP6	The procurement entities have developed innovative platforms to bring suppliers and users together	3.52	1.939	.165	229	.000	.911	229	.000
1PP7	The procurement entities have introduced innovative requirements in all tenders	3.53	2.023	.166	229	.000	.918	229	.000
Green Public Procurement									
GPP1	The public procurement system in place encourages electronic submission of bids	3.17	1.755	.163	229	.000	.903	229	.000
GPP2	The green public procurement system considers environmental sustainability	3.61	2.153	.179	229	.000	.894	229	.000
GPP3	The public system encourages organisations to adopt green product certifications	3.24	1.893	.170	229	.000	.881	229	.000
GPP4	The green product certification in the public procurement system encourages the use of green products	3.58	2.028	.166	229	.000	.909	229	.000
GPP5	The green public procurement focuses primarily on recycling	3.84	2.093	.153	229	.000	.932	229	.000
GPP6	The green public system reduces costs and liabilities	3.81	2.303	.170	229	.000	.913	229	.000
GPP7	The green public procurement helps to minimise the impact on the environment	3.65	2.370	.249	229	.000	.794	229	.000
Sustainable Public Procurement									
SSPP1	The public procurement policies and regulations encourage sustainable public procurement	3.38	1.949	.172	229	.000	.881	229	.000

SPP1	Sustainable public procurement allows procurement authorities and organisations to use a life-cycle analysis to evaluate the environmental friendliness of products and packaging	3.41	1.991	.197	229	.000	.895	229	.000
SPP3	Sustainable public procurement laws and policies require suppliers to commit to waste-reduction goals	3.66	2.083	.188	229	.000	.896	229	.000
SPP4	Sustainable public procurement reduces packaging materials	3.70	2.020	.152	229	.000	.923	229	.000
SPP5	Sustainable public procurement ensures that suppliers operate in a safe manner	3.69	2.163	.172	229	.000	.917	229	.000

6.3.2 Challenges to the adoption of effective public procurement

Respondents were required to provide their perceptions of their experiences of procurement challenges. Table 6.3 shows the descriptive statistics. The analysis revealed that the item “*the procurement process does not ensure availability of correct bid documents and returnable documents*” with a mean score of 4.05 was the most-experienced challenge. The statistics showed that the item “*there was no easy access to finance from financial institutions*” mean score = 2.51 was the least-experienced challenge. The results implied that access to finance was one of the greatest challenges facing South African construction SMMEs.

Table 6.3: Procurement Challenges

		Mean	Std.dv	Kolmogorov-Smirnova			Shapiro-Wilk		
				Stat	Df	Sig	Stat	Df	Sig
	Finance Challenges								
ATF1	There is no easy access to finance from financial institutions	2.51	1.33	.333	.225	.000	.642	225	.000
ATF2	There is not enough collateral security as a guarantee for loan/credit facilities from the financial institutions	2.86	1.39	.191	225	.000	.874	225	.000
ATF3	Up-to-date records of all financial and business transactions are not maintained	3.46	1.89	.201	225	.000	.860	225	.000
ATF4	Lack of knowledge and expertise to produce an acceptable business plan to meet the standards required by financial institutions	3.90	5.11	.328	225	.000	.258	225	.000
AFT5	SMMEs are not able to generate sufficient cash flow to repay loans	3.44	1.93	.173	225	.000	.885	225	.000
AFT6	SMMEs are not able to gain access to a competitive market	3.60	1.77	.218	225	.000	.915	225	.000
AFT7	SMMEs do not have access to procurement opportunities from government institutions	3.45	1.88	.137	225	.000	.891	225	.000
AFT8	The government does not ensure that emerging construction contractors are paid timeously	3.38	1.70	.179	225	.000	.917	225	.000
AFT9	SMMEs do not have better understanding on when competition of tender documents	3.61	1.89	.189	225	.000	.907	225	.000

AFT10	Competitive pricing among construction SMMEs in the market are non-existent	3.49	1.85	.169	225	.000	.916	225	.000
AFT11	SMMEs do not have better understanding of public procurement	3.77	2.05	.155	225	.000	.912	225	.000
AFT12	SMMEs encounter crime and corruption	3.41	2.01	.183	225	.000	.903	225	.000
Human Resource Challenges									
HR1	SMMEs have insufficient numbers of people to assist in the running of the business	3.64	2.04	.222	225	.000	.899	225	.000
HR2	SMMEs lack human capital required to compete for public procurement	3.55	1.93	.174	225	.000	.900	225	.000
HR3	SMME workforce have no relevant skills and competencies required to effectively carry out their responsibilities	3.70	2.04	.182	225	.000	.840	225	.000
HR4	Opportunities for training and development for employees working in SMMEs do not exist	3.74	2.03	.174	225	.000	.855	225	.000
HR5	I do not consider investing in training and developmental needs of the workforce	3.57	1.80	.240	225	.000	.859	225	.000
HR6	SMME owners do not have the competencies and skill to effectively run their businesses	3.21	2.10	.189	225	.000	.868	225	.000
HR7	SMME owners do not have minimal education qualifications and experience to run their business more effectively and efficiently	3.19	1.89	.174	225	.000	.898	225	.000
HR8	SMME owners do not have adequate supervision skills	3.51	2.05	.170	225	.000	.868	225	.000
HR9	SMME owners are not able to increase their employees' morale	3.70	2.16	.179	225	.000	.898	225	.000
HR10	SMMEs are unable to increase their productivity	3.73	2.06	.181	225	.000	.900	225	.000
HR11	SMMEs are unable to eliminate employee idleness on site	3.87	2.10	.199	225	.000	.903	225	.000
HR12	Employees working in the SMMEs are not aware of what is required of them	3.87	2.17	.175	225	.000	.913	225	.000
HR13	There is a high possibility for employee strike action in SMMEs	3.74	2.09	.179	225	.000	.912	225	.000
HR14	Employee absenteeism in SMMEs is very high	3.50	2.84	.164	225	.000	.888	225	.000
HR15	The human errors/mistakes arising from business transactions and operations in SMMEs are high	3.60	1.92	.159	225	.000	.925	225	.000
Regulatory Frameworks									
RF1	SMME owners are aware of government regulatory frameworks that impact on construction SMMEs	3.59	2.10	.151	225	.000	.915	225	.000
RF2	SMMEs owners have better understanding of the government regulatory frameworks that govern the construction industry	3.61	2.15	.198	225	.000	.901	225	.000
RF3	Government regulations governing the construction industry are flexible enough to ensure compliance	3.72	1.98	.159	225	.000	.928	225	.000

RF4	SMMEs are able to comply with all the regulatory frameworks that govern the construction industry	3.50	1.94	.176	225	.000	.893	225	.000
RF5	Government regulatory frameworks promote the prospects for enterprise development in South Africa	3.60	2.00	.162	225	.000	.921	225	.000
RF6	Construction SMME owners do not find it easy to obtain their registration licence	3.37	1.95	.209	225	.000	.878	225	.000
RF7	There are penalties imposed on construction SMMEs for non-compliance with government regulatory frameworks	3.47	2.02	.128	225	.000	.909	225	.000
Supply Chain Management Challenges									
SCM1	SMMEs owners do not have adequate understanding of government policies and regulations on supply chain management	3.74	2.07	.186	225	.000	.881	225	.000
SCM2	SMMEs are unable to comply with SCM prescripts as set out by supply chain management policy	3.77	2.08	.151	225	.000	.909	225	.000
SCM3	The public procurement process and system do not ensure correct utilisation of preference points	3.62	1.92	.255	225	.000	.861	225	.000
SCM4	Passing over bids for incorrect reasons is eliminated in the procurement system	3.29	2.01	.172	225	.000	.893	225	.000
SCM5	There is availability of bid information on the bid register during the procurement process	3.43	2.15	.227	225	.000	.860	225	.000
SCM6	Ambiguous specifications in the public procurement process are eliminated	3.58	1.97	.155	225	.000	.923	225	.000
SCM7	The procurement process ensures availability of correct bid documents and returnable documents	4.05	2.16	.179	225	.000	.901	225	.000
SCM8	The procurement authorities and practitioners have knowledge of PP	3.84	2.07	.168	225	.000	.925	225	.000
SCM9	The procurement authorities demonstrate a high level of accountability, fairness, and transparency	3.47	1.79	.154	225	.000	.896	225	.000
SMC10	The possibility of fronting occurring in the public procurement process is minimal	3.48	2.09	.210	225	.000	.991	225	.000
SMC11	Fraud and corruption are eliminated in the government procurement practices	3.29	1.87	.170	225	.000	.909	225	.000
SMC12	Maladministration procurement practices are eliminated in the public procurement system in South Africa	3.45	1.82	.204	225	.000	.909	225	.000
SCM13	The procurement system is properly integrated and automated which helps to save costs	3.41	1.99	.181	225	.000	.911	225	.000
Quality Management Challenges									
QM1	There is adequate and regular monitoring and evaluation by SCM officials	3.34	1.81	.184	225	.000	.892	225	.000
QM2	Emerging contactors are able to gain access to government contracts	3.70	1.93	.197	225	.000	.911	225	.000
QM3	There are correct tender specifications	3.82	2.15	.225	225	.000	.888	225	.000
QM4	There exist correct conditions of contract (GCC/JBCC) in the public procurement process	3.81	2.32	.172	225	.000	.889	225	.000

QM5	The public procurement process allows for proper linking of planning and budget	3.79	2.11	.197	225	.000	.882	225	.000
QM6	SMMEs are accredited with CIDB	3.86	2.32	.189	225	.000	.895	225	.000
QM7	There is no proper and adequate procurement planning by government	3.90	1.99	.150	225	.000	.926	225	.000

6.3.3 Factors that influence effective public procurement

Table 6.4 presents the normality test and descriptive results for the factors influencing effective public procurement. The assessment of the factors revealed that the item “*there is a system of disclosure of business interests by workers, managers, and officials in state institutions*” with a mean score of 4.07 had the most influence on sustainable public procurement. The statistics showed that the item measuring “*public procurement practices are opened to public scrutiny*” had the lowest mean score (2.91), indicating the least influence on public procurement.

As shown in Table 6.4, the K-S Z and Shapiro-Wilk tests indicated a non-normal distribution at 0.000 for all the variables.

Table 6.4: Factors that Influence Sustainable Public Procurement

		Mean	Std Dv.	Kolmogorov-Smirnova			Shapiro-Wilk		
				Stat	Df	Sig	Stat	Df	Sig
	Openness								
O1	Public procurement practices are opened to public scrutiny	2.91	1.86	.263	.225	.000	.774	.225	.000
O2	The procurement by government institutions is conducted through an open system	3.69	2.21	.187	.225	.000	.894	.225	.000
O3	There is an open tendering system which is approved by designated officers	3.76	2.42	.212	.225	.000	.885	.225	.000
O4	An open public procurement system ensures that there is fairness and accountability	3.42	1.97	.244	.225	.000	.829	.225	.000
Accountability									
A1	There exist government policies and regulations on accountable governance	3.50	2.33	.218	.225	.000	.849	.225	.000
A2	The policies and regulatory frameworks on accountability are very clear and understood by all government officials	3.55	2.12	.184	.225	.000	.894	.225	.000
A3	Government officials and procurement authorities are held accountable for their decisions and actions	3.44	1.83	.197	.225	.000	.885	.225	.000
A4	Workers hold their managers and government officials accountable for their decisions and actions	3.59	1.85	.202	.225	.000	.908	.225	.000
A5	Managers and governmental officials are allowed to hold their colleagues accountable for their decisions and actions	3.68	2.05	.167	.225	.000	.915	.225	.000

A6	The public procurement system is responsive to and acts responsibly towards the stakeholders	3.62	1.87	.177	.225	.000	.920	.225	.000
A7	The public procurement system in place is fair and equitable to everyone	3.67	2.10	.140	.225	.000	.925	.225	.000
A8	The public procurement entities and authorities are independent	3.63	2.06	.179	.225	.000	.915	.225	.000
Transparency									

