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THE FACULTY OF ENGINEERING AND THE BUILT  
ENVIRONMENT

POSTGRADUATE SCHOOL OF ENGINEERING MANAGEMENT

**Small, Medium and Micro Enterprise project success in a  
State Owned Entity: A buyer's view**

by

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## **ABSTRACT**

The objective of the study is to identify generic processes and activities for effective Supplier Development in best practice criteria. Primarily, it aims to compare the framework to an existing Supplier Development programme within a State Owned Entity (SOE) to realise if the existing programmes best equip Small, Medium and Micro Enterprises (SMMEs) and serves the Supplier Development objectives it sets out to achieve and to propose any improvements required.

The target population for the research were professionals with a minimum of four years' post-graduation experience, who were occupying middle and senior management positions and involved in the execution phase of infrastructure construction projects implemented within the SOE. The study focused on the SOE offices located in Johannesburg, Port Elizabeth, East London, Durban, Richards Bay, Cape Town and Saldhana offices.

The national economy growth is reliant on the construction sector output, due to the increased concentration of small businesses within the sector. However, due to the difficulty experienced in securing continuous contracts, most of the construction SMMEs operate at low capacity and are still encountering numerous diverse challenges and barriers, which prevent their own development and growth. This leads to poor performance that result in the failure to execute construction projects successfully, despite the intervention of government.

An empirical study was undertaken; using both quantitative and qualitative approaches and information was gathered using a non-probability purposive sampling technique. The structured questionnaire was dispersed to one hundred participants for the study. A sum of 92 questionnaires were returned, which represents 92% of the total that was distributed.

The results indicate that 32.76% of the respondents stated that the SMMES had not received any form of aid from the government. It is also shown that 56.90% of the respondents believe that the SMMEs lack knowledge about the existing Contractor Development Programmes (CDP), as they did not participate in these.

Furthermore, the majority 33.85% of the respondents employed within the SOE, also stated that they themselves have very little knowledge about the Hubs within their organisation, while only 6.15% are knowledgeable regarding the Enterprise Development Hubs.

**Keywords:** Supplier Development, SMMEs, Construction projects, SOEs



## DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Philosophy in Engineering Management at the University of Johannesburg. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Lungelo Mkhungo

.....

February 2021



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## LIST OF ABBREVIATIONS AND ACRONYMS

BBBEE:	Broad Based Black Economic Empowerment
BEE:	Black Economic Empowerment
BER:	Bureau for Economic Research
CDP:	Contractor Development Programme
CIDB:	Construction Industry Development Board
CIPC:	Companies and Intellectual Property Commission
DPE:	Department of Public Enterprises
DPW:	Department of Public Works
DoL:	Department of Labour
GDP:	Gross Domestic Product
GEM:	Global Entrepreneurship Monitor
NGP:	New Growth Path
NYDA:	National Youth Development Agency
OECD:	Organisation for Economic Co-operation and Development
PPPFA:	Preferential Procurement Policy Framework Act
QSE:	Qualifying Small Enterprise
SARS:	South African Revenue Services
SEDA:	Small Enterprise Development Agency
SOE:	State Owned Entity
SMME:	Small, Medium and Micro Enterprise
Stats SA:	Statistics South Africa
SCM:	Supply Chain Management

# **CHAPTER 1: INTRODUCTION**

## **1.1 Introduction**

Chapter 1 introduces the topic of interest. It consists of the introduction to the study background and the breakdown of the research problem statement by identifying the research objectives, questions, study significance and the plan of development.

## **1.2 Study background**

The initial introduction to the term “Supplier Development” was by Leenders (1966), with the aim to describe the efforts made by manufacturers to improve the performance of suppliers and thus expand the number of suppliers who could be deemed viable (Chavhan, Mahajan and Sarang, 2018).

Wagner (2010) describes Supplier Development as either a reactive or a strategic practice, aimed at handling suppliers’ dire performance or enhancing the supplier’s capability over a long period, respectively. It plays a vital step towards improving a buyers’ performance through its effectiveness as it reaches its overall objectives by increasing customer satisfaction, profitability and market share growth, etc. (Li, Nathan, Nathan and Rao, 2010).

Supplier Development in the manufacturing industry dates back as early as the 1950s where, according to Saco (2013), training seminars and lectures were available for core supplier employees in the Toyota Motor Corporation. In the 1980s, Supplier Development later spread and planted its roots in the automotive industry in North America and Europe (Handfield, Krause, Scannel and Monck, 2009). More recently, Supplier Development became widely practiced in European, North American and Japanese companies (Liable and Kook, 2016). Supplier Development has only recently begun receiving the increased attention it deserves in Africa, mostly still being within subsidiaries of multi-national manufacturing companies (Wachiuri, Waiganjo and Oballah, 2015). The increase in inter-reliance between suppliers and manufacturers (Prodhan and Routray, 2014), has been as a result of the radical changes in customer expectation, rapid technological developments, market demand, competitive pricing schemes and product life-cycle reduction (Arroyo-López, Holmen and Boer, 2012; Wu, Lin, Chen and Wang 2011). Chavhan, Mahajan and Sarang

(2018) agree in their explanation that firms are forced into cost reductions with improved service and quality, because of growing competition.

There has been an increase in attention, mostly in conceptual or empirical publications, which has placed Supplier Development in the spotlight in recent years (Glock, Grosse and Ries, 2017). The shift from transactional to collaborative relationships, has made buyers become cognizant of the strategic importance of improving the capabilities, knowledge and market insights of their suppliers, combined with governance mechanisms that are effective for relationship streamlining (Schoenherr, Modi, Benton, Carter, Choi and Larson 2012), thus resulting in the establishment of Supplier Development teams and programmes by many more companies (Wagner, 2011). Literature suggests that company performance increases with collaboration with suppliers in Supplier Development programmes and new product development (Lau, 2011; Joshi and Verma (2012); Chavhan, Mahajan and Joshi Sarang, 2018)

Due to apartheid's purposeful and systematic restriction of the masses, from significant access to meaningfully participate in the South African economy (Department of Trade and Industry, 2018), many black South Africans continued to remain in poverty, lacked skills, and were not exposed to opportunities (Nattrass and Seekings, 2010). Therefore, currently, industries have been urged to conduct business with entities that were historically disadvantaged during the apartheid era. Since 1994, the introduction of any programme or implementation thereof, policies, legislation and programmes enacted only sought to redress the economic, political, social inequalities of the South African Apartheid legacy. The Reconstruction and Development Programme was developed with the objective to use focused Black Economic Empowerment (BEE) policies, to deracialise business ownership and promote SMMEs. Various strategies, such as, Microeconomic Reform, National Research and Development and Integrated Manufacturing Strategies were then deployed by government to effect this (Department of Trade and Industry, 2017).

Policy instruments used included regulation, legislation, institutional support, incentives and financial schemes and preferential procurement (Department of Trade and Industry, 2018). Since the apartheid state moulded the business environment through electricity, rail, steel and iron, air transport, and telecommunication parastatals



(Nattrass and Seekings, 2010), preferential procurement initiated the amendment of supply chain policies, increased the procurement from black-owned firms and regulated Supplier Development for SMMEs in the public sector in all public agencies, SOEs and government departments (Department of Trade and Industry, 2017). These public enterprises sought to improve the country's economy by improving the financial outcomes of small businesses through the effectiveness of operations and infrastructure construction projects implemented (Li, Humphreys, Yeung, and Cheng, 2007).

Numerous studies have confirmed that in most developing countries, the construction industry is responsible for approximately half of the investment in gross fixed capital. It is a significant contributor towards sources of new income generation and the creation of employment opportunities for both unskilled and skilled societies and thus greatly impacts a country's socio-economic development. It is also considered a driver of economic growth due to its multiple links with other sectors of economy, especially in developing economies like Malaysia, Vietnam, India, Indonesia, Pakistan, etc. (Khan, Liew and Ghazali, 2014). Furthermore, almost identical to the construction sector, the SMME sector is a significant contributor towards the South African Gross Domestic Product (GDP) (RSA, 2014). The SMME role towards a country's economy is substantial and their performance may affect the economy. They provide employment and represent the largest sector in economic units (Suarez, 2013), and therefore fuel national economic growth (Aigbavboa, Aghimien, Oke and Mabasa, 2018). The World Bank states that about 60% of total employment and about 40% towards national GDP is from formal SMMEs in emerging economies and notes that these statistics would be much higher if informal SMMEs were taken into account (Ndiaye, Abdul, Nagayev and Ng 2018). Their requirement for less capital, their structural flexibility, ability to quickly respond to market dynamics and quick returns, are what Singh, Garg and Deshmukh (2010) refer to as "unique SMME attributes that contribute for their development."

Furthermore, in his February 2018, State of the Nation Address, the President of South Africa highlighted the importance of effective Supplier Development for SMMEs in SOEs:

*“Government will take further measures to ensure that all state owned companies fulfil their economic and developmental mandates”* (Department of Public Enterprise, 2018)

Most companies encounter SMMEs who lack the capacity for technical skills, are without managerial skills, product quality, production process and competitiveness (Kalota, 2011) which could hinder the supplier from meeting the buyers’ short or long-term supply needs. Schiele, Veldman and Hüttinger (2010) state that this is when Supplier Development plays an enormous role through Supplier Development programmes implemented within a firm, with the aim of producing suppliers who can serve their customers, by achieving the approved supply chain list status of the buyer and in turn, rendering the buyer a better chance of achieving the preference status with its own customers, in the supplier’s operation capability. According to Hanemann (2014), should suppliers hold a preferred status, it could result in the benefit of a preferential treatment and therefore source sustainable competitive advantage and can benefit the buyer through increased availability and quality of products and/or other cost related benefits. However, Schiele, Veldman and Hüttinger, (2010) do note that preferred customer status research is still dawning and not much is known about its consequences and precursors.

According to Friedl and Wagner (2012), Supplier Development acts as a driver for buyer involvement into supplier activities, because buyers rely on suppliers who are strategic. These activities allow for supplier capability improvement.

Terpend, Tyler, Krause and Handfield (2008) highlight that the buyer-supplier relationship has an amalgamated objective to seek:

- The co-ordination of activities
- Reduction of opportunism/risk
- Co-operation improvement
- Knowledge transfer/acquisition

Numerous policies have been enacted as guidance for the government towards achieving industrialisation, which also partially led to the Supplier Development framework in South Africa. The National Industrial Policy Framework’s primary objective was to set out the approach for government, towards achieving the industrial development of South Africa’s economy.

### 1.3 Problem statement

An increase in an understanding of the benefit of Supplier Development has resulted in companies focussing on supplier performance improvement through Supplier Development programmes (Wagner, 2010), to strategically improve the overall cost position of buying firms (Chidambaranathan *et al.*, 2009, Weele, 2010), customer service and innovative capabilities (Weele, 2010). Supplier Development's contribution towards buying firms is in the form of creating appropriate suppliers and maintaining their cost capabilities, technicalities, quality and continuously improvement of delivery (Rajput and Bakar, 2012).

According to Talluri, Narasimhan and Chung (2010), Supplier Development is a strategic asset for the achievement of higher efficiency through a mutual commitment between supplier and buyers, over a long period. Yet Nagati and Rebolledo (2013) describe Supplier Development as a practice for supplier management, which is implemented with strategic suppliers. Wagner (2010, 2011) defines Supplier Development as a method used by buying firms to enhance supplier capabilities by dedicating resources, whether financial or non-financial, with measures that can have an indirect or direct character. Indirectly, Supplier Development is performed when the buying company takes on a passive role, by means of setting improvement targets, offering incentives to the supplier or performance goals (Wagner and Krause, 2009; Sucky and Durst, 2013).

Directly, Supplier Development is performed when the buying company invests in the supplier, by means of resources for equipment provision, training, and education programmes, transfers of temporary personnel or on-site consultation (Sucky and Durst, 2013; Bai and Sarkis, 2011; Kumar *et al.*, 2012; Wagner, 2010). Contrary to this, Mahapatra, Das and Narasimhan (2012) use Wagner's definition of Supplier Development as a definition for capability development, which Krause (2000) refers to as an activity of Supplier Development. Vickery, Jayaram, Droge and Calantone (2003) and Krause *et al.* (2000) concur that the main purpose of Supplier Development is the improvement of supplier-buyer performance. Furthermore, the authors add that the benefit for the buyer is not just performance improvement, but also strengthening competitive advantage (Vickery *et al.*, 2003) and playing a strategic role in the effectiveness of the overall organisation (Chen *et al.*, 2004). Bai and Sarkis (2011) and

Sucky and Durst (2013) further identify the various external and internal factors that determine the success of Supplier Development activities; power distribution, buyer-supplier relation duration, supplier capabilities, organisations' corporate strategies, or the uncertainty of technology.

Suppliers' performance is highly dependent on and directly proportional to the development of its capabilities as this enhances the efficiency of the suppliers' operations. Friedl and Wagner (2012) refer to the increase in operations, product development and managerial expertise as signatures of achieving supplier capability improvements. Capability development may result in an increase in performance-related benefits such as the speed of product development cycle times, flexibility and quality, the reliability of delivery and cost reduction (Blonska et al., 2013). Li, Humphreys, Yeung, and Cheng (2012) describe capability development as an affinitive investment to improve the buyer–seller relationship. Supplier Development implementations, over the past ten years, sought to attain the following value through supplier capability (Terpend, Tyler, Krause and Handfield 2008):

- New Product Development (NPD) improvement
- Continuous improvement
- Acquiring technology
- Global Capability

Mahapatra, Das and Narasimhan (2012) narrow the development and assess the development of superior supplier capability, into two main collaborative supplier management strategies: the need to build a close relationship between the buyer and supplier and directly investing in the Supplier Development. Several researchers have examined performance based on Supplier Development programmes (Li et al., 2012) however; researchers, such as, Li et al. (2003) and Humphreys et al. (2004) have gone a step further and undertaken a combined study of the aforementioned Supplier Development roles, thus examining both buyer competitive advantage and supplier performance improvement in their papers. Joshi and Verma (2012) also identify collaborative inter-organisational communication as a crucial factor and incentives to as a method to improve performance and decrease the problem with suppliers.

Supplier Development is a concern in both private and public sectors, within different industries, across the globe. *Programa de Proveedores de Clase Mundial*, is a world

class Supplier Development programme which is a private sector initiative to reinforce the collaboration and innovation between suppliers and large mining companies in Chile. Amongst other things, this programme was implemented to remedy the incline in labour costs and the decline in labour productivity caused by the shortage of skilled labour (Navarro, 2018). Indeed, Consejo Minero (2015b) stated a 30% decline in productivity, yet a 52% labour cost increase in dollars, between the period of 2006 and 2014. In developing countries where the industrial base is still weak, the mining and petroleum sectors have a low capacity to meet the requirements for the professional industry, during their early stages of the development (Tordo et al., 2013). Parris (2013) identifies these challenges:

- Timeliness is lacking
- Failure to follow written instructions
- Economic development levels are low
- Sub-standard work is accepted and poor quality is normalised
- The unpredictability of life
- Burning issues are avoided until they materialise into problems
- Corruption levels are at a high
- A lack of expectation of workers to be innovative

In his study of SMMEs in Tanzania, Anderson (2011) identifies the main challenges as:

- Poor access to funding
- Inadequacy of management capacity and international business skills
- Impaired market links and information

According to Talluri, Narasimhan and Chung (2010), buying firms experience challenges in developing relationships with their suppliers because of the problems encountered in utilising the limited resources effectively. A supplier's greatest challenge is ensuring they are more attractive to potential buyers than their competitors (Hanemann, 2014). In a study conducted on Nigeria, by Adebajo et al. (2013), they established that the majority of potential suppliers failed, having not even met the minimum acceptable performance level. Thus, great consideration is taken in

enhancing the deficient performance of suppliers when Supplier Development practices are viewed from the buyer's perspective (Rajput and Bakar, 2012).

Wagner (2011) further highlights that effective Supplier Development seems particularly possible in buyer-supplier relationships that are well-established, with high levels of commitment and trust. Nagati and Rebolledo (2013) concur that both parties should have the will to invest in the buyer-supplier relationship to eliminate risk uncertainties by cultivating a culture of trust, so barriers and failures are minimised during the Supplier Development process. Therefore, due to the challenges faced by both suppliers and buyers, and the differing returns on existing Supplier Development programs, there lies a need for more managerial-level insights into the nature of Supplier Development (Blonska et al., 2013). Calignano and Vaaland (2017) thus encourage local firm management to engage in joint development initiatives and be proactive rather than reactive to inter-firm collaboration. A poor understanding of the Supplier Development mechanisms by which it delivers benefits, may lead to the returns being negligible or even detrimental, possibly leading to Supplier Development initiatives being prematurely abandoned (Blonska et al., 2013).

We can safely say the SMME sector alleviates unemployment and creates opportunities for the average South African who is highly unlikely to penetrate the large enterprise sector (RSA, 2014). The construction sector assists to accelerate social and economic development and plays a vital role in the fight against unemployment and poverty (Khan, Liew and Ghazali, 2014), through the infrastructure construction projects executed by these SMMEs. This goes hand-in-hand with the diverse and foundational level that Broad-Based Black Economic Empowerment (BBBEE) tries to achieve in South Africa. The Government Gazette's meaning of BBBEE is "Viable economic empowerment of all black people; women, workers, youth, people with disabilities and people living in rural areas, through diverse but integrated socio-economic strategies" (RSA, 2014).

With the objective to: (RSA, 2014)

- Increase numbers of black owned, managed, and controlled enterprises and productive assets
- Facilitate ownership and management of productive assets and enterprises by collective enterprises, co-operatives, workers, and communities

- Ensure black owned enterprise investment
- Preferential procurement for all black owned or managed enterprises
- Have representatives at all levels and in all categories in the work force, who are equitable
- Skills and human resource development

Supplier Development therefore forms part of the BBBEE policy to advance economic transformation in South Africa. It combines Enterprise Development and Supplier Development programmes, Preferential Procurement and Supplier Diversity, to service business needs. Supplier Development has resulted in SMMEs being the predominantly preferred contractors for construction projects in SOEs. All SOEs are required to be aligned with the National Growth Path (NGP), and thus operate with a unique Supplier Development framework which aims to meet the government requirements for economic growth and development, hence it is understandable that SOEs and their proposed infrastructure construction projects, are used as a conduit to elevate SMMEs. Most SOEs in SA support the NGP and Supplier Development yet, regardless of the Supplier Development implemented, SMME contractors who display extensive previous experience in doing projects within SOEs, still seem to experience challenges that are associated with unsuccessful construction project execution. Failure in the Supplier Development process may affect both buyer and supplier and result in delays in meeting project targets.

The importance of the construction industry has been discussed at a macroeconomic level for several years and its positively direct correlation towards economic success has become indisputable (Khan, Liew and Ghazali, 2014). The building construction projects that are implemented and executed in the public sector are projected, and the occurrence of delays during the project lifecycle, can be anticipated (Hussain, Zhu, Ali, Aslam and Hussain 2018). Hussain, et al. (2018) define these delays as those situations resulting from the contractor or owner, either separately or mutually, that contribute to projects not being completed within the original contract period. The delays may have time and financial implications and result from either stakeholder involved in the project. Sunjika and Jacob (2013) categorises the delays as either excusable compensable delays, caused by the project owner (client); excusable non-compensable that are beyond the contractor or owner's control; concurrent delays which occur because of both the contractor and owner and non-excusable delays

which are the contractor's responsibility. However, researchers Asadi, Alsubaey, Makatsoris (2015); Gunduz, Nielsen, Ozdemir (2013); and Santoso, and Soeng (2016) explain how delays can be minimised by clearly identifying the causes that are associated to them.