T1	There exist well-functioning policies and regulations on transparency in public procurement	3.49	2.14	.211	.225	.000	.899	.225	.000
T2	Staff and government officials are aware of the need to be transparent	3.95	2.44	.175	.225	.000	.922	.225	.000
T3	Annual reports and budgets in various government institutions are widely distributed or published in the Government Gazette	3.78	2.39	.201	.225	.000	.916	.225	.000
T4	Financial transactions and accounts of government institutions are audited by the Auditor-General	3.90	2.50	.186	.225	.000	.929	.225	.000
T5	There is a system of disclosure of business interests by workers, managers and officials in state institutions	4.07	2.42	.193	.225	.000	.896	.225	.000
T6	The system for disclosure of business interests by staff members, managers and officials is effective	3.56	2.16	.166	.225	.000	.901	.225	.000
Competitiveness									
C1	The public procurement bidding process is competitive and healthy	3.72	2.11	.170	.225	.000	.923	.225	.000
C2	The competitive bidding process leads to better prices, quality, and innovation when firms are genuinely allowed to compete	3.64	2.15	.176	.225	.000	.879	.225	.000
C3	Competitive bidding helps to avoid favouritism and corruption in PP by enabling SMMEs and contractors to externalise their search effort	3.74	2.16	.211	.225	.000	.232	.225	.000
C4	Competitive bidding minimises informative asymmetries and encourages contractors to display their production costs	3.91	5.88	.317	.225	.000	.901	.225	.000
Value for money									
VFM1	The public procurement system ensures value for money	3.48	2.02	.254	.225	.000	.855	.225	.000
VFM2	Fraud is eliminated in the public procurement process	3.29	1.81	.188	.225	.000	.916	.225	.000
VFM3	Value for money serves as a check against unplanned procurement activities	3.52	1.88	.203	.225	.000	.899	.225	.000
VFM4	Procurement and government officials are highly professional and experienced in the field	3.58	1.88	.171	.225	.000	.922	.225	.000
VFM5	The procurement officers and government officials regularly appraise their procurement activities to ensure value for money	3.56	1.79	.187	.225	.000	.916	.225	.000

VFM6	Value for money ensures that the state agencies link their budgets to procurement activities	3.72	1.95	.159	.225	.000	.929	.225	.000
VFM7	Every state institution plans annual procurement spending to ensure value for money	3.60	1.99	.199	.225	.000	.896	.225	.000
VFM8	Value for money has reduced corruption and improved service delivery in procurement activities	3.45	1.83	.172	.225	.000	.920	.225	.000
VFM9	Procurement entities in government institutions always liaise with the Public Procurement Authority for timely and required procurement information	3.59	1.83	.164	.225	.000	.916	.225	.000
VFM10	Procurement activities within the procurement entities are assessed annually by the Public Procurement Authority	3.69	2.07	.153	.225	.000	.917	.225	.000

6.4 Exploratory Factor Analysis

EFA was used to test the reliability and validity of the variables in the conceptual model. EFA was conducted for the study variables using the maximum likelihood for determining the number of factors to retain. The factorability and multicollinearity assumptions were tested by examining the correlation matrix. To assess the factorability of the data, Pearson correlations were calculated to determine the intercorrelations for each variable. According to the rule of thumb, correlation coefficients should exceed 0.30 to justify categorising the data into factors. All variables had at least one correlation coefficient greater than 0.30. and appeared suitable for factor analysis.

To determine multicollinearity, the determinant of the correlation matrix was computed. A determinant that is ≤ 0.00001 indicates that multicollinearity exists in the data. The value of the determinant for the correlation matrix was greater than 0.00001, meaning that there is no multicollinearity in the data. The Bartlett’s Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test were used to assess the data’s factor suitability (Pallant, 2011).The KMO test was used to determine the appropriateness and adequacy of the study sample size. The value of 0.50 is the threshold for KMO, while the values below 0.50 are considered Merde, meaning unacceptable, values in the 0.50 are considered Miserable, values in the 0.60s are considered Mediocre, values in the 0.70s are Middling, values in the 0.80s are considered Meritorious, and values in the 0.90s are considered Marvellous. $KMO = 0.88$.

For each factor, an eigenvalue was obtained. The six factors had eigenvalues over Kaiser’s criterion of 1 and were retained. The factor loadings were interpreted by taking the absolute value of each loading and implementing the criterion. The values greater than 0.71 are considered excellent. It is suggested that 0.32 should be the minimum threshold used to identify significant factor loadings. The corrected item-total correlation decides whether items all measure the same underlying construct by relatively high correlation coefficients.

6.4.1 EFA reliability and validity

Reliability was conducted to determine the consistency of responses among a group of questions. This is also referred to as internal consistency or inter-item reliability. The Cronbach’s alpha coefficient was computed to assess the reliability of the questionnaire. Conventionally, a Cronbach’s alpha of 0.70 represents a satisfactory and sustainable level of internal consistency and scale reliability (Kline, 2015; Field, 2013; Bryman and Bell, 2011; Pallant, 2011).

6.4.2 Analysis of model constructs

6.4.2.1 EFA for openness

Four items of the openness scale were analysed. The corrected item-total correlation values were above 0.3, indicating that the items measured the construct adequately. To determine the strength of the item intercorrelations, the Kaiser-Meyer-Olkin (KMO) for openness was 0.885, and Bartlett’s test of Sphericity with $p<0.000$ was obtained as shown in Table 9.5. This indicated that the KMO value is above the cut-off value of 0.60. Cronbach’s alpha score of 0.951 was obtained for the scale, indicating adequate internal reliability. The results meet the criteria for factor analysis.

Table 6.5: KMO and Bartlett’s Test for all Openness Elements

KMO and Bartlett’s Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.885
Bartlett’s Test of Sphericity	Approx. Chi-Square	319.897
	Df	6
	Sig.	.000

a. Cronbach’s alpha = 0.951

Table 6.6 indicates that the factor loadings for all five items were above the cut-off value of 0.30. For the communalities, all the factors were less than 0.999, meaning that all the items were acceptable and could be perceived as key factors determining effective public procurement.

Table 6.6: Openness Factor Statistics

Item	Element	Factor loading	Corrected item total correlation	Communalities	
				Initial	Extraction
O1	Public procurement practices are open to public scrutiny	.688	0.715	.395	.474
O2	Government procurement is conducted through an open system	.798	0.714	.494	.636
O3	There is an open tendering system which is approved by designated officers	.746	0.763	.450	.556
O4	An open public procurement system ensures that there is fairness and accountability	.702	0.811	.410	.493

Extraction Method: Maximum Likelihood.

From the results presented in Table 6.7, one factor with the eigenvalue of 2.612 accounted for 65.310% of the variance. The total variance explained is above the recommended cut-off value of 50% (Kline, 2015; Motulsky, 2015; Field, 2013). Since only one factor was extracted, it was

unnecessary to rotate the solution. Therefore, the solution was considered unidimensional; and adequate evidence of convergent and discriminant validity was provided for the openness construct.

Table 6.7: Initial Eigenvalues for all Openness Elements

Total Variance Explained						
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.612	65.310	65.310	2.159	53.983	53.983
2	.600	14.995	80.305			
3	.413	10.319	90.624			
4	.375	9.376	100.000			

6.4.2.2 Exploratory Factor Analysis for accountability

Eight items of the accountability scale were analysed. The values of these items were above 0.3, indicating that the items measured the construct adequately. The Kaiser-Meyer-Olkin (KMO) for accountability was 0.914, and Bartlett’s test of Sphericity with $p<0.000$ was obtained as shown in Table 6.8. This indicated that the KMO value is above the cut-off value of 0.60. The Cronbach’s alpha score of 0.944 was obtained for the scale, indicating adequate internal reliability. The results meet the criteria for factor analysability.

Table 6.8: KMO and Bartlett’s Test for all Accountability Elements

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.914
Bartlett’s Test of Sphericity	Approx. Chi-Square	854.762
	Df	28
	Sig.	.000

a. Cronbach’s alpha =0.944

From Table 9.9, factor loadings for all eight items were above 0.30. Inspections of the corrected item-total correlation values were above the threshold, indicating that the items were a good measure of the accountability construct. The results confirmed that the data met the criteria for factor analysability.

Table 6.9: Accountability Factor Statistics

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
A1	There exist government policies and regulations on accountable governance	.804	0.740	.612	.647
A2	The policies and regulatory frameworks on accountability are very clear and understood by all government officials	.762	0.740	.557	.581
A3	Government officials and procurement authorities are held accountable for their decisions and actions	.673	0.714	.420	.453
A4	Workers hold their managers and government officials accountable for their decisions and actions	.730	0.677	.496	.532
A5	Managers and governmental officials are allowed to hold their colleagues accountable for their decisions and actions	.715	0.674	.462	.511
A6	The public procurement system is responsive to and acts responsibly towards the stakeholders	.676	0.701	.435	.457
A7	The public procurement system in place is fair and equitable to everyone	.616	0.782	.380	.380
A8	The public procurement entities and authorities are independent	.748	0.754	.523	.560

Extraction Method: Maximum Likelihood.

From the results presented in Table 9.9, one factor with the eigenvalue of 4.600 accounted for 57.502% of the variance. Since only one factor was extracted, it was unnecessary to rotate the solution. Therefore, the solution was regarded as unidimensional; and adequate evidence of convergent and discriminant validity was provided for the accountability construct.

Table 6.10: Initial Eigenvalues for all Accountability Elements

Total Variance Explained						
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.600	57.502	57.502	4.121	51.512	51.512
2	.707	8.831	66.334			
3	.587	7.338	73.672			
4	.522	6.521	80.193			
5	.486	6.080	86.273			
6	.462	5.770	92.043			
7	.362	4.530	96.573			
8	.274	3.427	100.000			

6.4.2.3 Exploratory factor analysis for transparency

The KMO for transparency was 0.892, and Bartlett’s test of sphericity was obtained with a significance of $p < 0.000$, as shown in Table 6.11. The Cronbach’s alpha score of 0.894 was obtained for the transparency scale, indicating adequate internal reliability. The loadings for all six items were above the cut-off value of 0.30, indicating that the items were a good measure of the construct. The results show that the data meet the criteria for factor analysability. The communalities concerning the items stabilized are shown in Table 6.12.

Table 6.11 KMO and Bartlett’s Test for all Transparency Elements

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.892
Bartlett’s Test of Sphericity	Approx. Chi-Square	676.342
	Df	15
	Sig.	.000

a. Cronbach’s alpha=0.894

Table 6.12: Transparency Factor Statistics

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
T1	There exist well-functioning policies and regulations on transparency in public procurement	.748	0.691	.503	.560
T2	Staff and government officials are aware of the need to be transparent	.706	0.689	.450	.499
T3	Annual reports and budgets in various government institutions are widely distributed or published in the Government Gazette	.852	0.685	.635	.727
T4	Financial transactions and accounts of government institutions are audited by the Auditor-General	.828	0.740	.611	.686
T5	There is a system of disclosure of business interests by workers, managers, and officials in state institutions	.727	0.652	.489	.528
T6	The system for disclosure of business interests by staff members, managers and officials is effective	.626	.658	.379	.392

Extraction Method: Maximum Likelihood.

Results presented in Table 6.12 showed an eigenvalue of 3.817, accounting for 3% of the variance.

Table 6.13 Initial Eigenvalues for all Transparency Elements

Total Variance Explained						
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.817	63.614	63.614	3.392	56.526	56.526
2	.606	10.105	73.719			
3	.520	8.667	82.386			
4	.412	6.864	89.251			
5	.385	6.418	95.669			
6	.260	4.331	100.000			

One factor was extracted; hence there was no need to rotate the solution. The solution was therefore considered unidimensional; and adequate evidence of convergent and discriminant validity was provided for the transparency construct. Table 6.13 indicates that the correlation values between the six items of transparency were related to one another.

6.4.2.4 Exploratory factor analysis for competitiveness

Table 8.14 shows that the KMO for competitiveness was 0.744, and the Bartlett’s test of sphericity was obtained with a significance of $p<0.000$. The Cronbach’s alpha of 0.755 was obtained for the competitiveness scale, indicating adequate internal reliability. From Table 6.15, factor loadings for all the four items were above the cut-off value of 0.30, indicating that the items were a good measure of the construct. The results show that the data meet the criteria for factor analysability.

Table 6.14: KMO and Bartlett’s Test for all Competitiveness Elements

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.744
Bartlett's Test of Sphericity	Approx. Chi-Square	188.257
	Df	6
	Sig.	.000

a. Cronbach’s alpha = 0.755

Table 6.15: Competitiveness Factor Statistics

Item	Element	Factor Loading	Corrected item total correlation	Communalities	
				Initial	Extraction
C1	The public procurement bidding process is competitive and healthy	.735	.590	.363	.539
C2	A competitive bidding process leads to lower prices when companies are genuinely allowed to compete	.700	.649	.339	.490
C3	Competitive bidding helps to avoid favouritism and corruption, enabling SMMEs and contractors to externalise their search effort	.668	.674	.317	.447
C4	Competitive bidding reduces informative asymmetries	.441	.677	.150	.195

Results presented in Table 6.16 showed an eigenvalue of 2.220, which accounted for 55% of the variance. The solution was unidimensional; and adequate evidence of convergent and discriminant validity was provided for the competitiveness construct.

Table 6.16: Initial Eigenvalues for all Competitiveness Elements

Total Variance Explained						
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.220	55.499	55.499	1.671	41.785	41.785
2	.764	19.109	74.608			
3	.551	13.772	88.380			
4	.465	11.620	100.000			

9.4.2.5 Exploratory factor analysis for value for money

Ten items of the value-for-money scale were analysed. All the items had values above 0.3, indicating that the items measured the construct adequately. The Kaiser-Meyer-Olkin (KMO) for value for money was 0.928; and a Bartlett’s test of Sphericity with $p<0.000$ was obtained as shown in Table 6.17. This indicated that the KMO value is above the cut-off value of 0.60. The reliability

score of 0.864 was obtained for the scale, indicating adequate internal reliability. The results meet the criteria for factor analysability.

Table 6.17: KMO and Bartlett’s Test for all Value-for-Money Elements

KMO and Bartlett’s Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.928
Bartlett’s Test of Sphericity	Approx. Chi-Square	1010.937
	Df	45
	Sig.	.000

a. Cronbach’s alpha 0.864

Table 6.18: Value-for-Money Factor Statistics

Item	Element	Factor Loading	Corrected item total correlation	Communalities	
				Initial	Extraction
VFM1	A public procurement system ensures value for money	.768	.836	.567	.590
VFM2	Corruption is eliminated in the public procurement process	.531	.817	.303	.282
VFM3	The value for money serves as a check against unplanned procurement activities	.697	.808	.502	.486
VFM4	Procurement and government officials are highly professional and experienced in the field	.616	.805	.377	.380
VFM5	The procurement officers and government officials regularly appraise their procurement activities to ensure value for money	.655	.795	.423	.429
VFM6	Value for money ensures that the state agencies link their budgets to procurement activities	.696	.629	.463	.484
VFM7	Every state institution plans annual procurement spending to ensure value for money	.749	.740	.540	.561
VFM8	Value for money has reduced corruption and improved service delivery in procurement activities	.678	.754	.451	.459
VFM9	Procurement entities in government institutions always liaise with the Public Procurement Authority for timely and required procurement information	.707	.652	.478	.500
VFM10	Procurement activities within the procurement entities are assessed annually by the Public Procurement Authority	.747	.689	.510	.559

Extraction Method: Maximum Likelihood.

From the results presented in Table 6.19, eigenvalue values for the one item were 5.245, which accounted for 52.452% of the variance. Since only one factor was extracted, it was unnecessary to rotate the solution. The solution was unidimensional; and adequate evidence of convergent and discriminant validity was provided for the value-for-money construct.

Table 6.19: Initial Eigenvalues for all Value-for-Money Elements

Total Variance Explained						
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.245	52.452	52.452	4.729	47.292	47.292
2	.870	8.695	61.147			
3	.683	6.831	67.978			
4	.642	6.422	74.400			
5	.536	5.364	79.764			
6	.494	4.941	84.705			
7	.452	4.524	89.229			
8	.409	4.086	93.315			
9	.350	3.497	96.812			
10	.319	3.188	100.000			

6.5 Confirmatory Factor Analysis

CFA is a follow-up analysis performed after conducting the EFA (Yale et al., 2015; Byrne, 2010). Figure 6.1 shows the initial hypothesized measurement model.

9.5.1 Goodness of fit

A model’s goodness of fit specifies how well the model fits into a set of observations. Several model fit indices can be used to assess the goodness of fit of a model (Jha et al., 2011). There are three groups of fit indices, including absolute, parsimonious, and comparative fit indices (Green, 2016). Absolute fit indices consist of the Chi-Squared test, the Relative Normed Chi-Square value (χ^2/df), the Root Mean Square Error of Approximation (RMSEA), the Standardised Root Mean Square Residual (SRMR) and Hoelter’s critical N. The Chi-squared test examines the variance between the sample and the covariance matrix, and is sensitive to sample size (Hooper et al., 2008; Kline, 2015). The Relative Normed Chi-square is a better measure of good fit than the Chi-squared in large samples, because it reduces the effect of the sample size on the Chi-squared statistics (Tabachnick & Fidell, 2013). The SRMR is used to interpret the square root of residuals of the sample covariance matrix when there are different scales in a sample (Hooper et al., 2008). The Root Mean Square Error of Approximation is preferred for models with fewer parameters (Byrne, 2010; Hooper et al., 2008).

Comparative fit indices assess fit by comparing the Chi-squared value of the model relative to a null model (Bagozzi, 2010). A null model consists of uncorrelated variables. Comparative fit indices consist of the Tucker-Lewis Index (TLI), the Incremental Fit Index (IFI), the Normed Fit Index (NFI), the Comparative Fit Index (CFI), and the Relative Fit Index (RFI). The TLI, also known as the Non-Normed Fit Index (NNFI) is used for sample sizes of less than 200 (Tabachnick

and Fidell, 2013). The CFI is the latest version of the NFI and takes into consideration sample sizes, therefore performing well with small samples (Tabachnick & Fidell, 2013).

Parsimonious fit indices were developed to correct the complexity of a model because complex and almost saturated models depend on the sample during estimation. Parsimonious indices include the Parsimony Adjusted Normed Fit Index (PNFI), and the Parsimony Adjusted Comparative Fit Index (PCFI). The PNFI, PGFI and PCFI penalize for model complexity and are dependent on adjusting their parent fit indices for loss of degrees of freedom (ibid). Table 6.20 presents the various thresholds for the various model fit indices. The RMSEA, SRMR, CFI, TLI, NFI, RFI, PNFI, and PCFI were the fit indices considered in this study.

6.6 Measurement of Model Fitness

Table 6.20 indicates that the validity of the measurement model produced a Chi-squared value of 1162.8 and 579 degrees of freedom. The p-value was less than 0.005 (p= 0.00). Table 9.20 shows that the CMIN/df =2.008; and based on the cut-off criteria was indicative of good fit. The RMSEA (0.066) and SRMR (0.045) scores showed poor fit. The CFI (0.888), RFI (0.784), the TLI (0.879) and NFI (0.817) further suggested the perfect fit of the model. The indices for PNFI (0.737) and PCFI (0.819) were above 0.50, indicating an acceptable fit. A model re-specification was further conducted to enhance the fit indices of the measurement model.

Table 6.20: Goodness-of-Fit Indices for Measurement Model

Model Fit Index	Threshold	Model	Fit	Model-specification	Fit
Chi-Squared test		1162.8		1087.6	
CMIN/df	df ≤2	2.008	Acceptable Fit	1.892	Good Fit
	df ≤ 5				
RMSEA	Values ≤0.05	0.066	Acceptable Fit	0.063	Acceptable Fit
	Values ≤0.06-0.08				
SRMR	Values ≤0.05	0.045	Good Fit	0.023	Good Fit
	Values >0.05 - ≤0.08				
TLI	Values ≥0.95	0.879	Poor Fit	0.993	Good Fit
	Value is 0.90-0.95				
	Value is 1				
NFI	Value ≥ 0.95	0.802	Poor Fit	0.815	Poor Fit
	Value is 0.90 - 0.95				
RFI	Value ≥ 0.95	0.784	Poor Fit	0.917	Acceptable Fit
	Value is 0.90 - 0.95				
CFI	Value ≥ 0.95	0.888	Poor Fit	0.902	Good Fit
	Value is 0.90 - 0.95				
PNFI	Value > 0.90	0.737	Acceptable Fit	0.743	Acceptable Fit
	Value > 0.50				
PCFI	Value > 0.90	0.817	Acceptable Fit	0.823	Acceptable Fit
	Value > 0.50				

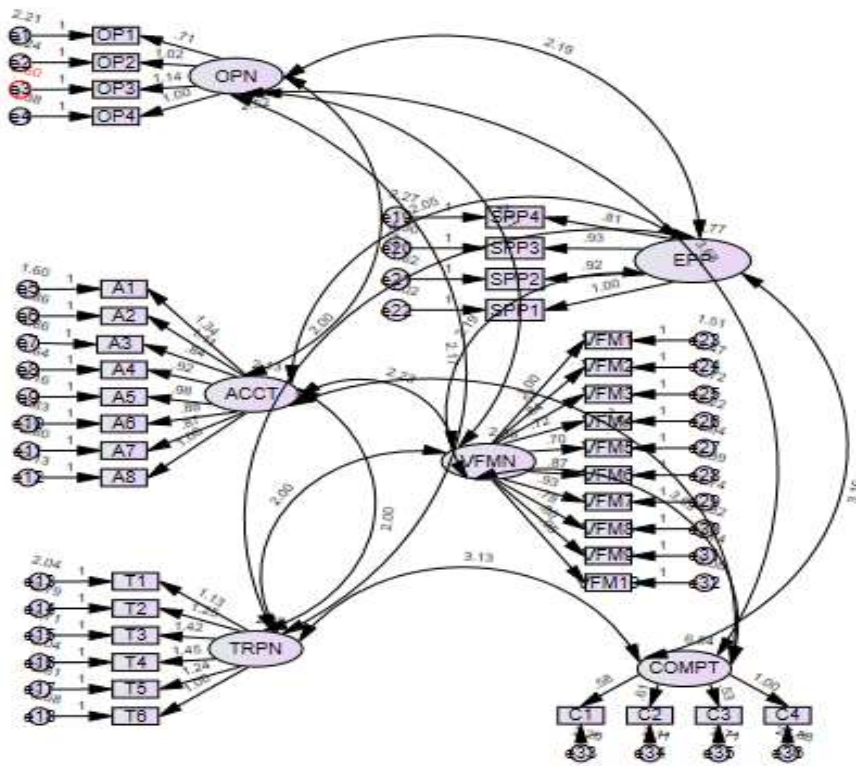


Figure 6.1 Initial measurement model

Table 6.20 shows the refined model. Indicator metrics with the highest residual correlation were identified, and error terms within the factor were correlated. Chi-squared was used to measure the absolute fit, the Relative Normed Chi-squared (χ^2/df), the RMSEA and the SRMR. The CMIN/df value was 1087.6. The Relative Normed Chi-squared (χ^2/df) = 1.892, suggesting a good fit. The SRMR (0.023) met the acceptable threshold, therefore indicating a good fit.

The comparative fit was assessed using CFI, TLI, NFI and RFI. The TLI (0.993) and the CFI (0.917) met the threshold of 0.90 as suggested by (Arifin, 2018; Tabachnick and Fidell, 2013; Hooper et al., 2008; Schumacker and Lomax, 2004). Notwithstanding that the NFI (0.815) was below the cutoff value, the rest of the three indices fulfilled the requirements for model acceptance. Hence, the model had an acceptable comparative fit.

Parsimony was assessed using PNFI and PCFI. The indices for PNFI (0.743) and PCFI (0.823) exceeded the cut-off value of 0.50, indicating that the model is not parsimonious; however, it is still of acceptable fit. It may be argued that the most accepted threshold of 0.90 for all other indices might be more appropriate. Figure 6.2 shows the results of the refined measurement model.

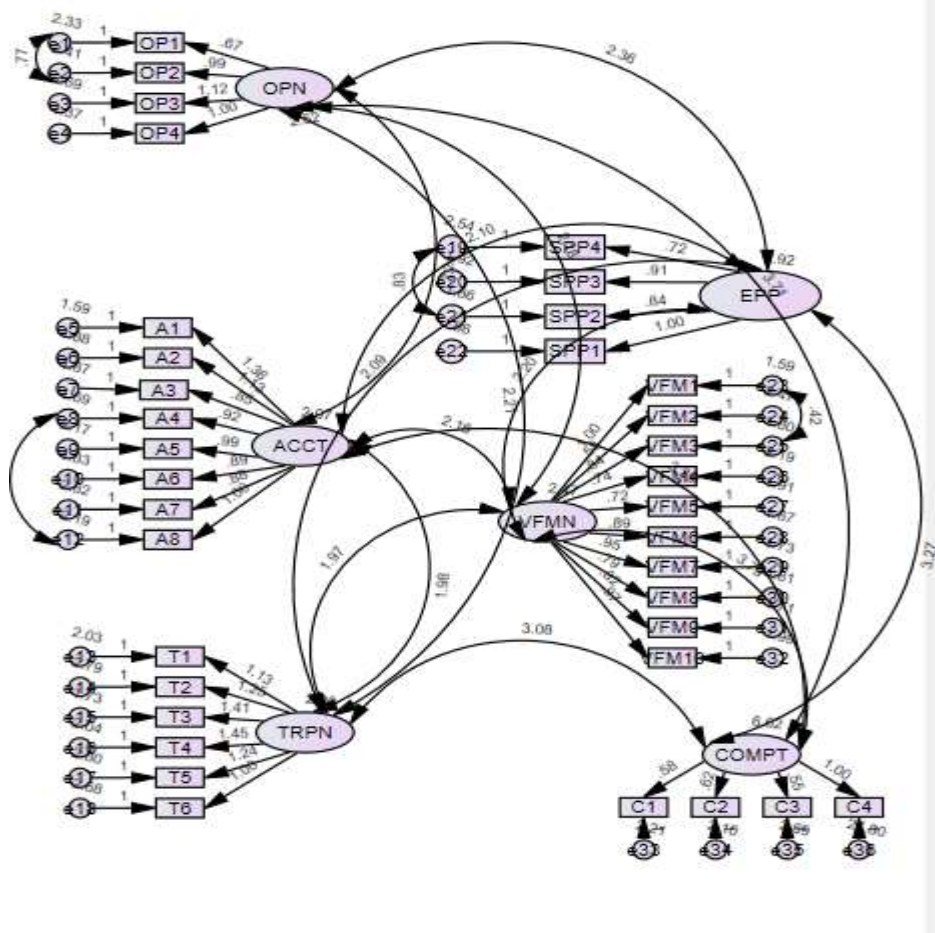


Figure 6.1: Refined measurement model

6.7 Structural Model Fitness

Path modelling is the second stage of SEM, which involves linking the latent variables. Structural modelling helps in the estimation of the structural relationships among the constructs. The goodness-of-fit indices determine the reliability of a research model and its adequacy to test hypothesised relationships among constructs in a study.