There are persistent problems experienced by buyers from their current suppliers and there are no standby suppliers, due to the deficiency of capable suppliers in the market. Suppliers either do not provide the product requested, the quality provided negatively affects the buyers' competitive advantage or suppliers' performance is not as required nor does it meet expectations (Joshi and Verma, 2012; Chavhan, Mahajan and Sarang, 2018; Sarang, Bhasin, Kharat and Verma (2016). Chavhan et al. (2018) and Sarang et al. (2016) proceed to provide the following solutions for the problems faced by buyers due to their suppliers:

- Vertical integration – Buyer' option to set up manufacturing capabilities internally or to acquire the supplier, in order to bring the “needed” product in-house.
- Supplier switching - Buyers' option to search for an alternative supplier, with greater capability.
- Supplier Development – Buyers' option to help enhance the product and offer the supplier support, by providing a helping hand to give the supplier a chance of capability improvement.

Nevertheless, the eventuality is that the authors conclude that Supplier Development is the most feasible solution to the aforementioned buyers' problems. Wagner (2010) concurs by stating that when comparing Supplier Development to supplier switch or vertical integration, it comes forth most preferable as an option. A persistent challenge faced by Original Equipment Manufacturers, is one of deriving a set of policies and procedures, and the allocation of resources towards Supplier Development (Schiele, Veldman and Hüttinger 2010). Supply Chain Management (SCM) has been recognised as the potential saviour.

Both SMMEs and SOEs recognise the value of Supplier Development however both agree that it requires continuous great effort and comes with numerous of its own challenges (Schiele, Veldman and Hüttinger 2010).



For the purpose of this study, our focus is on the preferable solution of Supplier Development. We review literature for best practice and investigate an existing SOE Supplier Development programme to determine if the existing programmes best equip SMMEs and serves the Supplier Development objectives it sets out to achieve. We compare the two and identify any gaps where improvements can be made to ensure effective Supplier Development as best as possible.

#### **1.4 Research significance**

Although many qualitative case-based and descriptive studies have been done on Supplier Development, some literature focuses on the establishment of Supplier Development programmes and benefits of management thereof, in western countries (Li et al., 2012) and most providing good insights on the factors which influence Supplier Development, its intercessors and the use of some Supplier Development activities (Krause et al., 2000; Yeung et al., 2005). With the rising prominence of Supplier Development in corporate practice, scholars have mostly focused on Supplier Development programmes and activities and have at some point in time, investigated the buying firms' Supplier Development activities (Wagner, 2011). However, most Supplier Development literature focuses on larger firms within either the Japanese, United States or European automotive industry because most parts are sourced from outside suppliers and make up 75% of the vehicle cost (Chavhan, Mahajan and Sarang, 2018). Furthermore, Rajput and Bakar (2012) identify a Supplier Development entrenchment existing within the electronics (e.g., Motorola), retail (e.g., Walmart), textile (e.g., Nike), aerospace (e.g., Airbus) and again, the automotive industry (e.g., Toyota), leaving other industries such as the railways, underexplored. According to Beck (2011), most railway state monopolies within the industry, hinder a competitive environment from the SMMEs and therefore portray a distinct contextual setting.

Wu *et al.* (2011) indicate that the concentration of most of the relevant Supplier Development literature, including that of Lawson et al., (2009) was focused on the buyer's performance in terms of cost, delivery and quality yet minimal research has concentrated on Supplier Development strategy adoption, resulting in suppliers raising their own competence levels. Literature also indicates a scarcity in research in

investigating barriers and pitfalls during the Supplier Development deployment process that SMMEs encounter as suppliers (Ahmed and Hendry, 2012).

Industry, state institutions and academia have developed an interest and thus shifted their focus towards Supplier Development, resulting in research on Supplier Development practices becoming of paramount significance (Ahmed and Henry, 2012). Moreover, South Africa boasts numerous successes in development programmes that promoted localisation and industrial development. One such programme was one which revived the automotive industry, secured employment within the core business and created momentous supply chain linkages in the processing sector, inclusive of plastic and leather (Van der Walt, 2011). This shows that Supplier Development is significant in the South African context.

The majority of the previous studies conducted in the construction industry have also taken a blanket approach and analysed the overall construction project, including all the project types within the construction industry. They neglected to do an in-depth analysis of each individual case, be it for public or government projects, or private projects, which are related more to administrative and/or legislation procedures (Kim, Thanh Nguyen and Truong Luu, 2015). This study's contribution is that it will show different views in critical delaying factors that affect public sector building projects as much research has focused on general construction projects (Gündüz, Nielsen and Özdemir, 2013) and fewer focused on public funding projects (Hwang, Zhao and Yi, 2013). This study was necessitated because the importance of small and medium sized enterprises in national building and economic development is of paramount importance in the South Africa economic debate (Aigbavboa and Thwala, 2014). The paper begins with a discussion about the general situation of SMMEs in Africa, followed by analysis of construction SMMEs; thereafter, the study area is discussed before the method adopted for the study is presented. This is further followed by the presentation of the research findings and discussion of the results. Lastly, conclusions and recommendations are drawn for the study.

This research therefore aims to reduce the gap in quantitative research, by conducting an empirical study that investigates the challenges faced by SMMEs in SA, the best criteria for a Supplier Development framework and an existing Supplier Development programme for SMMEs employed by an SOE, in South Africa's construction industry

and identify where improvements can be made. Ultimately, it aims to identify generic processes and activities (best practices) for effective supplier development. The study is guided by the research objectives and questions stipulated below in order to accomplish its goal.

## **1.5 Research objectives**

### **RO1:**

To identify the causes and effects of project delays within the construction sector

### **RO2:**

To briefly discuss the challenges faced by SMMEs, locally and internationally, and their consequences

### **RO3:**

To identify generic processes and activities for effective Supplier Development in best practice criteria, to best develop an effective Supplier Development framework for SMMEs within an SOE.

### **RO4:**

To compare the framework to an existing Supplier Development programme within an SOE

## **1.6 Research questions**

### **RQ1:**

What are the causes and effects of project delays executed by small businesses within the construction industry?

### **RQ2:**

What are the challenges faced by SMMEs that are contracted by SOEs?

### **RQ3:**

What are the criteria that best inform an effective framework for SMME Supplier Development within an SOE?

### **RQ4:**

Are there any improvements that can be made to the Supplier Development programme used within an SOE?

## **1.7 Study limitations and assumptions**

Supplier Development is a concept that is far broader than shall be represented in the dissertation. With the ambition to make the purpose of Supplier Development transparent and its effects on SMMEs, it focused solely on the matrix within the SOE and on construction projects. The effects of Supplier Development on supply SMMEs and programmes used in private institutions was barely discussed. This minor dissertation focused only on Supplier Development and performance for SMMEs construction industry within an SOE. Thus, service companies were not considered in this research. The basis for the study was that of the limited data collected from the one SOE in project execution, in South Africa. A survey was developed and sent out to only a limited number of employees who represented SOE project execution and Supplier Development experts.

## **1.8 Chapter summary**

The background of Supplier Development in SOEs is discussed, using studies that have been done by field experts. The problem statement is identified that most Supplier Development has regulated SMMEs as contractors on SOE construction projects but, regardless of the regulated Supplier Development within public enterprises, SMMEs still seem to experience challenges with successful project execution. We therefore identify best practice Supplier Development criteria based on literature that is reviewed, and investigate, compare and test criteria against an existing Supplier Development programme being employed within the SOE and note any improvement requirements.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Introduction**

The purpose of the literature review is to analyse peer-reviewed studies that have been done in relation to the research topic, over the previous years. Reference to previous studies will assist in ensuring that the contents of this research paper and study conducted are aligned with the Supply Development Strategy within Supply Chain Management Policies, which are used in State Owned Entities. The vital aspects during the execution of the research are to have a clear understanding of the literature prepared and the topic. It presents the literature review, in the form of a critical analysis and review of past and current research, which is relevant to the identified problem. A comparison and contrasting of studies similar to the topic is done to execute the project, to indicate their relevance towards the research being conducted. The themes under which the problem is presented and is discussed are Construction project success, Small Medium and Macro Enterprises, Supplier Development, Supplier Development in South Africa, Supplier Development within an SOE.

### **2.2 Construction Projects**

#### **2.2.1 Construction Project Delays**

Construction delays impact on a nation's economic projections but not in the most positive manner. When referring to construction projects, Hussain, et al. (2018) define the delay as an event or act which results in the budget and time limit specified for project deliverables, being prolonged outside the contractual agreements made by parties. Earlier Al-Kharashi and Skitmore (2009) defined a construction delay, in similar yet much simpler terms as the time overrun, occurring at a completion date much later than expected or planned and originally specified date within the contract, or happening beyond the date agreed upon by the parties for the delivery of the project. Saraf (2015) indicates there being many factors, which hinder the construction performance and cause delays or construction failures. Pourrostan, Ismail, Mansounejad (2011); and Kim, Thanh Nguyen and Truong Luu (2015) explain that the impact of construction delays not only affects the construction industry but further influences a country's economy in general. Construction delays are experienced in both private and public sector projects (Yang, Yang and Kao, 2010) and have become

a common phenomenon that is experienced globally and hence is no longer just a familiar concern for developing countries only (Enshassi, Al-Najjar, and Kumaraswamy, 2009). However, the construction industry experiences shortcomings such as contractors who are incompetent, lack of modern equipment, poor project understanding, especially in developing countries. These shortcomings can easily lead to the lack of safety, poor quality and cost overruns, which result in a negative impact on the project. Moreover, with the government projects being related to hydropower, bridges and roads, low income housing, or thermal power projects; the delays are detrimental because people's social welfare and lives are directly affected, along with other negative social impacts (Kim, Thanh Nguyen and Truong Luu, 2015). Viewing a delay solely from the perspective of the contractor, it is simply seen as an additional responsibility as it results in: an increased construction period, increase in expenses and overhead costs for the expanded project period, the probability of the contractors' total working capital being trapped in one project and therefore hindering their ability to participate in other projects (Al-Kharashi and Skitmore, 2009). Thus, Kim, Thanh Nguyen and Truong Luu (2015) state that in order to avoid delays, a process should be undertaken to identify the root causes of the delays, which could assist experts to derive solutions that may counter and lessen the causes related to delays.

#### **2.2.1.1 Causes of Delays**

The construction sector has been experiencing problems of insufficient quality, inferior working conditions and poor safety, which have been identified as factors affecting the productivity of construction works, and will ultimately affect the performance of companies (Saraf, 2015). The findings of a survey conducted by Enshassi (2009) on factors affecting the performance of construction projects in the Gaza Strip, indicates the most crucial factors affecting project performance as: delays due to; the shortage of materials, material price escalating, raw materials and equipment available being of poor quality, resources unavailability, skills level of project leadership being low, and the unavailability of highly qualified and experienced people.

In a survey conducted by Saraf (2015), amongst project owners, contractors, and engineers, the main factors affecting the performance of construction projects findings indicated, that they all agreed that the most crucial factors affecting project

performance are: improper designing, improper planning, labour and technical personnel shortages, decision making, quality and material shortages, construction methods, mistakes during construction and defective works, site management, and productivity. Generally, most of the problems within the construction sector are founded by ineffective and improper communication.

Lack of communication occur on a small or large-scale and may result in project failure. Gamil and Rahman (2017) explain how lack of communication in the construction industry between employees working in the same firm, is an example of a small-scale, and large-scale occurs between the various construction participants within a project, namely, clients, consultants and contractors. However, whatever the magnitude of the scale, the consequences for poor communication are undesirable in both small and large-scale projects. Severity of the effects of both magnitudes, on large projects is much higher and may result in conflict and failure of the project. Nonetheless, if the conflict is between the employees, it can have result in progress delays, mistakes and accidents during construction.

In their study, Sunjika and Jacob (2013) identified 38 causes and effects of construction project delays for investigation, which they tabulated and divided into issues related to all major stakeholders involved in projects and the resources required: Client, Contractor, Consultant, Resources, Community, Contractual relationship and External related issues. For the purpose of this dissertation, we zoom into Contractor and Resource (labour, equipment, material) related issues as these causes may assist in identifying the gaps existing within SMME contractors that Supplier Development intervention may bridge:

**Table 2.1: Causes of delays (Sunjika and Jacob, 2013)**

<b>Contractor related issues</b>	
<b>Issues</b>	<b>Descriptions</b>
<ul style="list-style-type: none"> <li>• Subcontractor co-ordination is poor</li> </ul>	<ul style="list-style-type: none"> <li>• Primary contractor must ensure the effective co-ordination of the specialised subcontractors appointed to achieve timely delivery of the assigned construction work activities and also according to required specifications.</li> </ul>
<ul style="list-style-type: none"> <li>• Construction methods used are inappropriate</li> </ul>	<ul style="list-style-type: none"> <li>• Activities executed during construction are to be done according to best tools and practices. Failures to follow procedure result in errors, which lead to project delays due to rework.</li> </ul>
<ul style="list-style-type: none"> <li>• Planning is inadequate</li> </ul>	<ul style="list-style-type: none"> <li>• The Project Managers appointed by contractors need to ensure that they develop project plans that are workable and define their implementation processes otherwise faulty plans may result in project completion delays. The programmes submitted by local Contractors at the initial project planning stages are rarely practicable and appropriate; this hinders an effective monitoring and controlling process during project execution.</li> </ul>
<ul style="list-style-type: none"> <li>• Experience is insufficient</li> </ul>	<ul style="list-style-type: none"> <li>• A lacking in similar requisite experience usually results in errors made by the Contractor during construction, which then leads to delays caused by reworking.</li> </ul>
<ul style="list-style-type: none"> <li>• Errors during construction</li> </ul>	<ul style="list-style-type: none"> <li>• Errors during construction are quite common amongst inexperienced</li> </ul>



	<p>contractors. For their personal economic gain, contractors sometimes employ low skilled workers, so they pay them lower rates. The likelihood of frequency in which errors occur is thus increased. Rework of an already executed aspect of a scope slows down project progress. This has serious impact if it involves execution of critical tasks.</p>
<ul style="list-style-type: none"> <li>• Site management is incompetent</li> </ul>	<ul style="list-style-type: none"> <li>• Unskilled resources with a lack of project management fundamentals, fail in site management thus, creating a project execution environment prone to faults and errors, which result in activity delays due to rework.</li> </ul>
<ul style="list-style-type: none"> <li>• Choice of Bank is wrong</li> </ul>	<ul style="list-style-type: none"> <li>• Banks are the main finance providers for projects by contractors. In this way, the internal processes, which hinder the timely release of funds (loans), affect a contractor's ability and capability to successfully execute projects. This challenge is most prominent in the Nigerian developing banking industry.</li> </ul>
<b>Labour and equipment related issues</b>	
<b>Issues</b>	<b>Description</b>
<ul style="list-style-type: none"> <li>• Site manpower is unskilled</li> </ul>	<ul style="list-style-type: none"> <li>• Employment of unskilled workers on site lessens the probability of works that are according to specification which is a source of errors during construction which leads to time being spent on corrections and ultimately, results in project delays.</li> </ul>

<ul style="list-style-type: none"> <li>Equipment selected is improper and equipment is faulty</li> </ul>	<ul style="list-style-type: none"> <li>Tasks that are undertaken using incorrect equipment are done at longer durations and faulty equipment result in delays due to the repair.</li> </ul>
<ul style="list-style-type: none"> <li>Labour disputes</li> </ul>	<ul style="list-style-type: none"> <li>Strikes that arise cause construction delays because time is spent on grievance settlement and negotiations.</li> </ul>
<b>Material related issues</b>	
<b>Issue</b>	<b>Description</b>
<ul style="list-style-type: none"> <li>Poor quality materials</li> </ul>	<ul style="list-style-type: none"> <li>Both poor quality materials and workmanship may result in a product that is not up to standard, which leads to correction or reworking. Material shortages may result due to slowed activities and/or temporary abandonment of sites.</li> </ul>

Various other studies have been undertaken on the causes of delay occurring within construction projects. Upon their investigation of “*Problems of projects and effects of delays in the construction industry of Pakistan*”, Haseebet, Xinhai-Lu, Anees Bibi, Maloof-ud-Dyian, and Rabbani (2011) acknowledged improper planning, insufficient experience, payment and financial problems, poor site management, and the shortage of equipment and materials. However, they concluded that the most common delay factors in Pakistan are natural disasters, such as earthquakes and floods.

Fugar and Agyakwah-Baah (2010) studied the causes of delay of building projects in Ghana. They found the top ten most important factors as: poor site management, poor professional management, poor supervision, difficulty in accessing bank credit, delay in honouring certificates, material shortages, increase in material costs/ fluctuation of prices, project cost underestimation, project complexity underestimation and contractors underestimating the time for completing projects.

Many other researchers who have analysed the factors that cause delays within construction projects in general, include Gündüz, Nielsen and Özdemir (2013);

Marzouk and El-Rasas (2014); Al-Kharashi and Skitmore (2009); and Aziz and Abdel-Hakam (2016). All these authors identified the following, as the most important causes of delay: Owner’s financing and making late payment on work completed, inadequately experienced contractor, owners making a great number of changes, contractors’ poor site supervision and management, owner or their agent making design changes during construction. However, regardless of all these studies, there lies difficulty in describing exact project delay causes and researchers are still yet to do so adequately due to administrative, geographical, and country-specific regional differences (Hussain, et al., 2018).

### 2.2.1.2 Impact and need to address delays

Gündüz, Nielsen and Özdemir (2013); Marzouk and El-Rasas (2014); Al-Kharashi and Skitmore (2009); and Aziz and Abdel-Hakam (2016) further advocate that cost and schedule overruns occur in construction projects due to the delays and thus emphasise a need for construction industry improvement.

Table 2.2 stipulates the effects identified by Sunjika and Jacob (2013) that delays may have on a project:

**Table 2.2: Effects of delays (Sunjika and Jacob, 2013)**

Effects	Description
<ul style="list-style-type: none"> <li>Poor quality completed project</li> </ul>	<ul style="list-style-type: none"> <li>Poor quality materials and/or poor workmanship may result in project quality issues.</li> </ul>
<ul style="list-style-type: none"> <li>Budget overrun</li> </ul>	<ul style="list-style-type: none"> <li>Projects completed at a cost higher than the budget amount.</li> </ul>
<ul style="list-style-type: none"> <li>Time overrun</li> </ul>	<ul style="list-style-type: none"> <li>Projects, which exceed the duration in which they are expected to be completed.</li> </ul>
<ul style="list-style-type: none"> <li>Litigation</li> </ul>	<ul style="list-style-type: none"> <li>Court cases to resolves issues, which result from disputes especially common in projects where large amounts of penalties apply.</li> </ul>
<ul style="list-style-type: none"> <li>Arbitration</li> </ul>	<ul style="list-style-type: none"> <li>Independent professional arbitrators who provide their services at a cost and thus affect time on projects.</li> </ul>

<ul style="list-style-type: none"> <li>• Bad Public Relations</li> </ul>	<ul style="list-style-type: none"> <li>• Reputational damage that may occur to either the clients, consultants, or contractors when projects are delayed.</li> </ul>
<ul style="list-style-type: none"> <li>• Disputes and claims</li> </ul>	<ul style="list-style-type: none"> <li>• Delays may result in disputes and claims with time and cost impacts for any losses incurred by stakeholders.</li> </ul>
<ul style="list-style-type: none"> <li>• Total abandonment</li> </ul>	<ul style="list-style-type: none"> <li>• Issues that result in delays may lead to abandonment of projects if resolutions of burning matters are not found timeously.</li> </ul>

The four most important effects of project delays are identified in a study by Oshungade and Kruger (2017); budget and time overruns, disagreements and claims. Delays result in consequences that are undesirable, which impose risk and costs to the project and affect project success by impacting most importantly, safety, quality, cost, and time (Sunjika and Jacob, 2013).

#### **2.2.1.2.1 Safety**

Amongst Cooke's (2009) emphasis of the many dangers associated with the construction industry, the author highlights the business's poor safety and occupational health record, the extreme dispute and litigation levels and adversarial attitudes.

In order to ensure the sustainability of the construction industry, unions, government and leading companies in the construction sector have shown an increasing interest and concern regarding occupational safety (PricewaterhouseCooper, 2013). This was evident when stakeholders; businesses, labour and government, such as the South African Federation of Civil Engineering Contractors (SAFCEC), the Master Builders South Africa (MBSA), Black Business Council in the Built Environment (BBCBE), the National Council of Trade Unions (NACTU), Congress of South African Trade Unions (COSATU), the Federation of Unions of South Africa (FEDUSA), the Department of Public Works (DPW), the Department of Labour (DoL), all signed the Construction

Health and Safety Accord, in August 2012, as an agreement to improve health and safety in the construction sector (DoL, 2013).

The need for safety awareness has resulted in greater discussions in annual integrated reports, increased union commentary, articles relating to safety in the construction sector in the media, safety stoppage and an increase in the frequency of DoLs rigorous safety inspections. The construction industry has been placed under a microscopic view and come under scrutiny for its high number of injury and fatality rates. During an initiative to meet with the leaders of the construction sector, the DoL (2013) highlighted the following safety status:

*“The construction and building industry is one of the high risk sectors, having experienced 755 injuries and 171 fatalities between the years 2007-2010. It is alongside; the food, tobacco and drink, chemical, forestry and agriculture, and steel and iron industries, which paid an amount greater than R287 million for occupational injuries by the 31<sup>st</sup> of March 2013, year end.”*

In their document called *“Highlighting trends in the South African construction industry”*, PricewaterhouseCooper (2013) brings to our attention the insinuations that have been made that high priced environments yield fatalities because in environments where the main purpose is to chase profits, many accidents are bound to occur and in turn, result in injury and/or fatality. However, the reality is that safety improvement results in profit incentives. Despite the DoL’s endeavours to monitor legislative impact and shield the vulnerable employees, South Africa continues to experience halts in production due to it being plagued by the lack of adherence to the Occupational Health and Safety Act. The effects of the injuries and fatalities in the workplace result in loss of income and furthermore, a decline in GDP (DoL, 2013).

According to the *Encyclopaedia of Occupational Health and Safety*, though occupational risks and hazards are easier to identify and manage in some industries (e.g., chemicals and mining), this is not the case for the construction sector, which faces numerous unique challenges pertaining to the effective management of occupational safety:

- The complexity of construction projects, especially larger ones, make them rather dynamic. Having several employers with numerous contractors under

them, working concurrently on one site and continuously changing during different project phases.

- An argument may arise of the repetitiveness of activities and that only a limited number truly are, due to the wide variance in project types and changing conditions.
- Susceptibility of construction workers to cold, heat, strong winds, lightning and rain and other occurrences of natural unsafe conditions is high.
- The general workers are employed on a project-to-project basis, therefore; this thus demands a continuous redevelopment of safe and productive working relationships. However, this inconsistency of the work force has consequences that may negatively affect safety on site because the possibility to maintain the safe and productive relationships already created, becomes difficult with new people constantly coming in and out of the project.
- The principal contractor, its subcontractors, sub-subcontractors have a complex safety administration hierarchy, that requires strong leadership, communication and administration.
- During the construction duration, the many inexperienced, transient workers employed are illiterate and may not be fluent in the common language.
- Most of the temporary construction workers have more than one employer. They do other jobs to make up for less-busier times, which increases the health and safety burden. This makes it difficult to cultivate safe and effective teamwork as most construction work is executed in a team.
- Safety management administrative costs are usually not or only partially included in project costing.

#### **2.2.1.2.2 Quality**

With reference to various studies undertaken in general contractors and/or architectural practices, the Construction quality in South Africa (2011) identifies procurement and construction related barriers as dominant barriers to quality achievement, also barriers related to design factors, and more recently, corruption has also been identified as South Africa's major barrier:

- Procurement related factors: lack of contractor pre-qualification, contracts awarded primarily on price and competitive tendering, pressure due to

shortened project periods, including emphasis on budget and time. But also, institutional barriers such as inadequacy of monitoring capacity and/or procurement, delivery and procurement model used such as the “design by employer” model on complex projects; and fraud and corruption, or political interference (including cronyism and nepotism).

- Design related factors: Poor co-ordination of designs and inadequacy of specifications and largely intricate details.
- Construction related factors: Poor and unscrupulous quality control, management lacking commitment, insufficient training for workforce and shortage of skills, all resulting in the contractor’s inability to deliver the required quality.

The key factors obtained from a survey on specific project participants that was undertaken, is illustrated below:



**Table 2.3: Stakeholder Perceptions of Barriers to Construction Quality (Construction quality in South Africa, 2011).**

**Scale: 1 = minor; 3 = average; 5 = major influence**

Interventions / Situations	Mean Score						
	Ranking	Clients	Designers	Project Managers	Contractors; Grade 2 to 4	Contractors; Grade 5 to 9	Overall Mean
Poor site management (planning, organising, leading, controlling, and co-ordinating)	1	4.4	4.6	4.3	4.7	4.0	4.4
Lack of contractor quality expertise	2	4.6	4.6	4.2		4.2	4.4
Corruption	3	3.7	4.1	4.5	4.9	4.2	4.3
Inadequate resourcing by contractors	4	4.0	4.1	4.3		4.1	4.1
Lack of understanding of quality	5	4.0	4.4	3.8	4.6	3.7	4.1
Level of subcontracting	6	4.0	3.9	4.2	4.6	3.7	4.1
Inadequate information	7	3.6	4.0	4.3	4.5	4.0	4.1
Detail	8	3.8	4.4	4.3		3.7	4.1
Focus on cost by contractors	9	4.3	4.1	3.8	3.8	4.1	4.0
Poor constructability	10	3.8	4.2	4.2		3.8	4.0

We can see from the table above that most of the major influential situations occurs in Contractors with grades 2 to 4, comprising of the smaller enterprises, and that the top five ranked situations all exist within or are due to contractor related issues, therefore including SMMEs.

A contractor's Construction Industry Development Board (CIDB) grading of Grades 1 to 9, determines the maximum project value that a contractor may undertake and plays a crucial role during the tendering process for projects. Table 2.4 below provides a breakdown of the various CIDB grades with the corresponding maximum project value that a contractor can undertake. This basically also indicates the capacity and capability of the enterprise based on the projects it can undertake.



**Table 2.4: Summary of contractor CIDB grades and corresponding project value (CIDB, 2013)**

<b>CIDB Grade</b>	<b>Maximum Project Value</b>
1	R 200,000.00
2	R 650,000.00
3	R 2,000,000.00
4	R 4,000,000.00
5	R 6,500,000.00
6	R 13,000,000.00
7	R 40,000,000.00
8	R 130,000,000.00
9	No Limit

### **2.2.1.2.3 Budget Overruns**

A cost overrun can be defined as a surplus of the final project cost over the original budget and can also be known as a cost escalation or budget overrun (Gupta, 2009). Project cost is one of the most crucial project success criteria and is an aspect that is closely monitored and controlled by those involved in the construction industry. However, research indicates that projects are rarely completed within the stipulated budget (Memon, 2010). Cost overruns are common in the construction sector and have become the norm because projects are seldom completed on time and within the estimated and stipulated construction costs (Subramanian, Sruthi and Kavitha, 2014). The budget-overrun concept in the construction industry means that a project failed at meeting its financial objectives. It is when the contract sum is exceeded by the project costs and conflict and litigation may result in project failure (Gamil and Rahman, 2017).

There has been increased awareness regarding the importance of appropriate performance measurement and the role it plays in support of the lean construction concept application because of the substantial attention placed on performance measures by the construction industry and researchers, over the past two decades (Sarahan, 2013).

Numerous studies have been conducted on schedule delays and budget overruns in construction projects. Moreover, research by Karunakaran, Abdullah, Nagapan, Sohu and Kasvar (2018) identifies lack of construction cost control management as a major cause for projects failing to meet their objectives of timeous completion, with the

quality specification and within the approved budget. Unlike most, they continue by not only identifying the causes but by explaining them and also dividing them into project, contract, consultant, client, contractor, labour related and external causes. Furthermore, Mukuka, Aigbavboa and Thwala (2017) touch on the client-related aspect of late approval of designs and drawing revisions by the employer as major causes of time and budget overruns.

The studies revealed the following main causes:

**Table 2.5: Main causes of budget overruns from numerous authors**

Study Title and Author	Top ten causes of cost overruns (Ramabhadran, 2018)	Critical factors affecting cost overruns (Gamil and Rahman, 2017)	Top ten severe causes of time delays (Islam, Trigunarsyah, Hassanain and Assaf, 2015)	Causes of cost overruns (Karunakaran, Abdullah, Nagapan, Sohu and Kasvar, 2018)
Causes of budget overruns in construction projects	Lower productivity	Internal administrative difficulties	Lack of constructability	<b>Project-related:</b> Underestimating the project complexity results in unresolved project uncertainties that lead to extension of time claims with costs.
	Reworking costs	Delays in decision-making	Construction methods used are obsolete	<b>Contractor-related:</b> Incorrect equipment use lowers the production rate and results in extension of time with cost implications.
	Late payments made by the employer	Payments deferment	Funding shortage by the employer	<b>Consultant-related:</b> incomplete design drawings at tender stage due to poor consultant management, leads to incorrect cost estimates.
	Lack of training	Poor communication	Construction manager	<b>External:</b>

Study Title and Author	Top ten causes of cost overruns (Ramabhadran, 2018)	Critical factors affecting cost overruns (Gamil and Rahman, 2017)	Top ten severe causes of time delays (Islam, Trigunarsyah, Hassanain and Assaf, 2015)	Causes of cost overruns (Karunakaran, Abdullah, Nagapan, Sohu and Kasvar, 2018)
		among construction parties	lacking experience	Late approval from local council clients leads to project cost overruns
	Lack of skilled resources to execute the work		Lack of company experience	<b>Labour-related:</b> Awarding contracts to lowest bidders who tend to cut on labour salaries, which affects the worker's motivation to perform better
	Improper planning		Lack of proper scheduling and planning	<b>Contract-related:</b> Complexity and nature of the project influences contract nature and type. Awarding to lowest bidders leads to cost overruns.
	Estimation errors		Project cost estimate is inaccurate	
	Delayed completion		Transportation problem	
	Poor cost monitoring methods		Increase in price of resources	
	Employer and contractor conflict		Selecting the lowest bidder	

Oshungade and Kruger (2017) then discuss the effects that these causes may have and identifies the five major effects of cost overruns as:

- Disputes
- Projects being completed late
- Projects exceeding approved budgets
- Creation of frustration to construction contractors
- Poor quality of work due to haste

Gamil and Rahman (2017) add that the numerous consequences and effects that arise within the construction sector, such as schedule and budget overruns, disputes and eventually, project failure, are because of poor communication. Their findings indicate that unproductive outcomes are as a result of a lack of effective communication.

#### **2.2.1.2.4 Schedule Overruns**

A schedule overrun is defined as an event or act that prolongs time and results in an increase in the duration to undertake and complete an activity under the contract (Mohamad, 2010). Gamil and Rahman (2017) concur with this definition that a schedule overrun is a time delay that increases the duration of a project and results in a finish date that is later than that agreed upon by the contracting parties during the project inception. Schedule overruns cause adverse effects on the project success and if objectives amongst participants are inappropriately communicated, delays may occur.

Time overruns are a lingering issue in construction projects across the globe and the South African construction sector receives no immunity. Challenges of failing to stay within budget allocations and meet deadlines in order to deliver projects successfully are not alien to South Africa and in order to mitigate these overruns, root-cause identification is required. Oshungade and Kruger (2017) explain how South African construction projects experience problems of disruptions and delays that mostly end with a surplus on the initial cost budget and time. They continue to state that successful completion and effectively meeting project periods, leads to the wealth creation, socio-economic growth and improved living standards. According to Kim, Thanh Nguyen and Truong Luu (2015, 2), projects that are not completed within the predetermined time are often due to unpredictable elements and many conditions within the construction process, resulting from numerous sources, namely, contractual relations, site

conditions, finance, co-ordination between parties, contractor performance and material procurement.

*“Seventy percent of construction projects experienced time overrun and the average time overrun was between 10% and 30% of the original duration.”*

The causes of project disruptions or delays are those activities that occur pre and during construction which disturb timeous project completion (Oshungade and Kruger, 2017). Similar to Karunakaran, Abdullah, Nagapan, Sohu and Kasvar (2018), a study by Ali, Smith, Pitt, and Choon (2012) categorised their findings of the four main factors causing schedule overruns into client-related, consultant-related, contractor-related, and external categories. Wong and Vimonsatit (2012) list unrealistic project deadlines set, cash flow problems, shortage of labour and skills, underestimating project complexity, unforeseen ground conditions, specification changes during construction as major consultant-related causes. Baloyi and Bekker (2011) identified site management skills shortage, subcontractors, underestimated resource planning and co-ordination and the productivity of labour as contractor- and supplier-related factors. Furthermore, Baloyi and Bekker (2011) stated changes in designs and scope of works, client representation, technical definition, internal skills shortages and decision-making, prolonged designs, delays in approvals, and in payments due, as the employer-related factors. External-related causes include late approvals from local council especially for the approval of plans, which are a prerequisite, prior to construction commencement.

The effects of the causes of schedule delays may either result in the owner, his team and third party (i.e., nature) legal responsibility or contractor legal responsibility and his team. Schedule overruns always have a devastating effect on construction project performance (Oshungade and Kruger, 2017).

Set stringent timelines that pertain to penalty clauses, which are severe, exert a great deal of pressure. It is therefore cost-effective in the short-term to add and utilise more resources, to avoid time penalty clauses, at the expense of optimal overall cost or quality (Steyn et al., 2017).

### **2.2.2 Project success**

According to Steyn, Carruther, Dekker, du Plessis, Kruger, Kuschke, Sparrius, van Eck and Visser (2017), a project is a planned, temporary endeavour, with a defined start and end date and consisting of limited resources, that is undertaken to produce a set of defined deliverables to meet the stakeholder requirements. However, the uncertainty of impact is emphasised due to the non-routine outcome that a project may have (Okoro, 2013). Regardless of all the uncertainties, project managers still have to commit to deliver projects on time, within scope and within the approved budget, during the start of the project. The three-dimensional goal of Project Management in Steyn et al.'s (2017) research emphasised project completion within the approved budget, delivery of the correct scope at the accepted quality by delivering predetermined project deliverables as per the agreed specification and delivering projects on time, within the agreed approved baseline schedule. However, the weighting for each of these dimensions differs from project to project. For example, for a project such as the construction of a world cup stadium, a timeous delivery of the project would be of greater importance than that of not exceeding the budget.

Project success has different meanings to different individuals (Ika, 2009). However, project management literature views project success from two points: project management success criteria and project success factors (Rezvani and Khosravi 2018). The success criteria relate to the “iron triangle” project measures of quality, time, and cost, which are measured retrospectively after projects are completed (Davis, 2014; Müller and Jugdev, 2012). Turner and Zolin (2012) refer to the elements, which may be influenced to increase the chance of project failure or success, as the project success factors. However, Turner and Zolin (2012) further state how some researchers do not necessarily agree and hence, criticise the traditional iron triangle criteria, which focuses solely on meeting quality, cost and time goals. They argue the inadequacy of the criteria as a basis of defining project success due to the provision of an incomplete view. Rezvani, Chang, Wiewiora, Ashkanasy, Jordan and Zolin (2016) highlight how original requirements and specifications are bound to change for projects, which run over numerous years and thus cost and time are impacted. Project success is an important topic because its implications influences society and the organisation (Rezvani and Khosravi 2018).

Due to the ever-evolving nature of the field of construction, where project managers continuously strive to execute and deliver projects successfully, there often appears to be a lack of standard benchmarks to be used for the evaluation of success and performance of projects. Different clients have defined project success and have gauged project performance in a plethora of ways over many years, some leaning towards non-conventional measures, such as health and safety, the environment and stakeholder interests; others using the more conventional measures of performance, such as cost, quality, and time, for project evaluation (Bhatti, 2013). Therefore, Bhatti (2013) highlights the need for the identification of commonly used key performance measures within the construction field and for the development of processes and systems of measurement within construction industries in order to satisfy a wide range of clientele. With regards to construction projects which are very time consuming in their entirety, Saraf (2015) relates construction project success as dependent on project performance, which is measured based on customer satisfaction, achieving required standards of quality specifications, timely completion, and being within the stipulated budget (Omran, 2012). Steyn et al. (2017) continue to identify risk as one of the justifications still maintained and used by some project managers, for project failure. However, if this justification held water and risk really was a vital cause, then we would not find some successful high-risk projects, which satisfy the expected requirements and are completed within schedule and within cost.

### **2.2.3 The Construction Industry**

Khan, Liew and Ghazali (2014) define the construction sector as an economic engine, essential for both developed and developing nations, by playing a significant role in wealth production, better quality of life provision to the nation, and great employment generation. Construction is divided into three phases: pre-construction, construction, and post-construction phases. When compared to other industries, the construction industry has generally been considered as underperforming; therefore, ten project-benchmarking parameters have been identified by working groups on key performance indicators (KPI), with the aim in achieving construction industry good performance (Saraf, 2015). The construction industry is one of a complex and dynamic nature and the manner in which the construction projects are executed impacts the economy of a nation (Sunjika and Jacob, 2013). The amount and quality of construction projects completed within a nation's domain, are the basis of evaluating

whether a country is underdeveloped, developing, or developed (Kaliba, Muya, and Mumba 2009; Abdullah, Mukmin and Samad, 2011). Many developed and developing nations now have an understanding and realisation of the significance of the construction sector in sustainable and socio-economic development. The construction output and national output are said to be directly linked because of the close link between construction activities and various phases of the economic development of a country (Khan, Liew and Ghazali, 2014).