The structural model showed acceptable absolute fit. The chi-square value was 1162.8 and had 579 degrees of freedom. The associated p-value was less than 0.005 ($p=0.00$), which, as stated earlier, is expected in the case of large sample sizes (Hooper et al., 2008).

Table 6.21 Structural Model Fit Indices

Model Fit Index	Threshold	Model	Fit	Model-specification	Fit
Chi-Squared test		1162.8		1099.5	
CMIN/df	df ≤2	2.008	Acceptable Fit	1.909	Good Fit
	df ≤ 5				
RMSEA	Values ≤0.05	0.066	Acceptable Fit	0.063	Acceptable Fit
	Values ≤0.06-0.08				
SRMR	Values ≤0.05	0.045	Good Fit	0.027	Good Fit
	Values >0.05 - ≤0.08				
TLI	Values ≥0.95	0.879	Poor Fit	0.891	Poor Fit
	Value is 0.90-0.95				
	Value is 1				
NFI	Value ≥ 0.95	0.817	Poor Fit	0.813	Poor Fit
	Value is 0.90 - 0.95				
RFI	Value ≥ 0.95	0.784	Poor Fit	0.995	Good Fit
	Value is 0.90 - 0.95				
CFI	Value ≥ 0.95	0.819	Poor Fit	0.900	Acceptable Fit
	Value is 0.90 - 0.95				
PNFI	Value > 0.90	0.737	Acceptable Fit	0.743	Acceptable Fit
	Value > 0.50				
PCFI	Value > 0.90	0.819	Acceptable Fit	0.823	Acceptable Fit
	Value > 0.50				

A model re-specification was conducted to enhance fit indices of the measurement model. The highest residual correlations were identified, and error terms within the factor were correlated. Table 6.21 indicates that the assessment of the validity of the refined structural model produced a Chi-squared value of 1099.5. The p-value was less than 0.005 (p=0.00). The CMIN/df =1.909 and based on the cut-off criteria was indicative of good fit. Table 9.21 shows that the CMIN/df =2.008 and based on the cut-off criteria was indicative of good fit. The value of RMSEA = 0.063 and SRMR (0.027) showed poor fit. The CFI (0.900), RFI (0.995) further suggested a good fit for the structural model. The indices for PNFI (0.734) and PCFI (0.823) were above 0.50, indicating an acceptable fit. Figure 6.3 presents the structural model.

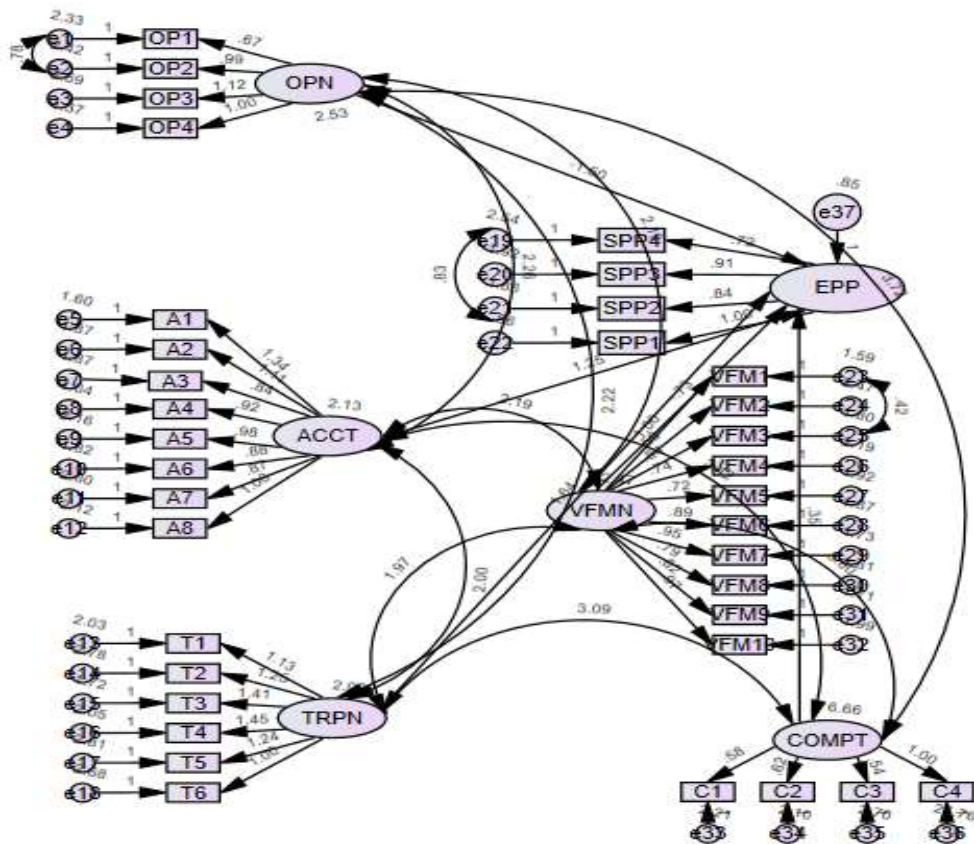


Figure 6.2: Structural model

6.8 Structural Modelling

The relationships among the variables within the structural model were determined. The relationships were hypothesised as follows:

- H1: Openness (OPN) has a significant direct influence on effective public procurement
- H2: Accountability (ACCN) has a significant direct influence on effective public procurement
- H3: Transparency (TRPN) has a significant direct influence on effective public procurement
- H4: Competitiveness (COMPT) has a significant direct influence on effective public procurement
- H5: Value for money (VFM) has a significant direct influence on effective public procurement

The results of the standardised regression relationships from the structural model are depicted in Table 6.22. The parameter estimate is significant at $p \leq 0.05$. The results of the influence of the exogenous variables on endogenous are further discussed.

Table 6.22: Structural Model Statistics

Proposed Hypothesis			Regression Estimate	P	Rejected/Supported	
EPP	←	OPN	H1	1.449	0.003	Supported
EPP	←	ACCN	H2	1.248	0.043	Supported
EPP	←	TRPN	H3	1.636	0.039	Supported
EPP	←	COMPT	H4	-0.345	0.421	Rejected
EPP	←	VFM	H5	0.726	0.037	Supported

6.8.1 Testing direct influence of openness on effective public procurement

Inspection of the R^2 and p-values for the openness construct revealed a direct influence of openness on effective public procurement. The direct influence of openness on effective public procurement is statistically significant as the p-value ($p=0.003$) is less than the cut-off value of 0.50. Therefore, the hypothesis cannot be rejected.

6.8.2 Testing direct influence of accountability on effective public procurement

Accountability was hypothesized to have a direct influence on effective public procurement. R^2 was 0.1248, and the p-value was 0.043, indicating statistical significance, as the p-value was less than 0.50. Therefore, the hypothesis cannot be rejected.

6.8.3 Testing direct influence of transparency on effective public procurement

Inspection of the R^2 and p-values for the transparency construct revealed a direct influence of transparency on effective public procurement. The direct influence of transparency on effective public procurement is statistically significant as the p-value ($p=0.039$) is less than the cut-off value of 0.50. Therefore, the hypothesis cannot be rejected.

6.8.4 Testing direct influence of competitiveness on effective public procurement

Although competitiveness was hypothesized to have a direct influence on effective public procurement, there were no empirical findings to support the hypothesis, as no statistical significance was found ($R^2=-0.345$, $p=0.421$). Therefore, the hypothesis is rejected.

6.8.5 Testing direct influence of value for money on effective public procurement

Value for money was hypothesized to have a direct influence on effective public procurement. The p-value was 0.037, indicating statistical significance, as the p-value was less than 0.50. Therefore, the hypothesis cannot be rejected.

6.9 Chapter Summary

This chapter presented the results and analysis of the descriptive statistics. EFA was performed to identify the factor constructs. The CFA was then conducted, and an analysis of the structural model was conducted to validate the hypothesized model. The following chapter discusses the results.

CHAPTER SEVEN: DISCUSSION OF RESULTS

7.1 Introduction

The previous chapter presented the results that emerged from the study. This chapter discusses the results that were obtained empirically from the research. The discussion is linked to the stated objectives, which underpinned the entire investigation. It also discusses the effective public procurement structural model results, which validate that the effective procurement model is a four-factor model rather than the hypothesized five-factor model illustrated in Figure 6.1. The review of literature is also integrated into the discussion of the results. The results are discussed as follows:

7.2 Level of Performance of the Existing Procurement Models

Objective One investigated the level of performance of existing procurement models in construction SMMEs. This objective was duly investigated and achieved via quantitative research. As presented in the previous chapter, the mean scores for all the public procurement practices ranged from 3.17 to 3.84, indicating a high-to-medium performance level. The results revealed that GPP, which focuses on recycling, was the most practised. The overall results showed that GPP, SPP, and IPP positively impact effective public procurement.

These findings are consistent with existing research that GPP is the most practised procurement model (Bag, 2017; Lee, 2016). Kaumbuthu and Wanyoike (2015) postulate that the concept of GPP is a unique tool as it addresses environmental concerns that have been raised regarding sustainability and climate change. The GPP process, which mitigates the environmental consequences of goods and services and works throughout their life cycle, has been identified as a significant public procurement practice. (Cockburn, 2019; Lundberg and Marklund, 2018; Yeo et al., 2016; Scoones et al., 2015).

It has been found that most firms adopt GPP to obtain sustainability in this dynamic business environment (Bag, 2017). GPP is a vital instrument to achieve objectives linked to climate change, resource utilisation, and sustainable production and consumption (European Commission, 2016). Given the positive impacts of GPP on economic development, many countries have begun to apply this concept in their procurement systems.

Apart from the GPP, research (Brammer and Walker, 2011) shows that the concept of SPP has recently acquired a high degree of salience in policy circles, internationally. SPP denotes the process in which the public procurement process considers and seeks to minimise any negative ecological or sociological externalities throughout the supply chain of the goods or utilities procured. Shan et al. (2017) believe that SPP is now widely recognised as a strategic lever to drive innovation and improve the sustainability performance of public and private sector organisations across the globe. SPP offers the following social benefits: it improves working conditions, increases minority employment, and allocates procurement contracts more fairly; enhancing access of SMEs to PP stimulates local economies and creates jobs, promotes local entrepreneurship and innovation, and

adds value to the development of goods, services and works for local, national and export markets; and supports rural economic development (Gomes and da Silva, 2005).

From the economic perspective, SPP offers the following benefits: it generates more and better jobs, raises production standards, and creates economies of scale for sustainable goods and services, allows producers to compete globally, and create demand for sustainable goods and services, supporting new, efficient industries and sectors and fostering innovation (Gomes and da Silva, 2005). Also, evidence suggests that sustainable procurement policy frameworks in the United States are consistent with the Constitution, which helps to eliminate discrimination and provide equal opportunities (McCrudden, 2004).

On the other hand, Kattel and Lember (2010) point out that IPP is built on evolutionary economics; and sees market failures as deliberately created by entrepreneurs to gain a competitive advantage. Technological innovation, which is key to “catching up,” is an artificial comparative advantage, driven by externalities and unpredictable spillovers and path dependencies as opposed to the trade and competition assumed by neoclassical economists to pressure companies to innovate. It has been argued that, while some countries, including Australia, Brazil, China, the United States of America, and Japan, have embarked on public procurement programmes aimed at stimulating innovation, or embedded innovation policy within their procurement systems, legislation has often lagged relatively, in terms of procurement innovation (European Commission, 2015; Mazzucato, 2015; OECD, 2014). In recent times, most countries have opted instead for indirect, “soft public procurement,” in which the government announces future public spending or future government contract opportunities and attracts innovators seeking government contracts. This preference for indirect procurement has been mainly due to the complexity of PPfI and the low policy and administrative capacities of developing countries to coordinate PPfI (Bolton, 2016; Kattel and Lember, 2010). IPP is seen as a return to state-led industrial development where governments use the power of public expenditure to create federal markets for suppliers and their innovative products.