Durdyev and Ismail (2012) identify another major role player, just like SMMEs in a country's economic and social growth and development, as the construction industry. Its significant influence is through the development of infrastructure, which in turn, uplifts the economy. Large-scale projects are known to be difficult to manage however, they are vital enablers of social and business change and contribute significantly toward the future success of businesses (Whitty and Maylor, 2009). The number of large-scale projects being implemented globally has increased substantially, yet most still experience significant schedule and cost overruns (Flyvbjerg, 2014; Brady and Davies, 2014; Molloy and Chetty, 2015). Sometimes, even if best practice is followed during operations, serious challenges still prevail, which usually lead to project failure (Rezvani and Khosravi 2018). Social amenities and infrastructure play a crucial role in creating sustainable communities (Sunjika and Jacob, 2013). Public infrastructure provides deeper and wider markets for output and employment by enabling a wider geographic footprint that is concentrated with economic resources (Gu, and Macdonald, 2009). A general understanding is that infrastructure is basic public infrastructure, which forms the foundation for economics and society. However, urban planners and economists discern infrastructure in two categories: (Snieska and Simkunaite, 2009)

- Economic infrastructure: promote economic activity, such as water and sanitation supply, telecommunications, electricity, railroads, highways and roads, airports, seaports, electricity.
- Social infrastructure: promote cultural, educational and health standards of the population, with indirect and direct impact on welfare, such as clinics, hospitals theatres, statues and fountains, museums, parks, courts, playgrounds, schools, universities, and libraries.



The National Treasury (2015) concurs with the researchers, in its definition that the two main categories for public infrastructure are Social and Economic Infrastructure. Social infrastructure consists of resources such as community facilities, clinics, hospitals, and schools. Economic infrastructure includes networks that support the delivery or delivers services, such as electricity to communities, homes and places of work and supports the economy. It continues to state the effectiveness and efficiency of the supply chain management system as crucial to social well-being and to the success of the economy because this infrastructure is created and maintained by the supply chain. Kowalski, et al. (2013) explain how transparency and openness during the government procurement process, strengthens the capability for government to construct and provide infrastructure that is developmentally significant and services and goods that are socially significant for citizens.

Nigeria's completion dates for most of the social amenities, which began construction a year ago, have already been shifted. The continuously rising inflation rate will result in an increase in the implementation cost of the 2009 Niger Delta Regional Development Master Plan (NDRDMP) (NDDC, 2019). Infrastructure and utility construction projects in the Niger Delta region include roads and bridges, buildings, jet and shore protection, channelisation, and electrification. Completing these infrastructure projects could diminish the agitation for development, youth unrest and militancy. On the other hand, delays could negatively affect Nigeria's socioeconomic activities via oil exploration hindrance (Sunjika and Jacob, 2013).

According to the National Treasury (2015), given the infrastructure management capacity constraints experienced within the public sector, it has formed partnerships with the private sector, in providing certain infrastructure services. The relationships, however, do not always fully result in beneficial or successful partnerships. Some of the constraints included:

- The high anti-competitive practices and corruption levels within the sector
- The CIDB found that the South Africa's construction industry performance was substandard when relating it to economic and social infrastructure procured by government. The industry was branded as one consisting of minimal process and productivity improvement, poor quality levels and a high enterprise failure level.

- The lengthy learning curve, time required for graduates to attain the required management skills and the failure to fill management positions due to scant availability of experienced engineers, remain as major barriers, which hinder construction industry transformation.

In South Africa, according to the Construction Industry Development Board (CIDB), the construction industry's performance is closely related to the construction supply chain individual performance. With the effort to address perceived processes and other issues affecting the construction industry, the CIDB requested that all contractors be registered. This would enable the provision of information about size, capabilities, and distribution of contractors, allow for effective development of contractors, facilitation of sustainable empowerment, assistance in the development of proper track records for contractors, provision of risk management tools for clients and contractors and also the establishment of a foundation to implement the National Contractor Development Programme.

Completing construction projects successfully leads to the improvement of living standards, socio-economic growth and ultimately, the creation of wealth (Memon, Rahman, and Abdullah, 2011).

## **2.3 Small Medium and Micro Enterprises**

### **2.3.1 SMMEs in an international overview**

#### **2.3.1.1 Definition and Background**

Sometimes referred to as "Small businesses", SMMEs play a crucial role in a country's economy and are regarded as key drivers for the creation of jobs, innovation and of economic growth (Seda.org.za, 2016) and Wang (2016) affirms this is the case in developing countries as well.

Over the past decades, growth in the debate on the role that the SMME business organisation plays towards economic development has risen. This resulted in the development of research on SMMEs as a whole (Gunasekaran, Rai, and Griffin, 2011), together with the factors that hinder small business growth and even triggered policy focus on resolving these factors (Aigbavboa, Aghimien, Oke and Mabasa, 2018). Evidence from empirical research from around the globe indicates that the

ubiquity of SMMEs has grasped the world's attention. Since the 1950s, this has challenged the original ideas of the 19<sup>th</sup> century, that large businesses were the greatest supporters of the economy and nowadays, the vital role played by SMMEs in economies is in no doubt (Wang, 2016).

Recent research has however revealed a surge in the recognition of the important role that SMMEs play in economic growth worldwide (Tshikhodo, 2016). In their research of the role played by SMMEs in job creation, Ayyagari, Demirgüç-Kunt, and Maksimovic (2011) indicated that SMMEs with an employee total of fewer than 250 employees were regarded as the growth engine in numerous countries. Data taken from the Chinese National Bureau of Statistics showed that in 2012, SMMEs made up 99.4% of all enterprises in China, contributed 59% of the GDP and accounted for 60% of total sales. They represent 99.8% percent of European enterprises and provide 67.1% of private sector occupations (Ahmed, Bouassami and Tizro, 2014).

In most African countries, SMMEs contribute a percentage greater than 50% of the GDP and of employment. They constitute over 90% of private businesses (Abor and Quartey, 2010), which is probably why they have also been defined as the fuel for national economic growth and the founding elements for large firms (Aigbavboa, Aghimien, Oke and Mabasa, 2018). SMMEs make up 92% of Ghana's businesses and 70% of its GDP (Ahiawodzi and Adade, 2012) and make up 70% of the Nigerian manufacturing industry (Abor and Quartey, 2010). Mahembe (2011) iterates that SMMEs make a significant contribution towards growing a country's economy through increased innovation and exports, high productivity, and job creation. Chilone-Tsoka (2009) affirms a consensus on the notion that SMMEs have a potential to yield and stimulate economic gains and therefore the creation of opportunities for employment, particularly in developing countries, where SMMEs accommodate skilled and unskilled employees and thus have become the main source of employment. As time has progressed, construction SMMEs have become key contributors towards the economy of Zambia, through job creation (Aigbavboa et al., 2018). Small and Medium Enterprises (SMME) in Indonesia, include micro businesses (Tambunan, 2009) and play a significant role toward the Indonesian economic development (Setyawan Agus, Isa, Wajdi, Syamsudin and Nugroho Permono, 2015). Tambunan (2009) further identifies five characteristics of SMMEs, which make them vital for Indonesia's economic development:

- Agricultural-based SMME businesses commonly exist within rural areas, thus have become significant for rural economic development.
- SMMEs' source of finance is from personal savings.
- They target low-income consumers and serve the domestic market by producing simple goods.
- They are locally owned companies and employ millions of workers

Numerous stakeholders, including academics, investors, the state, unions and business sector, have outlined the importance of the progression in SMME development and sustainability, through engaging in conscientious discussions and strategies. Moreover, Yeboah (2016) adds that SMMEs not only have economic gain but improvement of their competitiveness could also result in poverty reduction and social development. SMMEs are labour intensive, businesses involving the youth and the majority of the workforce consists of those uneducated or less educated. All this research and figures mirror the significance of SMMEs across the globe, not only in developed but also in developing economies, equally (Wang, 2016). It is a common belief that the SMME sector performance is closely related to the economic performance of any nation (Aigbavboa, Aghimien, Oke and Mabasa, 2018).

While there is now minimal doubt of the significance of the informal and SMME sector on economic growth internationally (Tshikhodo, 2016), finding a single definition for an SMME has proven rather challenging. Different countries have their own definitions as companies differ in employment, sales, and capitalisation levels. Hence, some authors highlight that defining SMMEs by measures of size, such as profitability, net worth, turnover and number of employees may not be viable. When applied to different companies of different sizes, comparing one sector may lead to classifying all other companies as small, while applying that same size definition to a different sector may yield different results (Aigbavboa, Aghimien, Oke and Mabasa, 2018). According to Wang (2016), growth rate, age, ownership, and size of a company are the key determinants among firms' characteristics. However, Ahmed, Bouassami and Tizro (2014) stated that SMMEs could be categorised based on workforce and company turnover; companies that are independent from larger organisations, with no more than 250 employees with a turnover no greater than 50 Million Euros and are not dependent on larger firms.

According to the United Nations Industry Development Organisation (UNIDO), the definition of SMMEs lies solely on the purpose of classification and is regarded as a significant issue, especially during the development and implementation of policies. UNIDO advises countries to consider the qualitative and quantitative indicators when formulating a definition for SMMEs, for policy development purposes. To differentiate between large enterprises and SMMEs, UNIDO formulated the following table that summarises the main qualitative indicators:

**Table 2.6: Application for Qualitative Indicators (UNIDO)**

Categories	SMMEs	Large Companies
Finance Source	<ul style="list-style-type: none"> <li>• Role of family funds, self-financing</li> </ul>	<ul style="list-style-type: none"> <li>• Diversified ownership structure, access to anonymous capital market</li> </ul>
Organisation Sales Buyer's relationships Production Research development	<ul style="list-style-type: none"> <li>• Highly personalised contacts</li> <li>• Competitive position not defined and uncertain</li> <li>• Unstable</li> <li>• Labour intensive</li> <li>• Following the market, intuitive approach</li> </ul>	<ul style="list-style-type: none"> <li>• Highly formalised communication</li> <li>• Strong competitive position</li> <li>• Based on long-term contracts</li> <li>• Capital intensive, economies of scale</li> <li>• Institutionalised Finance</li> </ul>
Personnel	<ul style="list-style-type: none"> <li>• All-round knowledge</li> <li>• Lack of university graduates</li> </ul>	<ul style="list-style-type: none"> <li>• Specialisation</li> <li>• Dominance of university graduates</li> </ul>
Management	<ul style="list-style-type: none"> <li>• Functions-linked personality</li> <li>• Proprietor entrepreneurship</li> </ul>	<ul style="list-style-type: none"> <li>• Division of labour by subject matters</li> <li>• Manager entrepreneurship</li> </ul>

### 2.3.1.2 Barriers and challenges faced by global SMMEs

Regardless of their importance, SMMEs throughout the world are challenged by considerable obstacles, which hinder their development. Therefore, determining and identifying these growth-impeding factors and what influences them has become of paramount importance (Wang, 2016). International literature outlines exogenous and endogenous factors that affect SMME functioning and development. It reveals the key hindrances as access to markets, debt, and cash flow management. SMMEs within the construction sector worldwide face several challenges while in operation (Ofori and Toor, 2012; Tshikhudo, 2016). Some of these are common, some seem different due to location and the market (Tshikhudo, 2016) and others put the firms in a critical position to also deal with the new challenges that are arising from liberalisation, globalisation, and extensive institutional, technological, and organisational change (Aigbavboa, Aghimien, Oke and Mabasa, 2018). For example, challenges such as the low skills and resources level hinder the businesses from gaining access and entry to participate and compete in the industry. Most of these small companies are reliant on outsourcing employees on an 'as and when needed' basis, therefore skills training and knowledge or skills retention have become negatively affected due to construction workers always moving on to the next best opportunity (Ofori and Toor, 2012). European SMMEs face major challenges that are related to taxation, finance, and administrative issues (Ahmed, Bouassami and Tizro, 2014).

According to Aigbavboa, Aghimien, Oke and Mabasa (2018), the inextricable link between the SMMEs, the economy and the construction industry is the high dependency relationship and the reliance of the national economic growth on the construction sector output, due to the increased concentration of small businesses within the sector. However, due to the difficulty experienced in securing continuous contracts, most of the construction SMMEs operate at low capacity. SMME building contractors are still encountering diverse challenges which prevent their own development and growth (Aigbavboa, et al., 2018), which leads to poor performance that results in the failure to execute construction projects successfully (Adendorff, Appels, and Botha, 2011). Majama and Magang (2017) relate the lack of skilled labour and financial resources to this poor performance.

Barbosa (2016) stated that the topic of liquidity as a constraint forcing start-ups to enter small, has also come forth for debate and that this initial under-investment potentially negatively affects the firm's probability of survival. Due to financial capital

constraints, entrepreneurs are also unable to initiate barriers against random shock thus negatively affecting investment timing and affecting the businesses' probability of survival. Numerous challenges faced by small businesses are due to the failure of knowledge and accounting practices integration, into the business reasonable level, resulting in poor management of cash flow and financial control. This hinders the businesses' chances of remaining sustainable and possibly surviving the competitive market.

A substantial number of scholars have also researched the factors that impede SMME development within specific areas (Wang, 2016). Upon identifying factors that affect small business growth, Chilipunde (2010), Abor and Quartey (2010), named limited access to finance or lack of capital as important barriers. In his investigation of the main obstacles SMMEs are facing and the factors influencing these obstacles from the enterprise managers view, Wang (2016) uses data results from 119 developing countries investigated during the World Bank Enterprise Survey to conclude that access to finance is perceived as the most essential obstacle hindering SMME growth. However, amongst the top four constraints was, land access, production constraints, financial problems and suppliers not being ready to deliver. These constraints were similar to those in Gree and Thurnik's study, where amongst the 30 obstacles selected, the important factors identified included regulations, technology, corruption, management skills and location; however, finance came out as number one (Wang, 2016). Brush, Ceru, and Blackburn (2009) divided growth paths into episodic, incremental, and rapid. Furthermore, they investigated management, access to finance, and market condition impacts on company growth and concluded that rapid growth companies were hungry for cash.

Mason and Brown (2013) investigated the analysis of the promotion of high growth enterprises through policy approaches and the effects of such policies on the companies. During their analysis of the World Bank Enterprise Survey (2009), Chavis, Klapper, and Love (2010) found that amongst the many firms examined, about 31% of them identified access to finance as the most vital constraint. Young businesses with less than three years' experience accounted for 40% of this sample and therefore piqued an assesSMMEnt of the relationship between access to finance and a businesses' age. Empirical research found that increased age was directly proportional to bank finance, while increased age was inversely proportional to

informal finance. This indicated that young firms relied on informal financing rather than financing from banks and thus were twice as likely to use personal assets as collateral than older businesses. However, the conclusion was that in countries with better credit information and stronger legislation, younger companies have less reliance on informal financial resources (Wang, 2016). Eventually, Wang (2016) concludes that it is very evident from all the literature above how SMMEs face an array of diverse barriers.

An entrepreneur with good time management understands that working hard goes hand-in-hand with working smart and the delegation of responsibilities to subordinates, in order to save time. Poor management is as a result of an entrepreneur's lack of self-discipline (Antlová, 2009), and poor project management impedes the growth of small contractors (Chilipunde, 2010). Chilipunde (2010) further elaborates that more usual than not, the projects are completed with penalties and delivered with sub-standard quality because of poor co-ordination throughout the project execution. Poor site organisation also falls under inefficient management and hence, small companies sometimes lack the capacity to handle large projects. Antlová (2009) earlier enlarged on this by further identifying lack of access to specialised education and training as another constraint for small business growth, which hinders them reaching their maximum potential. Chilipunde (2010) concurs that the inadequacy of small businesses to get access to training is amongst the challenges affecting SMME growth and adds that the lack of technical skills and skilled labour shortage affect the SMME, aside from agreeing with the authors about the shortage of skills being a major challenge faced by SMMEs.

Numerous other factors govern small business fate. Small Enterprise Development Agency (SEDA) identified essential factors that ultimately influence SMME performance, when faced with obstacles. These included economic and industrial factors, the manner in handling environmental influences, the entrepreneur's individual characteristics, adaptability and implementation of strategic practices and management, and motivation within the company that could either prove to be their greatest challenges or greatest strengths. Based on the above-mentioned characteristics, it can be said that the SMME success is not entirely attributed to specific factors or events, but to how the enterprises or owner handle them. Furthermore, other research found that business failure is common in companies with



low-priced produce, smaller sized companies, operating in rural areas and as sole proprietorships.

A combination of exogenous and endogenous potential failure risks influences the fate of small businesses and though financial obstacles (poor financial management, capital savings overdrawn, debt interest and debt and bankruptcy declarations), are most common, it is suggested that only 30-50% are economically attributed therefore 50-70% of failures can be attributed to factors other than finances. The internationalisation process is also identified as one of the greatest difficulties faced by SMMEs in both developing and developed economies as they all face problems in entering foreign markets. Both developed and developing countries would experience common issues of cultural and language barriers, currency and economy changes and country difference affect the internationalisation of business for SMMEs (Seda.org.za).

Numerous studies were undertaken in different countries, to identify the major barriers and challenges that SMMEs face that limit their growth, development and even success. Findings of the studies undertaken revealed:

**Table 2.7: Challenges faced by SMMEs**

Study title and Author	Common difficulties faced by SMMEs in	Major factors impeding the growth of	Crucial factors and challenges affecting small business growth	Effects of barriers and obstacles holding back high growth of small firms in
	Indonesia (Tambunan, 2008; Setyawan Agus, Isa, Wajdi, Syamsudin and Nugroho Permono, 2015),	Zambian SMMEs (Aigbavboa, Aghimien, Oke and Mabasa,2018)	(Biger and Gill, 2012)	the UK (Lee, 2014)
Challenges faces by SMMEs	Access to financial resources is limited.  Limited access particularly to technology,	Poor project management.  Lack of experience in preparation of tender document.	Regulatory issues  Country's infrastructure	Government  Management  Recruitment Finance

	<p>capital, markets, information and productive resources in general.</p> <p>Management and technological skills are lacking.</p> <p>Business networks are lacking.</p> <p>Lack of working capital.</p> <p>Difficulties in marketing</p> <p>Productivity is low</p> <p>Quality of organisation of co-operation and institutions is still low and poor.</p>	<p>Lack of capital.</p> <p>Poor financial control.</p> <p>Poor time management</p>	<p>Market challenges</p> <p>Poor information technology skills</p> <p>Lack of management skills</p> <p>Poor management</p> <p>Marketing</p> <p>Lack of financing</p>	<p>Premises</p> <p>Market conditions</p>
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## 2.3.2 SMMEs in South Africa

### 2.3.2.1 Definition and Background

The definition for SMMEs is very broad as it incorporates organisations ranging from informal, non-VAT registered to formally registered companies (The DTI, 2008). SMMEs range from traditional family businesses with an employment of greater than one hundred (medium-sized enterprises), to informal micro-enterprises of survivalist entrepreneurial persons which encompasses the poorest lot of the population, are unlikely to have a staff employment and have very little potential to grow. The higher

end may be comparable to the SMME sectors within developed countries, while the lower end may be comparable to the majority of SMMEs existing within South Africa, respectively (Seda.org.za, 2016). The South African government has defined the SMME sector according to factors such as size of employment, ownership and formality, with various classifications (Aigbavboa and Thwala, 2014). South Africa's National Credit Regulation Act defines construction SMMEs as significant drivers for reducing unemployment and as contributors to the economy (Mahembe, 2011). Mahembe (2011) continues to identify two broad categories that SMMEs are defined into: statistical and economic. Statistical definition is used in three main areas: when comparing the economic contribution made by small companies across different countries; during the comparison of the extent to which the small business industry's contribution towards the economy has changed over time; in the measurement of the small business industry's contribution towards the GDP, exports and employment and the industry's overall size. Economic definition considers a business as small if the following three criteria are met: the managers are part or full owners who do not operate through a formalised management structure but run it in a personalised way; is independent and not part of a larger firm and owns a fairly small share of their market. However, according to Aigbavboa and Thwala (2014), these definitions consist of numerous weaknesses. Though they are in one way or another necessary, they however, prove insufficient in understanding a sector with dynamic realities, with much greater complexity. For instance, the economic definition that mentions personalised management by its owners or part owners, is discordant with its statistical definition of a small manufacturing firm consisting of about 200 employees.