Contrary to traditional forms of public procurement, IPP involves purchasing innovative solutions, systems, and designs that do not yet exist and may require further investment in R&D. Bolton (2016) concurs that, although procurement is constitutionalised in South Africa and its use for secondary considerations such as society and the environment is mandated by Section 217, there is, however, no prohibition on, or promotion of, innovation procurement in the legislation. In South Africa, procuring entities are given broad scope to design their innovation procurement process within the boundaries of the Constitution, as amended.

7.3 Factors that Influence Effective Public Procurement

Objective Two explored the factors that influence effective public procurement for SMMEs in the

South African construction industry. Findings from the SEM indicated that the general hypotheses of openness, accountability, transparency, and value for money jointly influencing effective public procurement could not be rejected. However, the hypothesis that competitiveness influences effective public procurement was rejected.

7.3.1 Openness and effective public procurement

Results from the structural model revealed that the influence of openness on effective public procurement was statistically significant, indicating that openness is a determinant of effective public procurement. The findings correspond with the results reported by previous studies that openness is an essential feature of effective public procurement (Ochieng and Oteki, 2016; Horn and Raga, 2012; National Treasury, 2012). It is a requirement that an effective public procurement process be open to everyone.

It is required that practices be open to public scrutiny, and public procurement laws promoting openness are crucial (Horn and Raga, 2012). Open tendering, which ensures fairness and accountability, is key to promoting transparency in the procurement process. In South Africa, one of the objectives of the public procurement practice is to create a tendering process that entails open competition using a tender process (Bolton, 2016). Open public procurement seeks to eliminate some of the anomalies of corruption in the government. Open tendering has been identified as the effective government procurement method, ensuring fairness and accountability worldwide. Within the South Africa context, the PFMA requires that effective public procurement be open and competitive. Open public procurement requires transparent policies, guidelines, procedures and practices, readily accessible to all parties to compete openly and fairly (Fourie and Malan, 2020).

Unfortunately, most public procurement systems are rigid, not allowing for innovative ideas. As a feature of effectiveness, openness should embrace new and innovative approaches in public procurement. Given the rising level of corruption in public procurement, OECD (2015) encourages adherents to facilitate access to procurement opportunities for potential competitors of all sizes, especially SMMEs.

7.3.2 Transparency and effective public procurement

The result of the SEM indicated a positive relationship between transparency and effective public procurement. An objective of an effective public procurement process is transparency (Ambe and Badenhorst-Weiss, 2012). The results of this study are consistent with scholarly research (Fourie and Malan, 2020; Horna and Raga, 2012). Transparency in the procurement process ensures effective and efficient decision-making without bias and enforcement that follows procedures. According to Fourie and Malan (2020), transparency is one of the pillars of public procurement in which all parties act within ethical standards based on mutual respect and trust.

According to Horna and Raga (2012), the principle of transparency is crucial to the public procurement process. Countries, including Austria, Brazil, China, the United States of America, Russia, and South Africa, have tailored their procurement laws towards ensuring transparency in the procurement processes and systems. Procurement regulations have been enforced to improve the transparency of public procurement and to reduce corruption in placing orders to supply products, in production performance, and in rendering services to satisfy public and municipal needs (Kudryavtseva and Novikova 2013). Procuring authorities must procure goods and services in a fair, equitable, transparent, competitive, and cost-effective manner (Rawlin, 2008).

7.3.3 Accountability and effective public procurement

The relationship between accountability and effective public procurement was statistically significant. Numerous studies have confirmed that for a procurement process to be effective, accountability must be ensured (Balkaran, 2013; Munzhedzi, 2013). To reduce corruption, accountability is crucial. According to Soudry (2007), accountability represents a central pillar of public procurement. This explains that without accountability, the vast resources channelled through public procurement systems run the danger of being entangled with increased corruption and misuse of funds (Jeppesen, 2010). Given the unprecedented corruption in South African public procurement, there is an urgent need to rethink innovative ways of curbing corruption and some other administrative malpractices within South African spheres of government

To reduce corruption in public procurement, initiatives such as central portals for advertising tenders and central access to information documents have been developed. The intention is to eradicate legislative fragmentation, enhance transparency and accountability concerning the awarding of government tenders, curb corruption, and reduce costs (Balkaran, 2013; Munzhedzi, 2013). Moreover, it is suggested that to eliminate maladministration, mismanagement of finances, fraud and corruption in public procurement, the government needs to strengthen and review existing internal control systems to detect deficiencies (Ambe and Badenhorst-Weiss, 2012).

7.3.4 Competitiveness and effective public procurement

The study examined the relationship between competitiveness and effective public procurement. Results of the SEM revealed no significant direct relationship between competitiveness and effective public procurement. Thus, although findings from past studies have suggested competitiveness as an essential feature of an effective procurement system (Baldi et al., 2016; OECD, 2015; Horn and Raga, 2012; Tadelis, 2012), this finding contradicts the anticipated outcome of competitiveness as a determinant of effective public procurement. According to the OECD (2015), several governments have adopted tools to reduce corruption in public procurement while reinforcing competition and efficiency in procurement procedures. For instance, in Spain, a self-declaration system promotes the participation of SMEs in public procurement. Furthermore, Italy

has implemented a training programme to empower SMEs in public procurement, while Ireland has consultation and review mechanisms to tailor the procedures to SME needs (OECD, 2015).

Baldi et al. (2016) opine that competitive bidding is considered the greater competition among suppliers, guaranteeing lower awarding prices due to the lowest-cost bidder's selection. It has been argued that competitive bidding minimises informative asymmetries and encourages bidders to reveal their production costs, enabling transparency and limiting corruption and local political favouritism (Baldi et al., 2016; Tadelis, 2012). The findings from this study present an exciting dimension in that, contrary to abundant literature supporting the significant influence of competitiveness on effective public procurement, the study disagrees with this assumption. This offers the researcher a complex opportunity to explain why this is the case, as unexpected variables responsible for contradiction may lie within the respondents themselves.

7.3.5 Value for money and effective public procurement

The structural model indicated that the correlation between value for money and effective public procurement was statistically significant. Findings from the study confirm that to obtain a quality procurement system, it is important for there to be value for money; and that the quality of the goods/services/works must meet the entity's criteria and cost constraints (Munzhedzi, 2016; Horn and Raga, 2012; National Treasury 2012). It has been argued that price as a single indicator is often unreliable. Therefore, public entities cannot automatically justify the best value for money based on accepting the lowest price offer. Value for money represents the "best possible outcome when all applicable costs and benefits over the procurement cycle have been considered" (Fourie and Malan, 2020).

The value for money in public procurement underscores the importance of the procurement models such as BV, PVM, and BV. The proponents of the public value theory explain that the public sector was established to create public value. The proponents further argue that public management practice should increase the public value produced by public sector organisations in both the short and long term (Moore, 2007; Bovaird and Halachmi, 2001). The best value model was introduced to instil the spirit of continuous improvement and accountability into the public sector procurement system.

7.4 Challenges to the Adoption of Effective Public Procurement Practices

The study examined the challenges construction SMMEs faced in adopting effective public procurement practices. The results indicated that the mean scores for the public procurement challenges facing construction SMMEs ranged from 2.51 ("there is no easy access to finance for financial institutions" to 4.05 ("the procurement process ensures availability of correct bid documents and returnable documents"), indicating a high-to-medium public procurement challenge affecting construction SMMEs. The overall findings revealed that the most common factors affecting the adoption of effective public procurement were access to finance, human resources,

regulatory frameworks, supply chain management and quality management. The findings are consistent with existing research.

7.4.1 Access to finance and SMME's participation in public procurement

The study confirmed that access to finance was one of the common factors that impacted SMME participation in public procurement. The findings are consistent with existing scholarly research (Mutenyoka and Madzivhandila, 2014; Chimucheka, 2013). In their study, Obaji and Olugu (2014) discovered that in developing countries such as Nigeria, Ghana, Kenya, South Africa, Zimbabwe and Egypt, the banking system provides little or no financial support for SMMEs. In South Africa, several studies have confirmed that access to finance remains the most critical issue facing not only the construction industry but the entire SMME sector (Brijlal et al., 2014; Cant and Wiid, 2013; Basu, 2011, Ibrahim and Galt, 2011; Zolin and Schlosser, 2011). Although there had been several interventions by the South African government, the SMME sector still faced the challenge of access to finance. For example, the SBP (2015) argues that the South African government has allocated R508 million to these institutions to provide extended credit to SMMEs. However, SMMEs can still not participate in the public procurement process due to a lack of funding from institutions.

Obaji and Olugu (2014) claim that securing credit by SMMEs requires borrowers to pledge collateral against the loan. The conditions of pledging collateral affected the establishment of new SMMEs and the expansion of the existing ones. In Malaysia, a study conducted by Haron et al. (2013) shows that most financial institutions were reluctant to disburse funds to SMMEs because of a lack of collateral, size, and business records. Mthimkhulu and Aziakpono (2015) concur that the lack of access to finance is due to inadequate collateral on the part of the entrepreneur and the absence of credit history. Moreover, research (GEM, 2017; World Bank, 2017; International IMF, 2016) confirms that SMMEs have limited access to credit facilities as opposed to large enterprises. Evidence suggests that, compared with large enterprises, SMMEs, globally, struggle to access funding. In a recent study conducted by Asah et al. (2020), it was found that, in South Africa, access to finance by SMEs is determined by factors such as collateral, annual business turnover, and audited financial records. Asah et al. (2020) pointed out that collateral and financial investment capital impacted SMME ability to obtain credit from banks.

7.4.2 Human resources and SMME participation in public procurement

Besides access to finance, human resources have been identified as one of the greatest constraints impacting SMMEs participation in public procurement. Boldureanu et al. (2020) suggested that entrepreneurship education offers creative thinking ideas. Staniewski (2016) claims that entrepreneurs with management skills and experience who employ employees with unique knowledge are more successful in business than others. Mohammed and Nzelibe (2014) also concur that having well-versed and good business managerial skills is vital to any individual to run and successfully manage a business. The SMME sector is contingent on quality, available human resources to develop and deliver a competitive product that meets consumers' changing needs; and

can mitigate societal woes such as poverty and inequality (Mohammed and Nzelibe, 2014). Vallabh and Mhlanga (2015) express a similar view that human capital is critically important to the long-term development of the SMME sector. GEM (2020) also acknowledges that entrepreneurship education is the driving force behind achieving a business innovation culture, business development, and growth. Ndofirepi and Rambe (2018) advocate that creativity and innovativeness in the SME sector can be achieved only if universities and governments provide entrepreneurial development and support by assessing entrepreneurial degree content, delivery strategies, and enhancement of the practical orientation of the subject.

BER (2016) also confirms that management or managerial skills are a critical factor for the success of any organisation. BER (2016) notes that SMMEs, especially those in the service sector, are negatively affected by the shortage of skills in South Africa. Unfortunately, a study (Green et al., 2012) reveals that lack of managerial skills is a common phenomenon that affects most SMMEs in South Africa and across the world. van Scheers (2016) agrees with the above scholars that lack of essential managerial skills such as business planning is one of the reasons that small businesses fail. Furthermore, scholars such as Bushe (2019), Furawo and Scheepers (2018), Herrington et al. (2014), and Rungani and Potgieter (2018) advocate that the failure rate of SMEs is high because the owners and managers have failed to introduce creative and innovative ideas into the running of the business. Contrary to the view expressed by the above scholars, Mueller and Naffziger (2015) contend that planning activity in small businesses has nothing to do with the demography, such as age, skills, education, and experience of the owner.

7.4.3 Procurement regulations and SMME participation in public procurement

Furthermore, the results of the study are consistent with existing research (Smit and Watkins, 2012; Fumo and Jabbour, 2011) which identified procurement regulatory frameworks as one of the factors that limit the participation of SMMEs in public procurement. According to Fumo and Jabbour (2011), SMME owners in South Africa lack understanding of government regulations, hence they are unable to compete with large firms. James (2016) also claims that the delays in obtaining export permits and licences hinder the investment and efficiency of foreign-owned SMMEs in South Africa. Schwab and Sala-i-Martin (2014) concur that government bureaucracy or red tape is a key obstacle to entrepreneurial development in South Africa. Agwa Ejon and Mbohwa (2015) infer that an unfavourable regulatory environment is one of the most serious issues collapsing many SMMEs in Africa. OECD (2017) reports that a burdensome regulatory environment has been found to reduce the rate of entrepreneurial activity. Simodisa (2015) argues that South Africa has several regulations that undermine entrepreneurship by hindering access to critical resources such as talent and capital, creating an unstable and unpredictable business environment, and eroding the rewards of success. Shane (2014) also observes that compliance with the government regulatory framework is a greater encumbrance to SMMEs than to large firms; and regulation hinders SMME formation, growth, and

job creation. Kamara (2017) asserts that the high costs of starting SMMEs, including licensing and registration requirements can impose excessive and unnecessary burdens on SMMEs.

Anthony (2018) agrees with other scholars that the South African public procurement legislation permits all forms of public procurement. However, a conversion to e-procurement is more complex and challenging when it comes to a competitive bidding process. It is also argued that, despite several reforms in public procurement and the employment of SCM as a strategic tool, South Africa continues to face enormous challenges in its public procurement practices (Ambe, 2016). It has been found that most SMMEs have limited business opportunities because of non-compliance with the regulatory documentation required as set out in the SCM policy (Sitharam & Hoque, 2016). Moreover, a study discovers that the systems of procurement and provisioning are highly fragmented because tender boards are exclusively responsible for procurement; while provisioning is largely underwritten by norms and standards within the logistics system driven by the National Treasury (Ambe, 2018).

7.4.4 Supply chain management and SMME participation in public procurement

In addition, the results of this current study reaffirm the findings from previous research concerning the link between SCM and SMME participation in public procurement. Nkwanyana and Agbenyegah (2020) claim that SCM has emerged as a tool to help mitigate irregularities of the previous procurement models within the public sector. However, since its inception, extant literature exposes several irregularities and deficiencies in the public procurement process, particularly within the public sector. The anomalies and deficiencies can be attributed to the lack of M&E of the SCM (Mbanje and Lunga, 2015). Mhelembe and Mafini (2019) lament that, although the South African SCM system has been hailed as a positive step towards transforming the public service, accountability concerning municipal financial management and performance in the localized sphere of government has deteriorated. Despite government legislation on tender and procurement, more than 34% of public institutions, especially departments, have awarded contracts to themselves and close friends and family members. Several reasons were cited for the causes of South Africa's corruption: misuse of resources, misappropriation of the funds, bribery, fraud, procurement irregularities, and unethical behaviour (Georgieva, 2017; Serfontein and De Waal, 2015; Manyaka and Nkuna, 2014).

It has further been observed that most SMMEs face the challenge of accessing appropriate procurement-related information (Ocloo, Akaba and Worwui-Brown, 2014). The CIDB (2017) indicates that the lack of access to procurement information comes about because most government officials do not want to provide such information to the SMME owners. Pillay and Mafini (2017) intimate that those contractors are hampered in accessing government information because of the fragmentary nature of the sector.

As part of the broad SCM challenges, CIDB (2017) reports that the current preferential procurement environment is a key constraint to the construction industry. It encourages historically disadvantaged professionals to establish their own firms rather than join established companies. CIDB (2017) observes that the fragmentation has reduced the depth and breadth of expertise that can be consolidated within medium and large companies through access and experience on specialised and diverse projects. Besides, the preferential method of procurement in use in South Africa contributes to an unhealthy competition that impedes the development of small enterprise capabilities and sustainability (CIDB, 2012; Williams, 2007).

7.4.5 Quality management and SMME participation in public procurement

The study found that SMME participation in the public procurement process is impacted by quality management. These findings are supported by existing research (Karasachol and Ruangpermpool, 2002 and Parkin and Parkin, 1996), which identified quality management issues facing SMMEs, including cultural, management awareness, financial and human resource challenges. The Construction Monitor (2018) reports that access to work, especially for targeted enterprises, is important for transformational imperatives within the construction economy. Pillay and Mafini (2017) state that the over-reliance on unqualified people in South Africa has resulted in poor quality services and abysmal performance. The CIDB's Drivers of the Cost of Public Sector Construction (2017) reports that the late interim payments and delayed payment of final accounts – often up to 90 days after invoice submission – affect contractors' performance (CIDB, 2008). Hellrigel *et al.* (2008) suggest that threats of substitute commodities are one of the quality management issues facing SMMEs worldwide.

7.5 Chapter Summary

The chapter discussed the results from the questionnaire survey and presented the findings from the previous chapter. The results from the EFA and SEM were used to discuss the validated model. The mean scores for all the public procurement practices indicated a high-to-medium performance level. The findings revealed that GPP, which focuses on recycling, was the most practised. Results from the SEM showed that the general hypotheses that openness, accountability, transparency, and value for money jointly influence effective public procurement could not be rejected. However, the hypothesis that competitiveness influences effective public procurement was rejected. Moreover, the findings revealed that construction SMME participation in public procurement was impacted by access to finance, human resources, procurement regulations, SCM, and quality management. The following chapter draws the conclusion and makes recommendations based on the findings obtained from the study.

CHAPTER EIGHT: CONCLUSION AND RECOMMENDATIONS

8.1 Introduction

The previous chapter discussed the findings that emerged from the study. This chapter concludes and makes recommendations based on the results obtained from the study. The conclusions are made per the objectives of the study. The chapter summarises the key findings of the study. It concludes by offering the limitations and suggestions for future research.

8.2 Review of Research Objectives

8.2.1 Objective One: Level of performance of the existing procurement models

The first objective determined the level of performance of the existing procurement models within the construction industry in South Africa. This objective was achieved by first undertaking an extensive literature review to identify the relevant current procurement and models. Based on the literature, innovative, sustainable, and GPP systems were identified and presented to the study respondents. The respondents were asked to respond to each set of statements. The evaluation of responses showed that the GPP had been highly adopted compared with the other two methods. These findings further reaffirmed the results of existing research. It is suggested that effective public procurement is a potential catalyst for innovative solutions to pressing societal challenges (OECD, 2018). Effective public procurement is measured in terms of SPP, GPP, and IPP. Most countries have developed policies at some level regarding green, sustainable and IPP (OECD, 2018).

8.2.2 Objective Two: Factors that influence effective public procurement

The second objective dealt with the development of a public procurement model for SMMEs in South Africa. This objective led to the development of the main conceptual model. The hypothesized conceptual model was a five-construct model framed by gaps in existing literature concerning effective public procurement for the current study. The identified constructs were Openness, Accountability, Transparency, Competitiveness, and Value for Money. After the structural equation model, the validated model was a four-factor model in which competitiveness was excluded, as it was considered non-significant for effective public procurement in the South African context. The IBM AMOS, version 27 software, was the structural equation modelling software utilised to develop the structural model after the testing model fit of the measurement model. The findings obtained from the study are also supported by previous research (Sibanda, et al., 2020; Molver and Noeth, 2017; Baldi et al., 2016).

8.2.3 Objective Three: Challenges to the adoption of effective public procurement practices

The third objective identified the challenges to the adoption of effective public procurement practices. To achieve this objective, a literature review was undertaken, starting with a general overview of procurement research, followed by a review of relevant literature to identify the factors that influence and determine effective procurement, generally. The survey method was used to identify the influence of the identified factors from the literature. This study established that the factor with the most substantial impact on effective public procurement is the disclosure of business

interests by workers, managers, and officials in state institutions. Furthermore, the study found the unavailability of correct bid documents and returnable documents in the procurement process as the challenge most experienced. Inappropriate and inadequate procurement planning and lack of knowledge to produce acceptable plans were also found to be some of the most commonly experienced challenges to adopting effective public procurement. The overall findings suggested that construction SMME participation in public procurement was impacted by access to finance, human resources, procurement regulations, supply chain management, and quality management. Procurement entities should implement training programmes to empower construction SMMEs to participate in public procurement. The results of this study also agreed with existing research (Anugwo et al., 2018; Mamabolo et al., 2017; Lee, et al., 2016) which states that SMEs participation in public procurement is affected by several factors, including lack of skills, unavailability of correct bid documents and just to mention a few.

8.2.4 Objective Four: Goodness of fit of the hypothesized effective public procurement

The last objective was to measure the goodness of fit of the hypothesized effective PP model for the South African context. The study established from the evaluation of the model fit, statistics that the structural model was of good fit, and fit the sample data adequately. Further, the model fit statistics obtained from the measurement models indicated that the constructs included in the structural model qualified for inclusion. Moreover, the covariance of the constructs in the model with the exogenous was statistically significant.

8.4 Recommendations of the Study

The following recommendations are made as per the results of the study.

8.4.1 Recommendation 1: Managerial and leadership skills

Extant literature suggests that management or managerial skills represent an essential factor for the success of any organisation. It has been widely acknowledged that entrepreneurs with management skills and experience who employ employees with unique knowledge are more successful in business than others. Moreover, it is suggested that business owners and managers' education, experience, and skills help small businesses develop the strategies that lead to success. However, the results revealed that human-resource skills negatively impacted the construction SMME participation in public procurement. For instance, it was found that SMME owners do not have adequate supervision skills. In addition, the results indicated that SMMEs are unable to increase their productivity due to a lack of managerial skills and highly skilled employees. Against this background, the study recommends that for construction SMMEs to participate in public procurement effectively, they should possess both managerial and leadership skills. Besides, it recommends that construction SMMEs recruit employees who have exceptional skills, construction-related qualifications, knowledge, experiences, and competencies required to assist in running the business.

8.4.2 Recommendation 2: Competitive public procurement system

One of the primary objectives of effective public procurement is to be open to competition. In the South African context, it is a legal requirement that public procurement be provided per principles such as competitiveness. It has been argued that competitive bidding leads to competition among suppliers, guaranteeing lower awarding prices, due to the lowest cost bidder's selection. In addition, extant literature suggests that it has been recommended that competitive bidding minimises informative asymmetries and encourages bidders to publish their production costs. Competitive bidding also promotes transparency, reducing corruption and political favouritism. However, the results of this current study indicated that competitiveness was considered non-significant for effective public procurement in the South African context. This study proposes that construction SMMEs should be encouraged to participate in public procurement through competitive bidding.

8.4.3 Recommendation 3: Government support

Globally, SMME participation in public procurement and sustainability is affected by a myriad of factors, including access to finance. Evidence from the literature review indicates that the banking system in developing countries provides little or no financial products to SMMEs. The literature suggests that most applications for bank credit by new SMMEs in South Africa were rejected for one or several of various reasons. It is recommended that the conditions of pledging collateral could affect SMMEs participation in public procurement. This current study also confirms that access to funding was one of the major issues affecting construction SMME participation in public procurement. For this reason, the study recommends government support in the form of credit facilities to encourage the participation of SMMEs in public procurement. Financial institutions should disburse funds to SMMEs who are qualified to meet financial obligations.

8.4.4 Recommendation 4: Removal of legislative barriers

South Africa is among the few countries to have public procurement subject to its Constitution and acknowledged as a tool for addressing past discriminatory policies and practices. South Africa has established a procurement regimen that gives preferential allocation of contracts to some specific groups of people, such as those previously disadvantaged. Although there have been legislative reforms, this study found that legal frameworks constituted one of the challenges limiting construction SMME participation in public procurement. For instance, the results suggested that construction SMMEs found it problematic to obtain their registration licence. Based on the results, the study proposes that legal barriers that impede the participation of SMMEs in public procurement be removed. Government must create an enabling environment for all businesses, especially emerging contractors, to encourage their participation in public procurement. Additionally, the government should grant construction SMMEs tax holidays to encourage them to participate in public procurement. Furthermore, the government should educate SMMEs on public procurement laws to ensure compliance. When adopted, these measures will help SMMEs to effectively participate in public procurement system.

8.5 Contributions and Value of the Research

The ultimate contribution of this study is the development of a model that would ensure an effective PP process for construction SMMEs in South Africa. Through SEM, the model confirms that effective public procurement is determined by a four-factor model, which comprises openness, transparency, accountability, and value for money. The study asserts that these factors will significantly determine the effectiveness of the public procurement process of construction SMMEs in South Africa.

8.6 Limitations and Directions for Further Research

The scope of the study was limited to a quantitative research method. Future research should adopt mixed methods to obtain divergent views and results on public procurement, SPP, and IPP. Moreover, the study was limited to the procurement system in the South African context. This means that the results of the study cannot be generalised internationally. Future studies should compare the public procurement system in South Africa with other jurisdictions or countries. In addition, the study scope of the study was limited to public sector organisations. Hence, future research should combine public and private sector organisations. Another limitation of the study was the model developed. The model only focused on effective public procurement without explaining how it was arrived at. The model could not explain how the pillars of public procurement impact effective public procurement. That is, the model only include public procurement pillars and principles such as value for money, transparency, accountability, openness, and competitiveness. Therefore, future research should validate the model to determine exactly how effective public procurement was arrived at.

8.7 Chapter Summary

The chapter highlighted key findings that emerged from the study. Moreover, the chapter presented recommendations, limitations, and directions for future research. The evaluation of responses showed that the GPP had been more highly adopted than the other two methods. The hypothesized conceptual model in this study was a five-construct model framed by gaps in existing literature concerning effective public procurement. After the structural equation model, the validated model was a four-factor model from which competitiveness was excluded, as it was considered non-significant for effective public procurement in the South African context. The study established that the factor that has the most substantial impact on effective public procurement was the disclosure of business interests by workers, managers, and officials in state institutions. The findings revealed that public procurement authorities and government officials have engaged in different unethical procurement practices that undermined the efficiency and effectiveness of the procurement system. Furthermore, the study found the unavailability of correct bid documents and returnable documents in the procurement process the most significant challenge. Inappropriate and inadequate procurement planning and lack of knowledge to produce acceptable plans were also found to be some of the most experienced challenges to adopting effective public procurement.