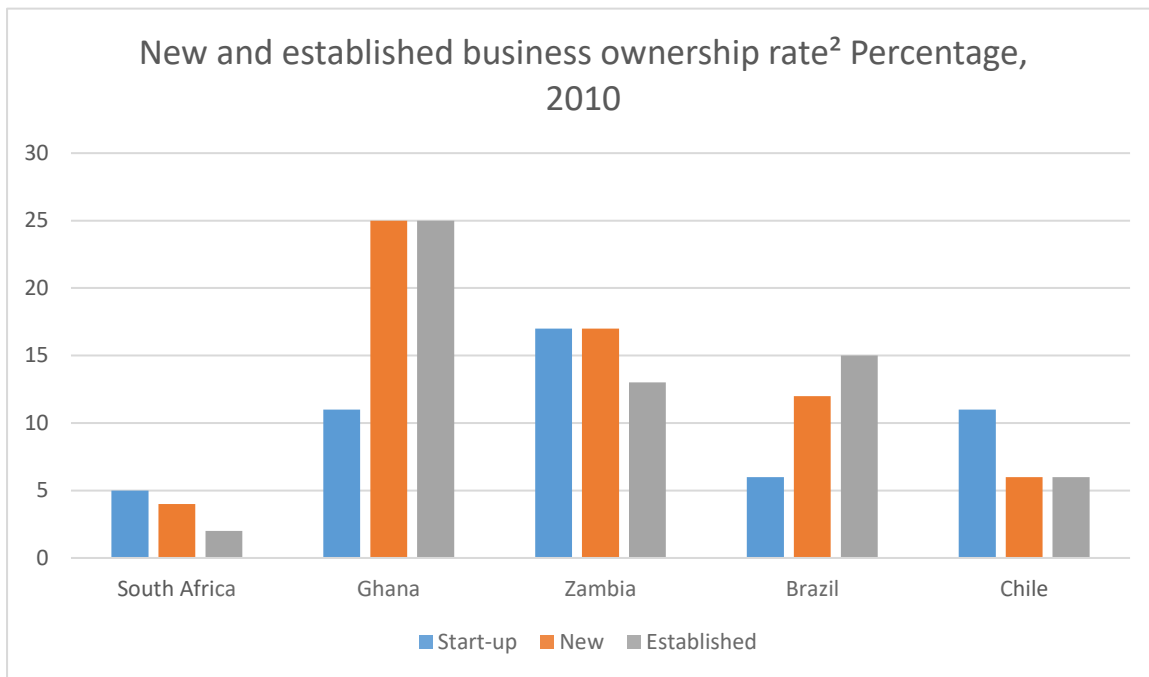
SMMEs are defined according to their gross asset value total, size, number of fulltime employees and total turnover. The DTI classifies the size of an enterprise based on its annual turnover in terms of the National Small Business Amendment Bill. Stats SA's March 2015 Quarterly Financial Survey (QFS) showed the following:

**Table 2.8: DTI's Lower-boundaries on Enterprise Sizes (adjusted by StatsSA)**

Industry Turnover	Large > Rm	Medium > Rm	Small > Rm	Very small > Rm
Mining and quarrying	370.5	95.0	38.0	2.0
Manufacturing	456.3	123.5	47.5	2.0
Electricity, gas, and water	456.3	123.5	48.5	2.0
Construction	247.0	57.0	28.5	2.0
Wholesale trade	608.0	304.0	57.0	2.0
Retail trade	370.5	180.5	42.5	2.0
Motor trade	370.5	180.5	42.5	2.0
Accommodation and catering	123.5	57.0	48.5	2.0
Transport	247.0	123.5	28.5	2.0
Real estate and business services	247.0	123.5	28.5	2.0
Community, social and personal	123.5	57.0	8.5	2.0

South Africa's critical shortcomings include resources that lack essential skills and the ability to implement because of fear of failure. Regardless of the positive social views about entrepreneurship, South Africans are still hesitant to establish new businesses and their willingness is measured below average, relative to other countries. Fellow African countries, such as Zambia and Ghana, are ranked well ahead of South Africa. We are still well behind in our ability of establishing, sustaining, and growing successful new enterprises (Global Entrepreneurship Monitor (GEM) Report, 2010). South Africa requires poverty alleviation, job creation and the redressing of inequality, both provincially and nationally, in seeking to improve the quality of life for all populations.

South Africa is well behind Ghana, Zambia, Brazil and Chile in its ability to foster successful new businesses:



**Figure 2.1: Global Entrepreneurship Monitor (GEM) Report 2010**

When compared to regional and global economies, the South African economy continues to grow at a much lower rate with current unemployment levels exceeding 25%. The World Economic Forum's statistics show that the South African GDP grew at an average of 3.4% between 2003 and 2013, and that the growth projection in 2014 was at 2.5% and 3.8% in 2015. This was about 50% lower than our sub-Saharan Africa counterparts (Aigbavboa, et al., 2018).

According to Statistics South Africa, Quarter 2: 2015, the alarmingly high 25% national unemployment rate, is one of South Africa's greatest struggles, and is aggravated by the lingering shortage of skilled labour within the country. SMMEs are major contributors towards South Africa's national GDP, towards the creation of employment (The DTI, 2008) and they constitute 97.5% of South Africa's formalised businesses (Abor and Quartey, 2010). They contribute an estimated 52%-57% towards South Africa's GDP and provide approximately 61% employment. Construction SMMEs particularly, are fundamental in contributing towards poverty alleviation; given the weight and the level of investment and financial commitment from the government of South Africa and employment generation and growth stimulation, generating employment. The South African government identified SMMEs as integral in solving the epidemic of unemployment facing greater than 24.1% of the 52.98 million

population (Statistics South Africa, 2013). Since South African SMMEs constitute such an enormous amount of all formalised businesses, they are a significant tool in sustainable job creation when they survive the teething years of business dynamics.

The Global Competitiveness Report by the World Economic Forum (WEF) describes how, when compared to other innovation-driven and factor-driven economies, South Africa is seen as an efficiency-driven economy, based on the country's share of exports, including primary goods and GDP per capita. South Africa's economic type influences societal attitudes, perceptions and intentions surrounding entrepreneurship, which in turn, directly links to the success and/or failure of SMMEs in the country as they affect the effective functioning of SMMEs within the economy. A comparison between South Africa and twenty-three other efficiency-driven economies considered in the GEM Report, indicated that South Africa scored 24.5 below average on fear of failure, 42.8 below average on perceived capabilities and 40.7 above average on perceived opportunities.

#### **2.3.2.2 Barriers and challenges faced by South African SMMEs**

Despite their enormous contribution and great significance towards economic growth, SMMEs worldwide and in South Africa, are still confronted by numerous challenges that hinder entrepreneurial growth (Mahembe, 2011). Aigbavboa and Thwala (2014) concur how, regardless of the extensive level of support given by the South African government and their contribution to develop construction SMMEs, the threat of barriers hindering their survival remain. This has resulted in high business failure rates and landed South Africa at the top of the global list for countries with the lowest construction SMMEs survival rate (Mahembe, 2011; Ahiawodzi and Adade, 2012).

There are countless possible drivers of failure and success of SMME business endeavours in South Africa with various reasons cited (Boya, 2016). Factors that affect the failure of SMMEs are poor interpersonal skills, the entrepreneur's poor judgement, unavailability of support, incompetence, and recession, which is a non-controllable attribute (Ladzani and Netswera, 2009). Furthermore, Nieman and Niewenhuizen (2014) propose access (or the lack thereof) to government support and funding, which may affect both existing and emerging ventures, as the main result of other non-controllable factors. According to Thwala and Mvubu (2009), South Africa's known systematic underinvestment in human capital, has resulted in a lack of a readily

available skilled labour force for small companies to employ, due to the skewed distribution of expertise, and employees with minimal work experience and career opportunities. Research has revealed that the two main challenges faced by SMMEs are the inability to develop good relationships with their customers and poor management skills. This is based on the principle that the managerial skill improvement is directly proportional to improved efficiency and productivity, which results in an organisation and country with greater stability, with increased profits and economic growth, respectively (Aigbavboa and Thwala, 2014).

Clients want value for money for commissioned projects, however construction SMMEs specifically, common to other types of SMMEs, face numerous difficulties within construction projects. These also result in poor quality and poor project performance during the execution of projects. Adendorff, Appels and Botha (2011) and Barry and Sebone (2009) conclude that the low success rate of construction SMMEs is a product of the poor quality projects being consistently delivered by them. Ofori (2009) agrees that SMMEs in all sectors encounter numerous barriers, however he also continues to identify those unique to SMMEs within the construction industry. He states that contractor's development and growth is hindered by; the low level of bargaining power that contractors have during the tender phase; the nature of work that contractors receive infers discontinuity because projects have a defined start and end; and the "payment for work done" mode used by clients affects the contractor's cash flow (Aigbavboa and Thwala, 2014).

It is important to consider that although a defined set of common barriers faced by South African SMMEs can be listed, not all domestic small businesses inevitably face the same set of challenges (Seda.org.za, 2016). The Finscope Small Business Survey (2010) highlights that these challenges are likely to be location specific. The survey continues to provide an overview of challenges and risks faced by South African SMMEs from various sources. The Bureau for Economic Research (BER, 2016) summarised these challenges to access to markets and finance, poor infrastructure, arduous labour laws, shortage in skills, crime, and bureaucratic inefficiency.

**Table 2.9: Challenges faced by SMMEs in South Africa (Bureau for Economic Research, 2016)**

<b>Access to credit and finance</b>	
<b>Challenges</b>	<b>Descriptions</b>
Hindrances to access credit	Typically, the entrepreneur lacking a credit history and having inadequate collateral hinders small businesses from attaining finance (Bureau for Economic Research, 2016), lack of access to vibrant markets, absence of feasible business ideas and poor market research, and the inability to produce adequate business plans as per financial institution's requirements (GEM, 2014). Moreover, the GEM South Africa 2014 report alludes that the most predominate reasons for South Africa's high business discontinuance rate are poor profitability, that is rapidly increasing, and a lack of access to finance.
Reluctance to finance start-up SMMEs	Given the conservative nature of banks and lenders in South Africa, SMME lack of access to finance is extremely common. They are more likely to be inclined to put resources in SMMEs in their later stages of development and are less likely to loan those that are starting up. According to Finscope's Small Business Survey (Finmark Trust, 2010), SMMEs in all provinces other than the North West and Gauteng, struggle with accessing finance. For the Northern Cape and Mpumalanga, this is mainly due to the nature of the two provinces, being predominantly rural.
<b>Poor Infrastructure</b>	
<b>Challenges</b>	<b>Descriptions</b>



<p>Infrastructure significant for SMME development</p>	<p>According to the GEM South Africa report (2014), infrastructure enables SMME development. Easily accessing space or land at affordable prices, transport and utilities and communication infrastructure can actively aid in supporting emerging companies. The lack of access to physical infrastructure impairs small businesses' growth and has a considerable effect on the cost of doing business. In addition to that, professional and commercial infrastructure, which involves accounting, commercial, and other legal services and institutions, is vital for sustaining existing SMMEs and the growth of new ones. Results from the Finmark Trust (2010) report show, that unlike those in the Northern Cape and Mpumalanga, Gauteng, SMMEs have greater difficulty in accessing adequate space and amenities. A mention of utility problems, such as interruptions in electricity delivery, was noted in the North Western SMMEs.</p>
<p><b>Low levels of research and development (R and D)</b></p>	
<p><b>Challenges</b></p>	<p><b>Descriptions</b></p>
<p>Innovation improvement by forming links with larger firms:</p>	<p>Small business need to build their Research and Development capacities, as it helps govern the feasibility of ideas and transforming them into actual businesses. R and D investments may also trigger access to innovative solutions through the discovery process. South African SMMEs are described as less innovative relative to SMMEs in developed countries. Booyens (2011) suggests that the failure of SMMEs</p>

	to form links with larger businesses, not only denies them technology diffusion opportunities, but also subdues innovation in South Africa. The GEM report (2014) concludes that there should be government incentives provided for R and D, to nurture innovation, entice and reinforce long-lasting links between knowledge intensive, foreign, and domestic companies.
<b>Arduous labour laws</b>	
<b>Challenges</b>	<b>Descriptions</b>
Labour laws discourage SMMEs to employ	The Organisation for Economic Co-operation and Development (OECD, 2015) labour laws employed in South Africa have been found to be a momentous regulatory impediment to business development, particularly in the case of laying workers off. Employers have found that even with proof of unproductive workers or if the business can no longer afford to keep them on, the law makes it difficult to lay staff off. The high South African minimum wages are proving costly for SMMEs.
<b>An inadequately educated workforce</b>	
<b>Challenges</b>	<b>Descriptions</b>
Limitation due to shortage of skills	The National Development Plan (NDP) states that service providing SMMEs are adversely affected by this skills shortage. This is true particularly for sales and accounting services businesses. The Department of Trade and Industry (2008) recognises that South Africa's limited entrepreneurship capacity and skills shortage restricts employment growth.

<b>Government bureaucratic inefficiency</b>	
<b>Challenges</b>	<b>Descriptions</b>
Hindrance due to permit delays	Government policies contribute towards entrepreneurial activity enhancement, by setting a platform upon which to start and sustain new businesses. The WEF 2014/2015 Global Competitiveness Report and GEM (2014) South African report identified government bureaucracy as amongst the greatest impediments to South African business and entrepreneurial activity. The ridiculous time delays associated with obtaining licences and permits, and red tape associated with new business start-ups and management, are mentioned in the WEF report.
Lacking in government co-ordination	Poor co-operation between inter-departments within the government affects programme planning and implementation. Elevation in inter-departmental conflicts result in various departments creating their own SMME functions and abandoning any co-ordination efforts. There ultimately, is a duplicate of efforts and impedes the development of the monitoring and evaluation framework for assessing the success of SMME programmes (The Department of Trade and Industry, 2008).
<b>High crime levels</b>	
<b>Challenges</b>	<b>Descriptions</b>
Cost increases due to security spend	The high South African crime rates have been an omnipresent issue that affects both informal and formal SMMEs. According to the OECD (2015), economic survey of South Africa, SMMEs were forced to increase security spending due to the high

	levels of crime. Increased security spending is directly proportional to overall cost of doing business. GEM (2014) stresses how the business cost of violence and crime hinders investment confidence in South Africa.
<b>Lack of access to markets</b>	
<b>Challenges</b>	<b>Descriptions</b>
Rural areas lack access to markets	Credit providers regard market access as an essential prerequisite to access mentorship and funding at the early stages. SMMEs' inability to access markets has been mentioned amongst the major factors that threaten their longevity. Watson and Netswera (2009) stipulate how urban small businesses are at an advantage compared to those that are disadvantaged and located in rural areas. Their ability to gain bargaining power by forming collectives via spatial clusters is hindered by their remote location and small size. Consequently, it becomes challenging to lobby government institutions to serve their needs. SMMEs in their teething phase are however, not encouraged to form clusters as fragile businesses may end up in intensely competitive positions.

Numerous other researchers (Thwala and Mvubu 2008; Mahembe, 2011; Ahiawodzi and Adade, 2012) identify major barriers as market access, government bureaucracy, developing relationships with clients, low production capacity for obtaining credit and finance, lack of management skills, suitable technology and recognition by larger businesses, and support for their significant role in economic development.

The South African railway industry poses a challenge to SMMEs who operate within the industry. The industry is dominated mostly by SOEs such as Passenger Rail Agency of South Africa (PRASA) and Transnet, then seconded by the mining and large manufacturing sector and therefore pose a challenge to SMMEs to best participate as suppliers (Transnet, 2010). Kelley, Singer and Herrington (2012) concur that the development of small businesses is hindered by the market dynamics in South Africa, where smaller firms struggle with the inability to compete with the bigger dominate firms regarding availability, price and quality of services and goods. Experts emphasise the important role Supplier Development plays in contributing to SMME growth and sustainability and point out the need for SMME development to enhance the growth of the economy.

## **2.4 Supplier Development**

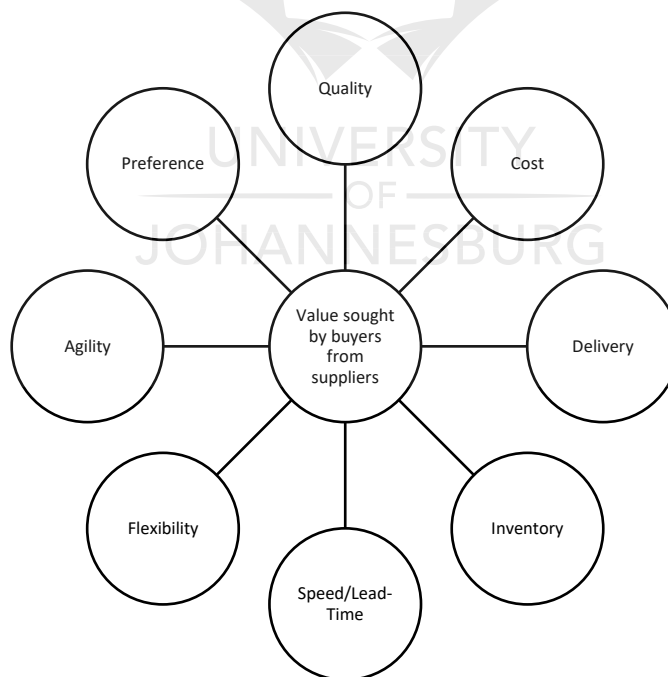
Buyers have become increasingly dependent on their suppliers' efficiency to provide technologically developed products within a limited period and in the most economical way possible. However, research has indicated that customers are not satisfied because suppliers were incompetent and failed to deliver the expected efficiency. The Supplier Development concept was initially introduced by Toyota in 1939, highlighting buyer-supplier collaboration, to improve performance (Ahmed, Bouassami and Tizro, 2014). Zeng, Zhang, Wang and Zhou (2018) defined Supplier Development as a buyer's measure for suppliers' capability and performance improvement, including cost capacity, quality, technology and delivery, to satisfy the requirements of the buyer. Based on literature, Chavhan, Mahajan and Sarang (2018) derived a detailed Supplier Development definition that combines all the definitions obtained from their research:

*“A long-term cooperative strategy initiated by a buying organization to enhance a supplier's performance and/or capabilities so that a supplier is able to meet the buying organization's supply needs in a more effective and reliable way which will give additional competitive advantage to the buyer to become more competitive in the market”.*

Supplier Development literature identifies several elements that are crucial for the buyer's success: Future business prospects, alternative procurement sources, new market support, improvements in new product development and collaboration,

investment in supplier's equipment training, communication, technical support, evaluation, certification, reward, and visits at supplier sites (Rajput and Bakar, 2012). The Supplier Development initiatives can be categorised into two levels, long-term and short-term orientations, either aiming to strategically enhance a buyer's supply base or to improve the delivery times of a supplier, respectively (Wagner and Krause, 2009; Wagner, 2010). Supplier Development initiatives, such as strengthening a supplier's capabilities in operations and managerial product development, may be done over the long-term and therefore, may be less immediate goals. Short-term initiatives are classified as those inclusive of delivery, order cycle times and quality (Friedl and Wagner, 2012). Buyers ought to understand the worries and motivations that the suppliers have in participating in these improvement efforts, in order to achieve the best planning and implementation of their Supplier Development initiatives. Firms that are product-based implement more proactive Supplier Development activities than those that are service based (Nagati and Rebolledo, 2013).