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APPENDIX A: QUESTIONNAIRE

**“A Public Procurement Model for Construction Small, Medium and Micro Enterprises in
Section A: Demographic Information
South Africa”**

This part of the questionnaire contains questions on the demographic information of the participants in terms of gender, age, race, educational qualification, tenure and employment status,

Please indicate your selection with an [X]. **A1.**

What is your gender?

1	Male	
2	Female	
3	Other	

A2. What is your age?.....years

A3. What is your race?

1	African	
2	Indian	
3	Coloured	
4	White	
5	Other (please specify)	

A4. What is your highest qualification?

1	Diploma	
2	Postgraduate Diploma	
3	Bachelor’s Degree	
4	Honours/BTech	
5	Masters	
6	Doctorate	
7	Other (please specify)	

A5. How long have you been working?yearsmonths

A6. What is your position you in the company? (please tick):

1.	Owner	
2.	Partner	
3.	Manager	
4.	Worker	
5.	Construction Project Manager or Procurement Manager	
6.	CFO or Head of SCM	

7.	Procurement Experts	
8.	Built Environment Professional	
9.	Accounting Officer	
10.	Member of Middle Management	
11.	SMME Expert	
12.	Other (please specify)	

A.7 Which of the following organisations do you belong to?

1	Public Works Sector	
2	Construction Industry Development Board	
3	Business Chamber	
4	Business Council	
5	Procurement Institute	
6	Built Environment Council	
7	Progressive Professionals Forum	
8	Other (please specify)	

Section B: Procurement Challenges Facing SMMEs

The following statements require information about the procurement challenges facing SMMEs in South Africa. Please on the scale of 1-10,rate the following statement. The weight-scoring are: 1 = 10%, 2 =20%; 3 = 30%; 4 = 40%; 5 = 50%; 6 = 60%; 7 = 70; 8 = 80%; 9 = 90%; and 10= 100%

No	Statement	1	2	3	4	5	6	7	8	9	10
Access to Finance											
ATF1	SMMEs have easy access to finance form financial institutions										
ATF2	SMMEs have enough collateral security as a guarantee for loan/credit facility from the financial institutions										
ATF3	SMMEs maintained an up-to-date records of all financial and business transactions										
ATF4	SMM owners have the knowledge and expertise to produce an acceptable business plan to meet the standards required by financial institutions										
AFT5	SMMEs are able to generate sufficient cash flow to repay back loans										
AFT6	SMMEs are able to gain access to the competitive market										
AFT7	SMMEs have access to procurement opportunities from government institutions										

AFT8	The government ensures that construction emerging contractors are paid on timely										
AFT9	SMMEs have better understanding on when competition of tender documents										
AFT10	There exists better competitive pricing among construction SMMEs in the market										
AFT11	SMMEs have better understanding of contractual documentation e.g. (guarantees, retentions, insurance and initial programme of works)										
AFT12	Crime and corruption have no significant impact on SMMEs										
Human Resources											

HR1	SMMEs have enough people to assist in the running of the business										
HR2	The human resources employed by SMMEs are competent enough to perform their tasks										
HR3	SMMEs workforce have relevant skills and competencies required to effectively carry out their responsibilities										
HR4	There exists several opportunities for training and development for employees working in SMMEs										
HR5	I consider investing in training and developmental needs of the workforce										
HR5	SMME owners have the competencies and skill to effectively run the business										
HR6	SMME owners have minimum education qualification and experience to run the business more effectively and efficiently										
HR7	SMME owners have adequate supervision skills										
HR8	SMME owners are able to increase their employees morale										
HR9	SMMEs are able to increase their productivity										
HR10	SMMEs are able to eliminate employee idleness on site										
HR11	Employees working in the SMMEs are aware of what is required from them										
HR12	There is low possibility for employee strike action in SMMEs										
HR13	Employee absenteeism in SMMEs is very minimal										
HR14	The human errors/mistake arising from business transactions and operations in SMMEs are reduced										
Regulatory Frameworks											
RF1	SMME owners are aware of government regulatory frameworks that impact on construction SMMEs										

RF2	SMMEs owners have better understanding of the government regulatory frameworks that govern the construction industry										
RF3	Government regulations governing the construction industry are flexible enough to ensure compliance										
RF4	SMMEs are able to comply with all the regulatory frameworks that govern the construction industry										
RF5	Government regulatory frameworks promote the prospects for enterprise development in South Africa										
RF6	Construction SMME owners find it very easy to obtain their registration license										
RF7	There are no penalties imposed on construction SMMEs for non-compliance to government regulatory frameworks										
Supply Chain Management											
SCM1	SMMEs owners have adequate and better understanding of government policies and regulations on supply chain management										
SCM2	SMMEs are able to comply with SCM prescripts and general regulatory documentation required as set out by supply chain management policy										
SCM3	The public procurement process and system ensure correct utilisation of preference points										
SCM4	The Passing over bids for incorrect reasons in the procurement system is eliminated										
SCM5	There is availability of bid information on bid the register during the procurement process										
SCM6	Ambiguous specifications in the public procurement process is eliminated										
SCM7	The procurement process ensures availability of correct bid documents and returnable documents										
SCM8	The procurement authorities and practitioners exhibit a high level of procurement knowledge and skills										
SCM9	The procurement authorities demonstrate high level of accountability, fairness and transparency										
SMC10	The possibility of fronting occurring in the public procurement process is minimal										
SMC11	Fraud and corruption are eliminated in the government procurement practices										
SMC12	Maladministration procurement practices are eliminated in the public procurement system in South Africa										
SCM13	Procurement system in properly integrated and automated which helped to save costs										

Quality Management											
QM1	There is adequate and regular monitoring and evaluation by SCM officials										
QM2	Emerging contactors are able to gain access to government contracts										
QM3	There is correct tender specifications										
QM4	There exist correct conditions of contract (GCC/JBCC) in the public procurement process										
QM5	The public procurement allows for proper linking of planning and budget										
QM6	SMMEs are accredited with cidb										
QM7	There is proper and adequate procurement planning by government										

SSECTION C: PUBLIC CONSTRUCTION PROCUREMENT PRINCIPLES AND PILLARS

The following statements require information about the public construction procurement principles and pillars. Please on the scale of 1-10, rate the following statement. The weight-scoring are: 1 = 10%; 2 = 20%; 3 = 30%; 4 = 40%; 5 = 50%; 6 = 60%; 7 = 70%; 8 = 80%; 9 = 90% and 10 = 100%

	Statement	1	2	3	4	5	6	7	8	9	10
Openness											
O1	Public procurement practices are opened to public scrutiny										
O2	The procurement of goods, works and services by government institutions are conducted through open system										
O3	There is an opened tendering system which is approved by designated officers										
O4	Open public procurement system ensures that there is fairness and accountability										
Accountability											

A1	There exists government policies and regulations on accountable governance										
A2	The policies and regulatory frameworks on accountability is very clear and understood by all government official										
A3	Government officials and procurement authorities held accountable for their decisions and actions										
A4	Workers hold their managers and government official accountable for their decisions and actions										
A5	Managers and governmental official are allowed to hold their colleagues accountable for their decisions and actions										

A6	The public procurement system is responsive and responsible to the stakeholders										
A7	The public procurement system in place is fair and equitable to everyone										
A8	The public procurement entities and authorities are independent										
Transparency											
T1	There exists well-functioning policies and regulations on transparency in public procurement										
T2	Staff and government officials aware of the need to be transparent										
T3	Annual reports and budgets in various government institutions are widely distributed or published in Government Gazette										
T4	Financial transactions and accounts of government institutions are audited by the Auditor General										
T5	There is a system of disclosure of business interests by workers, managers, and officials in state institutions										
T6	The system for disclosure of business interests by staff members, managers and officials is effective										
Competitiveness											
C1	Public procurement bidding process is very competitive and healthy										
C2	Competitive bidding process leads to lower prices, better quality, and innovation when companies are allowed to genuinely compete										
C3	Competitive bidding helps to avoid favoritism and corruption in the public procurement process by enabling SMMEs and contractors to externalise their search effort										
C4	Competitive bidding reduces informative asymmetries and motivates bidders to reveal their private production costs										
Value for money											
VFM1	Public procurement system ensures value for money										
VFM2	Fraud and corruption are eliminated in the public procurement process										
VFM3	The value for money serves as a check against unplanned procurement activities										
VFM4	Procurement and government officials are highly professionals and experienced in the field										

VFM5	The procurement officers and government official regularly appraises their procurement activities to ensure value for money									
VFM6	Value for money ensures that the state agencies link their budgets to procurement activities									
VFM7	Every state institution plans annual procurement spending to ensure value for money									
VFM8	Value for money has reduced corruption and improved service delivery in procurement activities									
VFM9	Procurement entities in government institutions liaise with Public Procurement Authority always for timely and required procurement information									
VFM10	Procurement activities within the procurement entities are assessed annually by the Public Procurement Authority									

SECTION F: INNOVATIVE PUBLIC PROCUREMENT, GREEN PUBLIC PROCUREMENT AND SUSTAINABLE PUBLIC PROCUEREMENT

Innovative Public Procurement		1	2	3	4	5	6	7	8	9	10
IPP1	There exists innovative-friendly regulations on public procurement system in South Africa										
IPP2	The innovative public procurement system ensure simplification and easier access for tender procedures										
1PP3	There exists high level strategies and practices to ensure innovative public procurement										
1PP4	The procurement entities provide training schemes, guidelines, and good practices network to support public procurement										
1PP5	The procurement entities ensure that there is subsidy for additional costs of innovative public procurement										
1PP6	The procurement entities have developed innovative platforms to bring suppliers and users together										
1PP7	The procurement entities have introduced innovative requirements in all tenders										
Green Public Procurement											
GPP1	The public procurement system in place encourages electronic submission of bids										
GPP2	The green public procurement system considers environmental sustainability										

GPP3	The public system encourages organisations to adopt green product certifications										
GPP4	The green product certifications in public procurement system encourages the use of green products										
GPP5	The green public procurement focuses primarily on recycling										
GPP6	Green public system reduces costs and liabilities										
GPP7	Green public procurement helps to minimise the impact on the environment										
Sustainable public procurement											
SPP1	The public procurement policies and regulations encouraged sustainable public procurement										
SPP1	Sustainable public procurement allows procurement authorities and organisation to use a life-cycle analysis to evaluate the environmental friendliness of products and packaging										
SPP3	Sustainable public procurement laws and policies require supplier to commit to waste reduction goals										
SPP4	Sustainable public procurement reduces packaging materials										
SPP5	Sustainable public procurement ensures that suppliers operate in a safe manner										

APPENDIX B: INFORMED CONSENT FORM

UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HSSREC)

APPLICATION FOR ETHICS APPROVAL For research with human participants

Information Sheet and Consent to Participate in Research

Date: 09 JUNE 2020

Greetings,

My name is Thulani Mdadane, a doctoral student at the University of KwaZulu-Natal in the School of Engineering, Construction Studies Programme. My email address is 972160114@ukzn.ac.za and cell phone number is 082 327 4809. Prof. Theo Haupt is my supervisor, who is also located at the University of KwaZulu-Natal in School of Engineering, Construction Studies Programme. His email address is theo.haupt@ukzn.ac.za and telephone number is 031-2607047.

You are being invited to consider participating in a study that involves research into “**A Public Procurement Model for Construction Small, Medium and Micro Enterprises in South Africa**”. The aim of the study is to develop a new public procurement model that would help to address the procurement challenges which confront the SMMEs, especially those in the construction industry. Furthermore, study aims to contribute to the gap in research by exploring how construction SMMEs could be used as a vehicle by the government to achieve radical social and economic transformational agenda towards job creation, poverty alleviation and equity redress through sustainability and innovation. Besides, the study aims to delve into the government initiatives that enhance the SMMEs sector, particularly the emerging contractors in the construction industry.

The research objectives of this study are:

Objective 1 : To investigate the procurement challenges facing SMMEs in South Africa in achieving sustainability and innovation;

Objective 2: To determine how government ensures SMME participation in its procurement programmes to help them achieve sustainability and innovation?

Objective 3: To identify the construction procurement principles and pillars that will support the SMMEs sustainability, innovation and green agenda in the construction sector;

Objective 4: To ascertain how the Infrastructure Delivery Management System help SMMEs to achieve sustainability and innovation in construction sector;

Objective 5: To examine how procurement principles and pillars be used in the new conceptual model to enhance sustainability and innovation of SMMEs in the construction sector.

The study is expected to involve 566 respondents existing within the built environment in Kwazulu Natal, Western Cape, and Gauteng.

Due to the COVID-19 pandemic, the primary data collection process will not involve physical or personal contact. It will be done through online using Google Form. The data collection will involve the following procedures.

A written permission will first be obtained from UKZN Research Office and the participating organisations, Construction Industry Development Board (CIDB), National Department of Public

Works, Procurement Performance Institute (PPI), and KwaZulu Natal Department of Public Works Having obtained the approval, the questionnaires and Informed Consent Form will then be placed on the Google Form and the link will be sent via email to each participant. The duration of your participation if you choose to participate and remain in the study is expected to be approximately two months. The study is not funded by any individual, group or organisation.

There are a number of contributions which can be derived from this present study. Firstly, the results of this study will add to existing knowledge of literature on SMMEs, SMME sustainability, innovation and public procurement policy.

Secondly, the study will contribute to the growth, survival and sustainability of the SMME sector in South Africa. One of the keys aims of the study is to make appropriate recommendations to the government on the challenges confronting the SMMEs.

Thirdly, the study will serve as a vehicle for the government and SMMEs in promoting job creation, employment equity, poverty alleviation and socio-economic development. The study will investigate the contribution of the construction SMMEs in South Africa towards economic growth and development.

Fourthly, the study will contribute to addressing the tension between efficiency and distributive arguments in public procurement.

Lastly, the study will serve as a new alternative procurement model for the government and the SMME sector as whole. A new procurement model will be developed out of the existing models on SMMEs.

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (approval number).

In the event of any problems or concerns/questions you may contact the researcher at the University of KwaZulu-Natal on the contact details above or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban 4000 KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557- Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

Your participation in the study is voluntary and by participating, you are granting the researcher permission to use your responses. You may refuse to participate or withdraw from the study at any time with no negative consequence. There will be no monetary gain from participating in the study. Your anonymity will be maintained by the researcher and the School of Engineering, Construction Studies Programme and your responses will not be used for any purposes outside of this study.

All data, both electronic and hard copy, will be securely stored during the study and archived for 5 years. After this time, all data will be destroyed.

If you have any questions or concerns about participating in the study, please contact me or my research supervisor at the numbers listed above.

Sincerely

Thulani Mdadane -----

CONSENT TO PARTICIPATE

I,have been informed about the study entitled “**A Public Procurement Model for Construction Small, Medium and Micro Enterprises in South Africa**” by Thulani Mdadane. I understand the purpose and procedures of the study.

I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at the University of KwaZulu-Natal on 972160114@stu.ukzn.ac.za /082 327 4809.

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557 - Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

Additional consent, where applicable

I hereby provide consent to:

Audio-record my interview / focus group discussion **YES / NO**

Signature of Participant

Date _____

APPENDIX C: PERMISSION LETTERS

Head of Department
KwaZulu-Natal of Public Works
easter.sharpley@kznworks.gov.za

Attendon Dr GG Sharpiey

Request for permission to conduct research

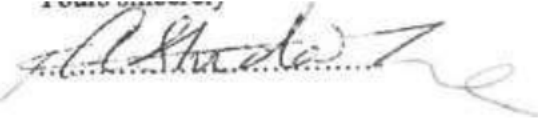
My name is Thulani Alfred Mdadane, Student Number 972160114 studying towards PhD in **struction**Studies Programme at the University of KwaZulu-Natal. For the study approval process by Humanities and Social Science Research Ethics Administration at UK.ZN, the student is required to obtain gatekeeper permission from organisation where they conduct research within the organisation.

Therefore, I request the permission to conduct research at your organisation for the study entitled "A Public Procurement Model for Construction Small, Medium and Micro Enterprises in South Africa".

The aim of the study is to develop a new public procurement model that would help to address the procurement challenges, which confront the SMMEs, especially those in the construction industry. Furthermore, study aims to contribute to the gap in research by exploring how construction SNMEs could be used as a vehicle by the government to achieve radical social and economic transformational agenda towards job creation, poverty alleviation and equity redress through sustainability and innovator. Besides, the study aims to delve into the government initiatives that enhance the SMMEs sector, particularly the emerging contractors in the construction industry. The study will involve participant of contractors, professionals in the built environment, and government officials from Public Works sector and Treasury from Gauteng, Western Cape, and KwaZulu Natal. The study will further include procurement expects.

If you are willing to be involved, would you please sign and stamp the form below that acknowledges that you have read the Participant Information Sheet, you understand the nature of the study being conducted and the likely benefits of participation in this study and you give permission for the research to be conducted at the organisation.

Yours sincerely



Thulani Alfred Mdadane

I, GASTEL SHARPLEY (Name) DOCTOR
of DEPARTMENT OF PUBLIC WORKS (organisation) having being fully informed of of..

(title)
the nature of the research to be conducted and given my permission for the study to be conducted. I reserve right to withdraw this permission serve the right to withdraw thi at any time.

Signature:.....



Date:.. .04.....

Stamp:

MNYANGO
WE.ZEM'SEBENZ'
HEAD: PUBLIC WORKS
SEPOSI: PRIVATE BAG X
9041

1 4 MAY 2020

ERMARITZBURG
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PIET
DEPARTMENT

KZN DEPARTMENT OF PUBLIC WORKS
K.ZN

Attention Mr. N Valakati

Request for permission to conduct research

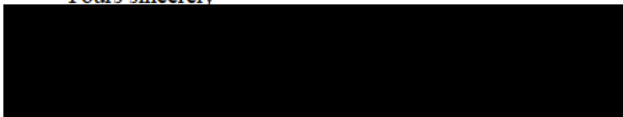
My name is Thulani Alfred Mdadane, Student Number 972160114 studying towards PhD in Construction Studies Programme at the University of KwaZulu-Natal. For the study approval process by Humanities and Social Science Research Ethics Administration, student required to obtain gatekeeper permission from organisation where they conduct research within the organisation.

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Yours sincerely

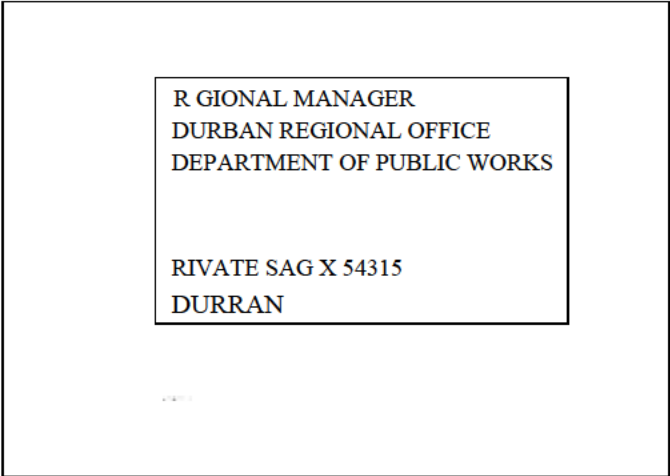

Thulani

I, NKOSINGIPHILLO VILAKAZI (Name) MR. (title)
of DEPT. PUBLIC WORKS & INFRA. (organisation) having being fully informed of the nature of the research to be conducted and given my permission for the study to be conducted. I reserve the right to withdraw this permission at any time.

Signature: 

Date: 14/05/2020

Stamp:



Head of Department
KwaZulu-Natal Department of Public Works easter.sharpley@kznworks.gov.za

Attention Dr GG Sharpiey

Request for permission to conduct research

My name is Thulani Alfred Mdadane, Student Number 972160114 studying towards PhD in Construction Studies Programme at the University of KwaZulu-Natal. For the study approval process by Humanities and Social Science Research Ethics Administration at UKZN, the student is required to obtain gatekeeper permission from organisation where they conduct research within the organisation.

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Yours sincerely



Thulani Alfred Mdadane

I, GASTEL SHARPEY (Name) DOCTOR
of DEPARTMENT OF PUBLIC WORKS (organisation) having being fully informed of (title)
the nature of the research to be conducted and given my permission for the study
to be ~~serve the right to withdraw this~~ conducted. I reserve withdraw this permission at any time.

Signature:.....



Date: 14/05/2020

Stamp:

KZN DEPARTMENT OF PUBLIC WORKS			
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structionIndusfiy Development Board (CDB)
nerumalnrcidborg.za

nitionMr P Peru mal

Request for permission to ~~conduct~~ research

My name is Thulani Alfred Mdadane, Student ~~Number~~ 972160114 studying towards PhD in Construction Studies Progamme at the University of KwaZulu-Natal. For the study approval process by Humanities and Social Science Research Ethics Administration, student required to obtain gatekeeper permission from organisation they conduct research within the organisation.

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. through sustainability and innovation. Besides, the study aims to delve into the government initiatives that the SMMEs pmficularly the emeröng contactors in the const•uction indusfry. The study will involve participation of ~~contractors~~, professionals in the built environment, and government officials from Public Works sector md Treasury from Gauteng, Western Cape, and Kwazulu Natal. The study will further include procurement expects.

If you willing to be involved, would you please sign and stamp the form below that acknowledges that you have read the Participant Information Sheet, you understand the nature of the study being conducted and the benefits of participation in this study and you give permission for the research to be conducted at the ~~organis~~

Thulani Alfred Mdadane

I, Leumke Vandon Piny (Name)
of CIDB 122 (title)

(Name) CIDB Leumke Vandon Piny (title)

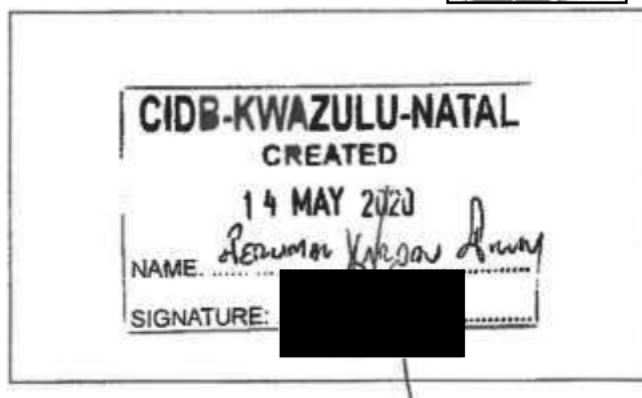
(organisation) having being fully informed of the nature of the research to be conducted and given my permission for the study to be conducted. I reserve the right to withdraw this permission at any time.

Signature'

Date

10/05/2020

Stamp:



Procurement Performance Institute (Pty) Ltd

ppisouthafrica@gmail.com

nduduzoh@gmail.com

nngema@ppiltd.co.za

Attention: Mr Nduduzo Ngema

Request for permission to conduct research

My name is Alfred Mdadane, Student 972160114 studying towards PhD in Construction Studies Programme at the University of KwaZulu-Natal. For the study approval process by Humanities and Social Science Research Ethics

Administration, student required to obtain gatekeeper permission from organisation where they conduct research within the organisation.

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If you are willing to be involved, would you please sign and stamp the form below that acknowledges that you have read the Participant Information Sheet, you understand the nature of the study being conducted and the likely benefits of participation in this study and you give permission for the research to be conducted at the organisation.



Thulani Alfred Mdadane

I.....(Name) (title)
of(organisation) having being fully informed of the nature of the research to be conducted and given my permission for the study to be conducted. I reserve the right to withdraw this permission at any time.



Signature_____

Date.....

Stamp:





**PROCUREMENT
PERFORMANCE
INSTITUTE**

03 2020

To Whom it may Concern;

Re; Gate Keepers Permission: Mr Thulani Alfred Mdadane student number 972ta14

This letter seeks to confirm grantil* Gate Keepers Permission to the above stated PhD andidate in
Construction Studies Preramme at the university of KwaZulu Natalb Yours. Faithfully.

On behalf of Procurement Performance Institute (Pty) Ltd understand and support the nature of the above
study.

Regards

Mr. Ndu uzo Siyabmea Ngernö



CHIEF EXECUTIVE OFFICER
a-11EF

APPENDIX D: PROOF OF LANGUAGE EDITING



Lydia Weight
NTSD English Specialist
SACE No: 11135129

E-mail: lydiaweight@gmail.com

Pinpoint Proofreading Services

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Kloof

Durban

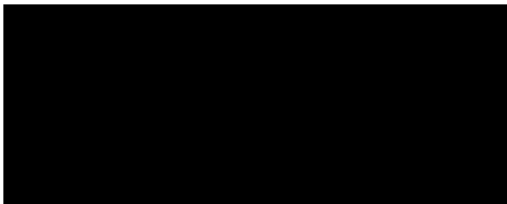
3610

11 February 2022

To whom it may concern

This is to certify that I, Lydia Weight, have proofread the document titled: An effective public procurement model for small, medium, and micro construction enterprises in South Africa, by Thulani Mdadane. I have made all the necessary corrections. The document is therefore ready for presentation to the destined authority.

Yours faithfully



L. Weight