Terpend, Tyler, Krause and Handfield (2008) indicate the features of operational effectiveness, in figure 2.2 below:



**Figure 2.2: Value sought by Buyers from Suppliers (Terpend, Tyler, Krause and and Handfield, 2008)**

Different buyer-supplier relationship practices and Supplier Development practices can be applied as per requirements, to achieve the development of a supplier (Sarang, Bhasin, Kharat and Verma, 2016).

The businesses' survival within changing environments and around strong business competition depends on this improvement of SMME competitiveness Rostek (2012). Ada et al., (2013) found that SMME competitiveness would increase the businesses' bargaining position in business competition. Porter (1985) identified the value chain concept as the basic founding element for competitiveness. He defined it as a set of activities vital throughout the life cycle of a product, which are useful during the design, production, marketing, delivery and support of its product (Setyawan Agus, et al., 2015). The value chain concept has been introduced into numerous organisations including some SMMEs. The relationships organisations have with their business partners and their existing business networks are a major source of SMME competitiveness (Gracia, Magistris and Albisu, 2011; Bek, Bek, Sheresheva and Johnston, 2013).

SMME clusters are identified as a business network procedure to remedy the limited resources issue within the sector, which has been practiced in many countries, such as Italy (Randelli and Lombardi, 2013), Turkey (Ada et al., 2013), Spain (Gunasekaran, Rai, and Griffin, 2011; Gracia, Magistris and Albisu, 2011), and Indonesia (Tambunan, 2009). Tambunan (2009) states how Indonesian SMMEs ought to cluster themselves in order to achieve optimum resource sharing. The author continues to identify management and technological skills, working capital and human resources as the key factors for improvement of SMME competitiveness in Indonesia and that these key issues, together with access to finance (Tambunan, 2009; Şener, Savrul and Aydın, 2014), are crucial for SMME business performance improvement (Setyawan Agus, et al., 2015).

Bek, Bek, Sheresheva and Johnston (2013) explain how the level of innovativeness within a SMME cluster, plays a crucial role in its business performance improvement, because it leads to the creation of product and business processes with intangible assets and property rights. SMME business networks directly affect and hence contribute significantly towards the businesses' marketing performance (Lamprinopoulou and Tregear, 2011). Anga (2014) specifies that SMME

competitiveness in the market world, is greatly affected by their failure to adopt information technology applications because those that are technologically innovative have been observed to have a higher growth rate.

The owner's business capabilities such as his vision, the methods to reach this vision and his strategies jointly influence the competitiveness and success of an SMME (Antlová, 2009). In the manufacturing industry, Bellgran and Säfsten (2010) emphasised the significance of the manufacturing strategy to reach the desired competitiveness level. Meaning "art of war", the word "strategy" is of military fraternity origin (Louw and Venter, 2010). By viewing strategy from a business perspective, it suggests an organisation's plan of action in enabling itself and ensuring that customer expectations are met, rising above all its competitors, and positively increasing the probability of the businesses' sustainability, in future. With the realisation of the many challenges facing South African SMMEs, it is clear that a strategy of some sort needs to be implemented to ensure some kind of success.

The stakeholder's ability to adapt to environmental conditions and the relevance of these strategies will then determine whether the strategies are successful (Boya, 2016). Votoupalova, Toulouva and Kubickova (2014) introduce a weighting system which allocates each type of strategy a percentage towards the total strategy for a modern organisation. A focus strategy (of 34%) is predominant, secondly a differentiation strategy (of 29%), a cost leadership strategy (of 26%) and lastly, any other strategies (of 11%), are employed respectively. Lynch (2012) refers to a focus or niche strategy, which is based on the adoption of an often narrow scoped, distinguished competitive niche, existing within the industry.

Elhers and Lazenby (2010) define a differentiation strategy as one resulting in the creation of value to consumers, by creating a product that is unique, thus introducing differences in the service and product that the organisation offers: "Shifting the pyridine". Elhers and Lazenby (2010) continue by stipulating that when a business sells and provides a service or product that is regarded appealing by a broad market, then a low cost leadership strategy is pursued. Best cost leadership strategy would thus in essence be a combination of both the low cost leadership and differentiation strategies. Knowledge of all negative and positive factors should be considered during



the formulation and implementation of SMME strategies to facilitate the making of informed decisions (Boya, 2016).

#### **2.4.1 Supplier Development Process**

The Supplier Development process is identified as one consisting of four steps: Assessment of the supplier's readiness for change, utilisation of collaboration to build commitment, implementation of system-wide changes, transitioning away from the supplier's organisation and the establishment of recognition and follow-up processes (Chavhan, Mahajan and Sarang, 2018). The Supplier Development process involves evaluating the supplier, covering the supplier's management, quality, technology, funding and delivery, identifying the domains in need of improvement, formulating Supplier Development programmes and plans, and assessing the Supplier Development effect (Zeng, et al., 2018).

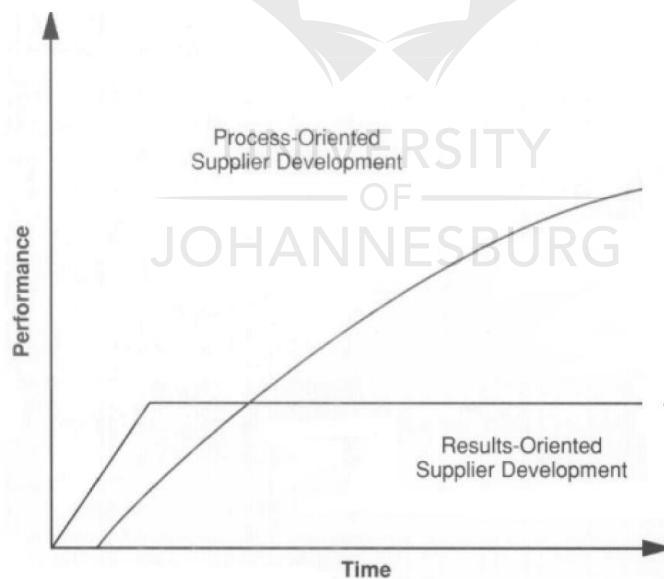
An article titled "*Avoid the Pitfalls in Supplier Development*" identifies a 7-step Supplier Development process map. These steps include identifying which commodities are critical, then identifying the critical suppliers, meeting with the top management of the suppliers, forming a cross-functional team, identification of key projects, the definition of details for an agreement, continuously monitoring the status and modifying the strategies (Joshi, and Verma, 2012).

#### **2.4.2 Supplier Development Programme**

In 1963, Nissan lead the early implementation of a Supplier Development programme and a decade later, in 1973, Honda participated (Handfield, Monczka, Giunipero and Petterson, 2009). Ahmed, Bouassami and Tizro (2014) describe the Supplier Development programme as elements combined to create sustainable supply management. There are two main Supplier Development programme categories: Indirect, which focuses on supplier delivery and product performance improvement, while direct Supplier Development focuses on supplier capability improvement. In a direct Supplier Development programme, the buying company is actively involved in resolving a supplier's respective problems, by dedicating its capital and human resources to a specific supplier. Activities which involve the transfer of qualifications and knowledge into a supplier's organisation, are an example of direct Supplier Development. Such activities include temporary personnel transfer, training, and education programmes, inviting supplier's employees and on-site consultation (Joshi,

and Verma, 2012). An indirect Supplier Development programme consists of the buying company using an external market and communication sources to achieve supplier performance improvements (Wagner, 2010; Chavhan, Mahajan and Sarang, 2018). A buyer can begin with knowledge transfer of operational processes and activities, in order to make the supplier more efficient in processes and quality (Aslan, Elif, Orhan, and Cetin, 2011). Predominantly, the Supplier Development programmes have two objectives: Making immediate changes to the supplier's operations to reduce supplier problems and increasing supplier's capabilities so that the supplier can also make its own improvements (Joshi, and Verma, 2012).

Most Supplier Development programmes are focused on the resolution of specific problems of the supplier and thus, are called results-oriented. These programmes aim to make an improvement in their suppliers' cost and quality but this type of results-oriented Supplier Development neglects increasing supplier's capability for their own continuous improvement and only enhances the suppliers' performance (Wagner, 2010). The following graph illustrates that the process-oriented programme is for continuous supplier improvement over the result-oriented programme.



**Figure 2.4: Graph of Process and Result Orientated Supplier Development performance (Wagner, 2010)**

Advantages of the result-oriented programme include rapid implementation of proven processes, rapid problem identification and resolution, giving the buyers' team rich experiential gain to solve the supplier's consecutive problems. The disadvantages may

be limited transfer of continuous process knowledge to suppliers, minimal supplier commitment and thus very little supplier capability improvement to solve their own problems. Surveys conducted also found that the buyers' interest lies mostly on short term, result-oriented approaches in product cost reduction, delivery, and quality (Joshi, and Verma, 2012).

In the manufacturing industry, the success of the product and vendor development programme essentially requires management to play an active short and long-term support role, on behalf of the manufacturer, with the support of dedicated human and company resources. The dissipation of production practices, methodology and knowledge of tools may be achieved through the exchanges of personnel in Supplier Development programmes (Wagner and Krause, 2009) and are intended to replicate and transfer the internal best practices utilised within suppliers' plants.

According to Routroy and Pradhan (2011), it is also quite important to be cognisant of the detail of critical barriers and success factors affecting the supply chain. Ahmed, Bouassami and Tizro (2014) argue that barriers and success factors of Supplier Development elements may affect Supplier Development implementation. In their view, Supplier Development barriers include; Lack of effective communication and minimal interest in following the evaluation results conducted by the buying company, low structural and cultural similarities, supplier's unwillingness to implement the certification programme and social relationship improvement. Routroy and Pradhan (2011) agree that these success factors play a vital role in the effective and efficient implementation of the Supplier Development programme.

Finally, Wagner (2010) discourages the engagement in both direct and indirect programmes, at once, and advises that organisations should engage in one of the Supplier Development programmes at a time, in order to attain effective results.

### **2.4.3 Supplier Development Activities**

From the buyer's standpoint, results indicate that there is an association between Supplier Development activities and improved buyer and supplier performance. (Nagati and Rebolledo, 2013). Supplier Development activities vary according to the organisation level but include, the buying company's direct capital investment into the supplier, training and education for supplier's employees, evaluation of supplier, supplier recognition, raising performance expectation, buyer and engineering

personnel placement at supplier's premises and feedback on supplier performance. Drastic improvements in the capabilities of the supplier can result in the buying firm meeting its competitive priorities, i.e., training a supplier in statistical process control can benefit the buyer not only in achieving desired quality levels but by making them more competitive in the market in which they operate too (Govindan, Kannan, Noorul, 2010). Supplier Development activities widely vary at organisational level but all include evaluation of supplier, provision of feedback on the supplier's performance, raising performance expectations, buyer's direct capital investment into supplier's company, engineering placement, mobilisation of buyer's employees at the supplier's organisation, provision of training and education for supplier's employees, and recognition of the supplier (Govindan and Noorul, 2010).

Besides substantially relying on its suppliers, manufacturing firms, on the other hand, primarily focus on Supplier Development activities that require none or a slight involvement from buyer side (Chavhan, Mahajan and Sarang, 2018). In earlier research conducted by Chavhan, Mahajan, and Sarang (2012), they emphasised that buyers used Supplier Development activities in the effort to generate and preserve a network of suppliers with ultimate efficiency and a competitive nature, to improve the businesses' competitiveness and productivity.

Friedl and Wagner (2012) identify three forms of Supplier Development activities. The first form pertains to gathering information about the supplier, evaluating the performance of the supplier and providing feedback of over information about the supplier's evaluation results. The second form involves providing the supplier with thorough and specialised technical, process, or managerial knowledge. The third form could be the interactive sharing of tacit knowledge through exchange of human assets, which are the employees from the buyer and supplier firm.

According to Ahmed, Bouassami and Tizro (2014); Chavhan, Mahajan and Sarang (2018), Supplier Development activities are classified based on the involvement of the buyer's resources, based on parameters such as time, personnel and capital. It is divided into three parts: Basic, moderate, and advanced Supplier Development. In basic Supplier Development, qualification is regarded as more significant than supplier certification and focuses on evaluation and feedback provision to suppliers. Moderate refers to the level of buyer involvement, as such, these activities include visiting

suppliers for problem solving, recognition and reward of supplier’s performance, supplier certification, and efforts to improve supplier efficiency in material-based issues. Advanced refers to the level of involvement by the buyer being very high, through activities such as financial data, quality and cost information sharing and provision of proper training by involving the supplier in new product design and development processes. From both the perspective of a supplier (Nagati and Rebolledo, 2013) and that of a buyer, factors such as purchase volume, communication, long-term co-operation and senior management participation, are all vital factors that influence Supplier Development activities. The commitment of buyers towards long-term co-operation was ranked as number one for the success of Supplier Development activities (Zeng, et al., 2018).

Table 2.10 shows a summary of Supplier Development categorisation.

**Table 2.10: Types of Supplier Development Activities (Chavhan, Mahajan and Sarang, 2018)**

<b>Basic Supplier Development</b>	<b>Moderate Supplier Development</b>	<b>Advanced Supplier Development</b>
Performance evaluation and feedback provision to suppliers.	Making frequent visits to suppliers' plants.	Provision of training to suppliers.
Sourcing from a limited number of suppliers.	Approval and award of any improvements in the supplier's performance.	Collaboration with supplier.
Standardisation of parts.	Collaboration with suppliers to improve materials.	Supplier involvement in buyer's new product, design, and development process.
Supplier qualification.	Supplier certification.	Intensive information exchange with suppliers.

The following illustrates the important elements of the Supplier Development programme through the literature preview.

**Table 2.11: Factors Contributing Primarily for Development of a Supplier per the Critical Literature Reviewing**

<b>Supplier Development</b>	<b>Literature</b>
1. Communication	Hargis, Dickson, and Nourish (2014); Joshi and Verma (2012); Aslan, Elif, Orhan, Cetin (2011); Lawson, Petersen, Cousins, Handfield, (2009); Obal and Lancioni (2013).
2. Long term commitment, collaboration, and trust	Ou, Liu, Hung and Yen (2010); Terpend, Tyler, Krause and Handfield (2008); Wagner (2010), Mahapatra, Das and Narasimhan (2012); Wagner, (2011); Nagati and Rebolledo, (2013).
3. Technical and capital support	Govindan and Noorul (2010); Sarang, Bhasin, Verma and Joshi, (2012); Nagati and Rebolledo, (2013).
4. Supplier's certification	Routroy and Pradhan, (2011); Chen and Deng (2013); Sollish and Semanik, (2012); Kalyanam and Brar, (2009); Gilliland, Bello and Gundlach, (2010).
5. Supplier's site visit	Aslan, Elif, Orhan, Cetin (2011); Sollish and Semanik (2012).
6. Product development	Chavhan, Mahajan and Sarang (2018); Wan, Wan, Nurulain, Rahman and Deros, (2011); Aslan, Elif, Orhan, Cetin (2011); Cousins and Handfield (2009)
7. Quality audits	Ahmed, Bouassami and Tizro, (2014).
8. Rewards and incentives	Nagati and Rebolledo, (2013); Aslan, Elif, Orhan, Cetin, (2011); Schiele, Veldman and Hüttinger, (2011); Steinle and Schiele, (2008); Zeng, Zhang, Wang and Zhou, (2018).

9. Top management involvement	Govidan et al. (2010); Ahmed, Bouassami and Tizro, (2014).
10. Early supplier involvement	Chavhan, Mahajan and Sarang, (2018); Joshi and Verma, (2012); Wan, Wan, Nurulain, Rahman and Deros (2011); Aslan, Elif, Orhan, Cetin (2011); Cousins and Handfield (2009); Song and Benedetto, (2008); Wan, Nurulain, Rahman, Deros (2011); Joshi and Verma (2012); Eisto, Holta, Mahlamaki, Kollanus and Marko (2010); Feng, Sun, and Zhang, (2010).
11. Supplier evaluation	Chavhan, Mahajan and Sarang, (2018); Fowler and Graves (2011); Aslan, Elif, Orhan, and Cetin (2011); Sarang, Bhasin, Verma and Joshi, (2012); Hald and Ellegaard (2011); Sarang, Bhasin, Verma and Joshi (2012), Yang (2010), Ahmed, Bouassami and Tizro, (2014); Sollish and Semanik (2012)

#### 2.4.3.1 Communication

Communication is defined as the study of the science of producing and processing, as well as the effect of symbol and signal systems utilised by humans, to send and receive messages. Communication is one of the most critical tools in structuring the objectives, strategies, company policies and activities within an organisation (Hargis, Dickson, and Nourish, 2014). It is essential for management to possess communication competency, as the policies and activities should not just be understood, but also filtered downward to the workforce via tasks and instructions, in order to meet the objectives and strategies of the organisation. Nowadays, buyer-supplier dependability on digital communication has increased, however face-to-face communication is still regarded as the best communication technique with the biggest effect on exchanging information between a supplier and the buyer (Obal and Lancioni, 2013). Ultimately, communication is regarded as the adhesive that holds

partnerships between different parties together (Lawson, Petersen, Cousins and Handfield, 2009).

Collaborative inter-organisational communication has been identified as an important factor in supplier performance improvement and in diminishing the problems suppliers face. Decreasing improper communication decreases the probability of implementing strategies that are incorrect and misunderstandings (Aslan, Elif, Orhan, and Cetin, 2011). Joshi and Verma (2012) agree that the importance of collaborative inter-organisational communication is in increasing supplier performance and decreasing problems associated with suppliers.

#### **2.4.3.2 Long-term commitment, collaboration and trust**

Schiele, Veldman, and Hüttinger (2011) stated how the success of Supplier Development activities requires the supplier's commitment towards the relationship with their customers. The success of Supplier Development initiatives is contingent on both supplier and buyer and have been linked to relational variables such as dependence, commitment, and trust (Nagati and Rebolledo, 2013). According to Zeng, et al, (2018), co-ordination, training, leadership and other factors are also crucial for the formation of co-operative relations in construction projects.

According to Abu Saleh et al. (2012)'s definition of commitment is of a factor containing several dimensions that combines the parties involved. Ahmed, Bouassami and Tizro (2014) suggest that commitment determines a company's productivity, effectiveness, efficiency, and financial long-term benefits. The long-term co-operation relationships between suppliers and buyers is regarded as one of the key success factors of Supplier Development. Most companies have developed strategic relationships of such a nature in the effort of building long-lasting competitiveness for both parties, over any short-term market advantage.

Ahmed, Bouassami and Tizro (2014) defined collaboration as the process where two or more parties jointly become involved in finding solutions to problems together, because of their inadequacy to do so alone due to the limitation of knowledge or resources. The writers continued by stating that collaboration requires both parties to be able to share sensitive information and requires large investments. Therefore, collaboration success is dependent on, and should be founded on the compatibility of goals, trust and shared values between the supplier and buyer. There are various



types of buyer-supplier collaboration and it can occur in several forms (Yan and Dooley, 2014). According to Allred et al. (2011); Yan and Dooley (2014); Cao and Zhang (2011), these forms could be inter-organisational collaboration, supply chain collaboration, collaboration quality and collaboration capability.

The climate of trust is crucial for working with Supplier Development as trust minimises the uncertainties and risks that may exist between a buyer and a supplier. Building the supplier's trust towards Supplier Development encourages the supplier to participate willingly and vigorously in the Supplier Development programme instead of just taking it as a buyer's requirement (Nagati and Rebolledo, 2013).

Ou, Liu, Hung and Yen (2010); Terpend, Tyler, Krause and Handfield (2008) link the significant enhancement in quality, reduction in cost, lead-time and increase in productivity, to co-operative buyer-supplier relationships. Empirical Supplier Development research that studied the Supplier Development practices implemented by firms in different competitive environments (Mahapatra, Das and Narasimhan, 2012), different relationship life cycle phases (Wagner, 2011) and different industries indicate that environments of greater competitive nature with mature relationships, allow for more effective Supplier Development.

In his study of literature, Lau (2011) concludes that a company that collaborates and involves their suppliers in new product development (NPD) and Suppliers Development Programme will perform extremely well. The co-operation between buyers and its suppliers can result in greater efficiency and enables the buying company to sell their goods at lower prices. This lands them ahead of their competitors and allows the buyer to focus on his core competency to remain more competitive.

Nagati and Rebolledo (2013) investigated the role of preferred customer status, trust, and environmental dynamism on supplier participation in Supplier Development activities and the impact they have on the improvement of the supplier's operational performance. The supplier's participation and involvement in Supplier Development activities initiated by the customer is dependent on the level of trust the supplier has in its customers. Supplier Development activities require suppliers to exchange product and processes' confidential information and they make investments for problem resolution and capability improvement. Suppliers may be resilient to participate in their customers' Supplier Development activities should they be doubtful

of the customer's intention to act systematically towards their interest. An environment of trust that guarantees customer loyalty ensures the continuity of long-term relationships and the allocation of some positive productivity gains resulting from learning new capabilities. Ghijsen, Semeijn, and Ernstson (2010) investigated the relations between supplier's trust and commitment and Supplier Development initiatives and suggested trust as a significant factor in encouraging suppliers to participate in Supplier Development activities.

#### **2.4.3.3 Knowledge transfer, training, technical and capital support**

Govindan and Noorul (2010) highlight how the buyer not only benefits by being closer to achieving the desired level of quality but also makes the company more competitive when they train suppliers in statistical process control. Only a drastic improvement in the supplier's capabilities can result in the buyer's competitive priorities being met. The buying company contributes their limited technical, financial, and personal resources, to a supplier who performs well but needs financial assistance to perform even better and also to exploit strategic opportunities for creating value with suppliers (Sarang, Bhasin, Verma and Joshi, 2012).

Customers can also opt for investment in education and training of the suppliers' personnel, and in installation of equipment and tools for logistics processes and production. With the amount of time required from buyers and the investments made in suppliers' resources, the implementation of such programmes can be with a handful of strategic suppliers (Nagati and Rebolledo, 2013).

#### **2.4.3.4 Supplier's certification**

The certification of suppliers by either external sources or the buying company boosts buyer confidence in partaking in continuous business with suppliers (Routroy and Pradhan, 2011). Chen and Deng (2013) agree that supplier certification represents an important value for buyers because it reinforces confidence between them and their supplier and therefore translates into operational and financial success for the buying company. The certification of a supplier diminishes the need for the customer to do deep and detailed inspections of suppliers, as they will be following the certification standards and therefore the expectation is that the supplier will produce an acceptable product quality level (Sollish and Semanik, 2012). Certification control has proven itself vital with the positive impact it has on supplier-buyer relationships (Kalyanam and Brar,

2009). Consideration should however, also be made that certification control can also be viewed as a tool for forcing control which could lead to decreased co-ordination amongst partners (Gilliland, Bello and Gundlach, 2010).

#### **2.4.3.5 Supplier's site visit**

Site visits increase buyer-supplier collaboration and assist in tacit transfer of knowledge. Many buyers now conduct a supplier's summit where suppliers are invited to the organisation and are made aware of all the quality issues related to them (Aslan, et al., 2011). Supplier site visits along with product testing, and performance decline cause or improvement area identification is used to achieve the desired company objectives from their suppliers, and are amongst methods used for supplier review (Sollish and Semanik, 2012).

#### **2.4.3.6 Early supplier involvement in new product development**

Previously, the expertise of the supplier was not being fully utilised during product development and design processes therefore there lay a gap in the emphasis of activities that lead to supplier capability improvements i.e., a process-oriented approach (Chavhan, Mahajan and Sarang, 2018; Joshi and Verma, 2012). Earlier, normal practice involved the buyers designing, sometimes without being cognisant of the supplier's technical capacity, and the suppliers would have to follow and execute these designs. This brought about numerous design complexity challenges for the suppliers and thus it became difficult for suppliers to have control over process and quality. This therefore gave birth to the concept of early supplier involvement, which provides an additional advantage of innovativeness of the suppliers to buyers. The design stage is the most imperative stage of involvement and errors made at this stage may result in major costs in further stages. Suppliers that are involved in the market testing understand their customers' expectations better and they can boost the level of satisfaction themselves (Chavhan, Mahajan, and Sarang, 2012).

Wan, Wan, Nurulain, Rahman and Deros (2011) state that there is a major time and monetary benefit, should suppliers be involved in the development of a product, however they highlight that a substantial effort and a lot of thinking is required. According to Aslan, et al. (2011), involving the supplier in new product development not only is beneficial in relation to product development time and purchasing cost but in aspects such as product quality and access to technology. Cousins and Handfield

(2009) earlier applied the notion that early integration of suppliers into product development, is critical for quality improvement, cost containment, reduction in time to market and may develop the supplier's capabilities, resulting in a long-term relationship (Song and Benedetto, 2008).

To sum it up, the qualifications in terms of financial strength of suppliers, production process compatibility, technical capability, delivery capability and product quality, have a positive effect on the performance of suppliers. Although commitment and trust are most essential, culture is jointly dependent on parameters, such as, exchange in communication, supplier-buyer relations, and the involvement of the new product development. However, the supplier's faithfulness, commitment and capability warrant a better result of early supplier involvement (Chavhan, Mahajan, and Sarang, 2012).

A case study to investigate the enhancement of supply chains in the manufacturing industry through a product and vendor development programme (PVD) was conducted by Wan, Nurulain, Rahman, and Deros (2011), in Isuzu Motor Ltd. It revealed that the responsibility of all parties involved in the PVD was a key success factor in avoiding misunderstandings and decision-making process delays, particularly by the PVD team (Joshi and Verma 2012). Furthermore, in a case study conducted on the operational implications of early supplier involvement for semiconductor manufacturing firms, Chavhan, Mahajan and Sarang (2018) mention the major barriers of early supplier involvement and their solutions. These include:

- Fear of leaking proprietary information that can be remedied by using non-disclosure agreements.
- The perception that there is a higher cost in the early involvement of suppliers. The costliness is due to viable reasons such as costs incurred for information systems setup, co-design expenses, training provision for suppliers for improved material quality control at the suppliers' plants, investments in supplier's plants for material improvements at the source and motivation of suppliers through rewards and incentives. The resolution lies on top management having an understanding that company survival is dependent on its supplier and that no organisation can exist on its own. This ensures the

visualisation of the benefits of greater security in the procurement of quality material benefits. Investing in their suppliers results in benefits of better security in great quality goods procurement that benefit them and better technologies.

- Demotivation of company staff can be remedied through sharing of profits. Top management has the role to create an environment that is competitive and motivating so that their employees are encouraged to put in their best efforts. Therefore, they always strive for manufacturing process improvement, manufacturing cost and lead-time reduction.
- Suppliers being unwilling to provide an increased level of support due to buyer-supplier relationship (supplier goodwill), buying company commitment, bearing increased responsibility/greater risk and the supplier's company size. This can be resolved by using reward-sharing agreements.
- Poor communication can be remedied through well-defined selection criteria. Proper communication channels should be established in order to prevent the hindrance of ESI efforts due to the miscommunication.
- Being completely dependent on suppliers who are reliable and technically competent to satisfy the objective. The use of appropriate assessment criteria to select reliable suppliers with the ability to deliver goods of the expected quality, on time and possessing the required technical capabilities.

A study of early supplier involvement in new product development in a casting industry, conducted by Eisto, Holtta, Mahlamaki, Kollanus and Marko (2010), revealed that early supplier involvement could have numerous cost and time saving benefits, with quality improvement benefits:

**Table 2.12: Benefits of Early Supplier Involvement in New Product Development (Eisto, Holttä, Mahlamäki, Kollanus and Marko, 2010)**

Cost Saving	Time Saving	Quality improvement
Solution is new and improved	Need for additional clarification is reduced	Choice in material
Finished part is handled much easier	Earlier preparation of customer's order	Rejection is reduced
Time is reduced	Process improvement	Quality and dimensions as per buyers requirement

The supplier's level of expertise, valuable knowledge and innovation increases right along the increase in the supplier's involvement. The supplier's role during design, production and service is vital for new design as per customer's demand, innovation, process development and short time to market. Furthermore, greater strategic advantage is brought about through short time-to-market, combined with collaboration. A surge in involvement is directly proportional to an increase in customer service, reliability, quality, delivery, and processes flexibility and inversely proportional to cost, which brings competitive advantage to the buyer (Feng, Sun, and Zhang, 2010).

#### **2.4.3.7 Quality audits**

Sustainable Supplier Development requires equal effort from both the buyer and supplier. Buying firms are required to encourage their suppliers in producing products of the highest quality and maintaining that quality thereafter. Quality audits and assistance from engineering are viewed as win-win strategies. Suppliers gain and learn improvement methodologies and quality control which they can use internally in their own organisation when producing other products, or with other customers (Ahmed, Bouassami and Tizro, 2014).

#### **2.4.3.8 Rewards and Incentives**

Incentives can be used for supplier's performance improvement (Aslan, et al., 2011). Supplier's performance can also be enhanced via incentive mechanisms (Nagati and Rebolledo, 2013), by providing rewards and financial enticements for the best suppliers, such as designating them preferred supplier status or increasing business volumes. Only suppliers with preferential status would willingly expand the scope of their competencies to accomplish their customers Supplier Development objectives

for its customers and allocate human resources (Schiele, Veldman and Hüttinger, 2011). The supplier preferentially/specially warrants its attention, allocates its time and resources and safeguards open information exchange essential for Supplier Development initiatives to a preferred customer (Schiele, Veldman, and Hüttinger, 2011; Steinle and Schiele, 2008).

Scholars have also sought for incentives to support training activities, including the increase in purchase volumes and financial incentives. This assisted suppliers in avoiding opportunistic behaviours and urged them to partake in activities for performance improvement (Zeng, et al., 2018).

#### **2.4.3.9 Top management involvement**

It is undeniable that support from top management is crucial for the success of Supplier Development. Top Management understand the strategic implications associated with the organisation remaining competitive in the marketplace. Therefore, the buying firm's top-level managers, should realise the need and initiate Supplier Development (Ahmed, Bouassami and Tizro, 2014). This confirms Govindan, et al. (2010), who stated that the manager of the purchasing function in the buying firm requires inspiration and support from top management, to be able to enlarge the array of resources in the operation of suppliers.

#### **2.4.3.10 Supplier selection and evaluation**

According to Fowler and Graves (2011) "*Supplier selection criteria is categorised into five steps; identification of importance of supply, performance criteria, allocation of weight to performance criteria, supplier assessment based on performance criteria and finally selection of supplier based on the results obtained.*" The authors also argued the necessity of supplier evaluation for the selected suppliers. The supplier's current performance level may be measured using step two, the performance criteria, as this criterion is their basis for initial selection (Fowler and Graves, 2011). In their quest to improve short and long-term Supplier Development plans, Aslan, et al. (2011) specify that it is mandatory before supplier selection, for a buying firm to evaluate a supplier properly through certification checks and frequent visits and should minor issues be detected, then continue to provide the required training type to eliminate any issues before selection.

Supplier evaluation is an essential part of Supplier Development, which serves as a founding podium to initiate a Supplier Development programme. Supplier evaluation is the initial step of Supplier Development and enables the buyer to identify areas of the supplier requiring improvement. Problem precise root-cause identification is undertaken to see whether the problem is design, material, product, process and operating system related. Suppliers are evaluated, based on their managerial and technical capabilities, delivery, cost, support, service and product quality and are classified into groups, based on these parameters. The combination of problems faced by the suppliers and a Supplier Development programme will result in the formation of a matrix that provides a guideline on Supplier Development plans that are problem specific. Evaluation also helps create long-term relationships between a buyer and its suppliers who perform well, and this relationship aids the buyer to remain competitive through continuous improvement (Sarang, Bhasin, Verma and Joshi, 2012).

An investigation by Hald and Ellegaard (2011) on supplier evaluation processes found that for the buyer to remain competitive and to raise quality, there should be shaping and reshaping of the supplier's performance. The authors identified thirteen different factors to sharpen supplier evaluation. Performance complexity, structure of the evaluation group, measurability/accessibility of data, decision-making authority were identified as factors that shape supplier evaluation systems' design. Resource consumption in updating data, translation/rating models on supplier performance, instability of supplier evaluation system, logic of the buyer on how to motivate their suppliers, were amongst the factors that shape the supplier evaluation systems' implementation. Reluctance to inform suppliers, information addition, failure to relate to buyer's performance, recommunicating performance data and failure to benchmark supplier performance were named amongst those factors that shape supplier evaluation systems usage. Furthermore, Hald and Ellegaard (2011); Sarang, Bhasin, Verma and Joshi (2012) classified the abovementioned thirteen factors into five generic dynamics. Directing is route allocation for an object, and if done correctly can generate radical supplier performance improvement. Dampening refers to depressing or restraining the buying firm's signal to allow it to save and restore face and goodwill. This can, however, also create confusion in terms of seriousness, reliability, and accuracy of the evaluation process, for the evaluated suppliers. Amplifying refers to the buyer intensifying the supplier's shortcomings for improvement, without



demotivating the supplier. Reducing involves minimising data for supplier evaluation, useful in directing the supplier's efforts. Finally, representing pertains to speaking on behalf of supplier performance and plays a vital part during the design phase and in shaping supplier performance.

According to a model developed by Yang (2010), the five variables that consist of different measures, crucial for supplier performance evaluation are manufacturing, learning, finance, reaction, and customer service. Companies assess their supplier's performance progress through supplier reviews. The performance scorecard review indicates a supplier's progress by looking at their quality, service level, time delivery, cost and other. It includes both the current and the desired level of performance among different categories of suppliers. It is important for companies to consider the supplier's feedback for improvement and their perspective.

Supplier performance improvement may be achieved through development of an effective plan, one following six significant steps; the analysis of level of performance and the supplier's current situation, gaps analysis and identification from expected performance levels, improvement plan development, improvement plan implementation, improved performance level measurement and lastly, the continuous repetition of the cycle for continuous improvement. However, a study conducted on a pool of companies indicated that 45.5% of the respondent companies did not have a formal supplier evaluation method (Ahmed, Bouassami and Tizro, 2014). Sollish and Semanik (2012) also emphasised the importance of companies deciding on the type of reporting schedule and monitoring technique.

#### **2.4.3.11 Supplier's innovation**

In a study undertaken on the benefits attained from supplier operational innovativeness with the influence of absorption capacity and effective supplier evaluations, Azadegan (2011) revealed that both influencing factors were means to increase supplier operational innovativeness, which relates mostly to the improvement of processes, the generation of a new higher speed tool, new concept and new product development. Absorption capacity influencing operational innovativeness includes personal adequacy, inter-learning between customer and supplier, new technology, communication and routine search. The supplier evaluation parameters used in the study, included design and manufacturing capability, quality, and product

development. A buying company with good direction implements supplier evaluation programme aids to encourage supplier operational innovativeness, which in turn, aids the buyer to remain competitive. For evaluation to be effective, proper assessment should be undertaken and those suppliers who excel in innovation should be recognised and rewarded through incentives to further motivate and increase the confidence of the supplier.

Other research on supplier pricing and supplier innovativeness indicated that innovation was greatly affected by a supplier's technical capability (Schiele, Veldman, and Lisa, 2011). Suppliers that were aware of their capabilities and innovativeness were found to have extensive pricing and so they state that this can be remedied through giving the supplier preferred customer status, which in turn, positively affects supplier innovativeness.

According to Charterina and Landeta (2010), the encouragement of specific investment, specialised resources, knowledge exchange by contract leads, lead to increased trust with resource interdependence resulting in the eventuality of close-knit companies with committed relationships leading to innovation. Christopher, Carlos, Khan and Yurt (2011) concur in a statement that point out that specifically investing in efforts to pool resources, knowledge exchange and assets for buyer-supplier relationships makes for effective improvement of supplier innovativeness because of the increase in commitment, interdependence and trust.

## **2.5 Supplier Development in South Africa**

### **2.5.1 Governments programmes in support of SMME development**

SMME development requires a multiple stakeholder approach, involving both private and public sectors (Department of Trade and Industry, 2010). According to Aigbavboa and Thwala (2014), South Africa's post-apartheid government was fully cognisant of the major role played by SMMEs in economic growth, thus, it produced a framework for SMME growth and support. Strategies, policies, and programmes were put into place with the objective of producing an enabling environment for small businesses. According to the Department of Trade and Industry (2010), with the support by government, the initiatives play a significant role in creating an environment that

enables the creation of jobs, competitiveness and growth creation for facilitating industrial development.

The Department of Trade and Industry (DTI) and associated organisations facilitate such initiatives. The DTI has committed to sub-programmes for the development of enterprises, aimed specifically at co-operatives and SMMEs by rolling out incentives and payments. Ensuring ease of access to finance to ease the cost of doing business, establishment of entrepreneurship, and providing support through institutional and organisational efficiency improvement are amongst some of initiatives. An agreement was signed with the European Union to donate R550 million to set up a SMME risk capital fund (Department of Trade and Industry, 2010).

Initiatives that actively support and promote the South African SMME sector of the economy include the following:

- Ntsika Enterprise Promotion Agency (Ntsika) - (Ntsika, 1999; Republic of South Africa - National Small Business Act, 2004): SMME initiative afforded establishment by The National Small Business Act of 1996. It was initially responsible for supporting small enterprise “wholesale” supply or facilitation, in training, export facilitation, information, research and marketing. Ntsika specialises in the provision of non-financial support services such as business, management and marketing development and assists in inter-business linkage research services.
- Centre of Small Business Promotion (CSBP): A body responsible for the administration and implementation of the national strategy aims including job creation.
- Khula Enterprise Finance: An organisation that was afforded establishment by the White Paper on Small Business in 1996. A body set up and mandated with the improvement of access to finance for SMMEs, through providing guarantees or wholesale finance to retail financial intermediaries, which, in turn, finance the SMME sector. Khula offers financial support services to the SMME sector in the form of five products; business loans (@14.5% interest per annum), credit guarantees to private sector institutions, capacity building, seed loans and equity funds.

- Skills Development Programme: Launched in 1998, this government initiative enables SMMEs to obtain assistance with developing good relationships with their clients and improve their management skills.
- South Africa Construction Industry Development Board (CIDB): This board was created with the paramount responsibility to develop SMME contractors. The CIDB undertook an initiative for the expansion of contractor development and training via identification and partnerships with tertiary South African institutions, information sharing with regional partners and consideration of overseas opportunities. It has hosted SADC visitors and made numerous trips in the SADC region to countries that shared common interests and were willing to collaborate with the CIDB. Moreover, the South African or German initiative was perused to source funding and a MoU with German counterparts (CIDB, 2011). Ronnie Khoza, the CEO of CIDB, said:
 

*“In the year 2010, training and contractor development were prioritised by those mandated to do so. The CIDB was therefore requested to play a role, beyond its mandate, to improve performance in this area. The CIDB has therefore decided to facilitate training through various interventions, including injecting funding for strategic opportunities. Contractor development has been recommended for consideration as a national priority and a Steering Committee has been formed between CIDB and the national Department of Public Works. Provinces have been selected for progressive inclusion regarding improved reporting on all contractor development opportunities, implemented through the framework for the National Contractor Development Programme (NCDP)”*
- Small Enterprise Development Agency (SEDA): Created to nurture the growth of SMMEs. SEDA’s objectives to ensure the contribution of co-operatives and SMMEs, towards the South African GDP increased from 40% to 45% by 2014. The measures that were put in to place to achieve this objective were SEDA’s provision of continuous support that would lead to an increased number of co-operatives and SMMEs by 2014 (Department of Trade and Industry, 2010).

“SEDA is an agency of the South African Department of Trade and Industry (the DTI). It is mandated to implement government’s small business strategy; design and implement a standard and common national delivery network for small enterprise development; and integrate government-funded small enterprise support agencies across all tiers of government. SEDA’s mission is to develop, support and promote small enterprises throughout the country, ensuring their growth and sustainability in co–ordination and partnership with various role players, including global partners, who make international best practices available to local entrepreneurs (Seda 2010).”

- The National Contractor Development Programme (NCDP): A sector-specific intervention within the South African Accelerated and Shared Growth Initiative (ASGISA) framework. Its commitment is the acceleration of construction industry growth to meet national demand by specifically enhancing equity ownership and capacity across different Grades and contracting categories. It also aims at skills and performance improvement in the delivery of public sector maintenance and capital works (CIDB Status Quo Report, 2009). The NCDP identifies various contractor development components for progression before being regarded as competent specialists in the operational field and for performance improvement (Department of Public Works and CIDB 2010).

The NCDP contractor development initiatives cover the following activities:

1. Development of the Construction Work Force through supervisor and artisan development for Grade 1, 2 contractors, and ungraded workforce.
2. Development of the Contractor comprises two subcomponents; Emerging contractor stage as a start to the progressing to the contractor enterprise development stage that focuses on business development, jointly with contractor performance improvement:

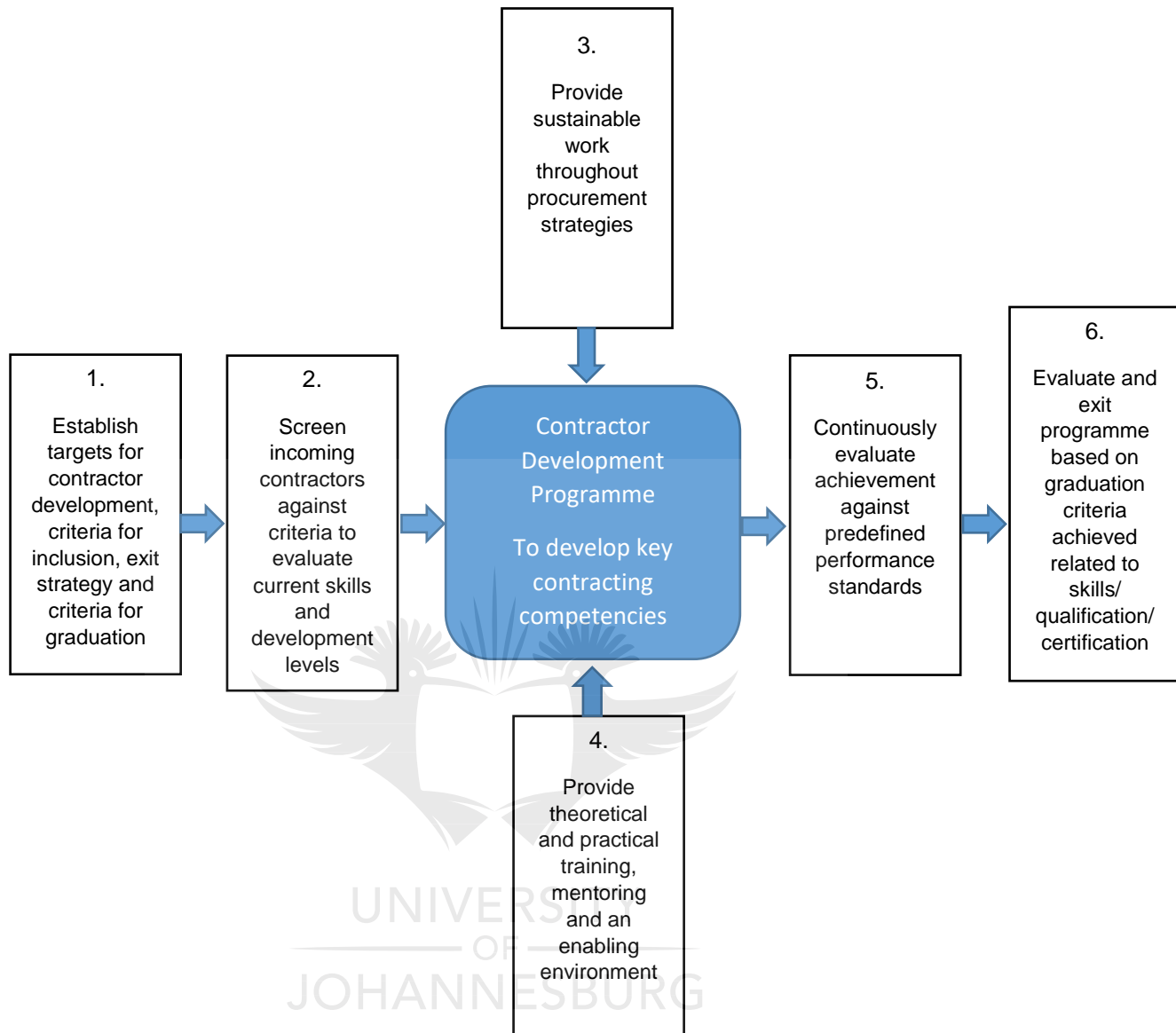
- 2.1 Development of Emerging Contractor through mentorships that teach the business side of contracting (HR and financial

management, marketing, contract administration, pricing and tendering for work). Learnerships with Emerging Contractor Development Programmes are also offered to Grade 2 and Grade 3 contractors.

2.2 The stage of Development of the Enterprise targets Grade 3 to 6 contractors that show growth potential. It is when the enterprise growth starts; operational area, workforce, plant and equipment, technical and business system expansion; market development for their services and capital accumulation for future growth begins. Direct contracts and joint ventures are regarded as key instruments that can be used during this stage as contracts are awarded using procurement strategies that are appropriate, through a competitive bid process, to ensure contractors within the competitive bidding environment a supply of sustainable work.

2.3 Improvement of Performance stage targets contractors with Grade 4 to 7 that show growth potential. The already established enterprise introduces systems of best practice for environmental, health and safety, and quality management. Just as the Enterprise Development stage, direct contracts and joint ventures are regarded as key instruments, however, with a combination of various other instrument within CIDB Best Practice, Project Assessment Scheme and Contractor Recognition Scheme.

### Generic Model for Contractor Development



**Figure 2.5: Generic Model for Contractor Development (DPW and CIDB, January 2010)**

Initially, South Africa’s “*White Paper on SMME development*” already encompassed government policies on the development of SMMEs. This indicates that SMME development was regarded as significant and initially documented as such, as early as 1995 (Seda.org.za, 2016). The Integrated Small Business Development Strategy that was developed, aimed to achieve the reduction of regulatory constraints, an increase in both non-financial and financial support and the creation of a higher demand for the services and products supplied by the SMMEs (The DTI, 2008). Subsequently, numerous institutions were established with the responsibility of ensuring the implementation of the small business development strategy (GEM, 2014; The DTI, 2008). The latest GEM states a value of just under 1.5 million but admits that

it is very difficult to measure the nascent number of people establishing SMMEs and this can be as high as 7% of the workforce.

In fully recognizing the significance of this segment of business activity, the South African government established the Ministry of Small Business Development, in early 2014. The Ministry's sole purpose involves facilitating and enabling small business development and promotion (Seda.org.za, 2016). The South African government is committed in ensuring that small businesses gradually and continuously increase their performance and growth contribution of the economy of South Africa, in vital areas such as access to markets, equity and job creation; while strategies for organisational improvement are being created and exercised at a government level (Boya, 2016). However, the ability of the South African SMME sector to make a meaningful contribution to economic growth, job creation and greater equal income contribution was questioned due to concerns raised by The South African GEM 2012 Report that indicated a low prevalence for established business in South Africa (Kelley, Singer and Herrington, 2012). This could hinder the South African government's quest to drive small business and entrepreneurial culture; for the generation and sustainability of employment and economic growth as per the principles set out by the department of economic development and the Department of Trade and Industry (Boya, 2016).

### **2.5.2 SOE contribution in government developing SMMEs in South Africa**

The OECD (2015) defines SOEs as enterprises where the significant control that the state has, is through it is the level of ownership it possesses (minority, majority, complete). Kipkorir (2013); Makabira and Waiganjo (2014) define a parastatal as a legal entity, either partially or fully government owned, established under an Act of Parliament and created by the government to specifically operate on the government's behalf in partaking in commercial activities. Public enterprises, parastatals, government business enterprises, government-linked companies, government corporations, public sector units or enterprises are but a few names that have been used when referring to SOEs (Bolton, 2010). According to Kipkorir (2013); Makabira and Waiganjo (2014), they have an enormous procurement budget spend, of which up to 60% of public expenditure is regulated to be directed towards public procurement. SOCs are regarded the backbone of the economy (Department of Public Enterprises, 2017), however, they also have been shown to represent different results,



with deviating prosperities, either representing missed opportunities, some being perpetual failures and others being successful. Regardless of the progress that has been made in oversight and procurement laws, there are still challenges and problems faced by these parastatals.

Kowalski, et al. (2013) suggest a wide range of SOE forms, dependent on the factors below:

- The Government level owning the enterprise (state/regional or local, central/federal).
- How the enterprise was founded
- The ranking position on the public administration hierarchy.
- The SOE purpose
- SOE status if in the process of privatisation.
- Minority, majority, or complete ownership by the government.
- Stock exchange listing.

Although standard performance indicators show that the primary objective of state ownership may not be economic efficiency, a constant question lingers over whether SOEs are the best instruments, with utmost economic efficiency to correct market failures (Kowalski, et al., 2013). SOEs have expanded in the last decade and remain as significant actors in domestic and global competitive markets regardless of the privatisation of several during the 1980s and 1990s. Furthermore, certain sectors and firms amongst emerging economies have developed new policy strategies that drive state ownership (Hsueh, 2011).

Examples of SOEs in South Africa include the Universal Service and Access Agency of South Africa, the South African Revenue Services, the South African Rail Commuter Corporation, the State Information Technology Agency, South African Telecommunications Regulatory Authority, the South African Post Office, the Industrial Development Corporation, the Council for Scientific and Industrial Research, Eskom, Transnet, the National Ports Authority, South African Airways, Safcol, Metrorail, Denel and Petro SA (Bolton, 2010). However, the DPE emphasises its obligation to provide shareholder oversight and assesses six SOEs in terms of performance delivery. Denel, SAFCOL, Transnet, Eskom, Alexkor and South African Express fall within the DPE portfolio and are amongst the largest employers in South

Africa who play a critical role in driving economic growth (Department of Public Enterprises, 2017).

According to Kowalski, et al. (2013), the purchase of services and goods by state-owned enterprises and governments contributes significantly, about 10 to 25%, towards a country's GDP and thus impacts the economy directly. South Africa's largest consumer of services, goods and construction works is government. South Africa's public sector spent about R500 billion on services, goods and on construction works in the year of 2013/14. As a result, this massive amount of money enabled and supported service delivery for the residents of South Africa. Spending these large sums of money efficiently and wisely, would provide a force for the greater good of the country's economy, by ensuring a wide geographic footprint for availability of health services, the receipt of services for those in need, the provision of well-equipped schools and the maintenance and construction of ports and roads infrastructure. It can also allow for wealth spread, amongst those entrepreneurs who successfully obtain government contracts and can result in a platform for job creation. Those without a direct link to the public sector supply chain can also benefit as suppliers for the government to source their supplies and materials from farmers, manufacturers, and many others (National Treasury, 2015). For countries where the state sector is large, public procurement can be used as a conduit to restrict market access to foreign companies and drive preferential treatment to indigenous state-owned and private companies (Kowalski, et al. 2013). The National Treasury (2015) continues to explain how socio-economic transformation through the Supply Chain Management within the public sector is crucial to address the existing structural economic imbalances and remedy those of the past. This transformation should be cultivated to ensure organic growth of emerging and black-owned businesses and should therefore be aligned with the Constitution.

In the 2017/2018 DPE Annual Report, The South African Minister of Enterprise stated:

*“State-Owned Companies exist to deliver crucial public services and goods that enable economic activity, improve the quality of the lives of our people, create jobs and effectively manage important assets of the state and to advance the country's strategic interests”*

The South African government has thus formulated methods and implementing policies, which facilitate Supplier Development. Amongst many other programmes, which are already in implementation, the Department of Public Enterprises (DPE) initiated a Competitive Supplier Development Programme (CSDP) to improve national supplier industry competitiveness. To achieve this, the programme leverages SOE expenditure and could possibly build export capabilities. The DPE therefore targets economic growth by using SOEs as a conduit for infrastructure investment, through the improvement of operational and financial sustainability of the DPE's portfolio of SOEs and the roll out of infrastructure programmes (Department of Public Enterprises, 2010). This, therefore, allows the DPE to effectively monitor key SOE programmes that are being implemented, with the intention of responding to government's programme of action. In support of the national policies and the NGP Framework, the DPE is expected to oversee the SOE transformation agendas and ensure alignment and implementation of the EIPA transformation, skills and youth development sub-programme. The focus is on BBBEE legislation, Black industrialists policy, Employment Equity (EE); development of youth, co-operatives, people with disabilities, women, SMME strategy and the Preferential Procurement Policy Framework Act (PPPFA). The EIPA's strategic objective is to position SOCs to support the reindustrialisation of the South African economy by developing Enterprise Supplier Development (ESD) programmes for SMME participation in SOEs' core value chains. In the DPE's portfolio, SOEs, just like the construction industry and SMME sector, play a significant role in a country's economic growth because their own performance directly affects the performance and competitiveness of an economy (Department of Public Enterprises, 2017). Programmes have also been developed in support of the New Growth Path (NGP), such programmes include the National Development Plan (NDP), MTSF, National Skills Agenda and the National Skills Funding for the optimisation of SOC skills training facilities, to name a few. Below the programmes are sub-programmes, which solely exist for driving the main goals of the Government policies. The EIPA is one such sub-programme, which consists of four sub-programmes within it: Environmental Policy alignment, Management, Economic Policy alignment, Transformation, Skills and Youth Development.

All developing countries have an economic and social mandate of improving the quality of life for all its citizens, therefore it is crucial to note that the South African

government's mandate is no different. One such means of realizing this is through efficient and quality infrastructure development (Boya, 2016). Using a case study of infrastructure provision in Pakistan, Anwar (2010) illustrated how state initiatives combined with local SMMEs' efforts helped to bring about a group-based co-ordination process for an endogenous solution to upgrade infrastructure. This process generated social benefits for the entire industrial district (Ndiaye et al., 2018).

The under-development of contractors into sustainable enterprises is usually due a lack in construction knowledge and experience. In large organisations such as parastatals, a company's previous projects record, construction experience and key personnel knowledge are prerequisite for a contractor to formally participate in construction projects (Martin and Root, 2010). Abor and Quartey (2010) underlined that this improves the contractor's chances of contributing towards the growth of an economy. Smit and Watkins (2012) however, explained how this also is disadvantageous to SMMEs and EMEs who are expected to operate in the same environment and compete for tenders with highly experienced counterparts. Hence the significance of "leveling the play field", as elaborated by Magoro and Brynard (2014) is important.

With the aim of ensuring cost effectiveness, efficiency and good-quality delivery and therefore succeeding in the achievement of government's objectives, the legal environment and SCM policies within an SOE must be simple and clear (National Treasury, 2015). Nasir, Mamun and Breen (2017) noted that SMME sector growth is highly dependent on a country's business legislation. Their success levels can be used to evaluate and measure government policy effectiveness in encouraging and cultivating a culture for entrepreneurship. The involvement of SOEs in Supplier Development, concerning SMMEs, is defined through preferential procurement and the ESD programme, which focuses on the minimisation of barriers that hinder SMMEs from participating in SOE supply chains.

#### **2.5.2.1 Preferential Procurement**

Preferential procurement is a verified tool used to ensure that small businesses contribute to the empowerment of the South African economy. The decision on when and with whom the government contract is facilitated by the volume and size of the government procurement contract. Procurement decisions are taken only after

multiple processes have been undertaken, all of which are attached to adhering to legislative procedures and requirements, therefore this highlights how making that “decision” may not be as simple as it seems. Prior to the implementation of BEE laws, resulting in the accurate facilitation of small business inclusion, the government did business with large reputable firms. The well establishment of these companies minimised risk and gave government comfort that projects would be completed within the desired budget and scope and budget. Chimwani, Iravo and Tirimba (2014) alluded that public procurement is crucial to government service delivery; however, the performance is affected by the constraints experienced.

The PPFA, 5 Of 2000, identifies the objectives for preferential procurement as follows:

- 1) Greater accessibility of the tendering process to black people,
- 2) Unbundling tenders into smaller tenders to afford smaller enterprises a chance to tender for work,
- 3) Introduction of a point system for tender awards, based on a combination of price and preference for targeted groups.

Ishmail (2013) stated, *“Enterprises operating in South Africa are measured on the degree to which they integrate previously disadvantaged individuals in the economy through employment, directorship, equity ownership, training and procurement. The companies themselves have a greater competitive advantage if their BBBEE level status in the score card.”*

The Department of Trade and Industry (2010) detailed how the majority of South Africans still suffer from a lack of advanced skills, exclusions from fixed asset ownership and earn extremely low incomes, thus the South African economy cannot operate to its full potential. Preferential procurement awards SMMEs the opportunity to participate economically and through skills transfer programmes with international companies, exposes the national companies to international standards, thus empowering them to compete internationally.

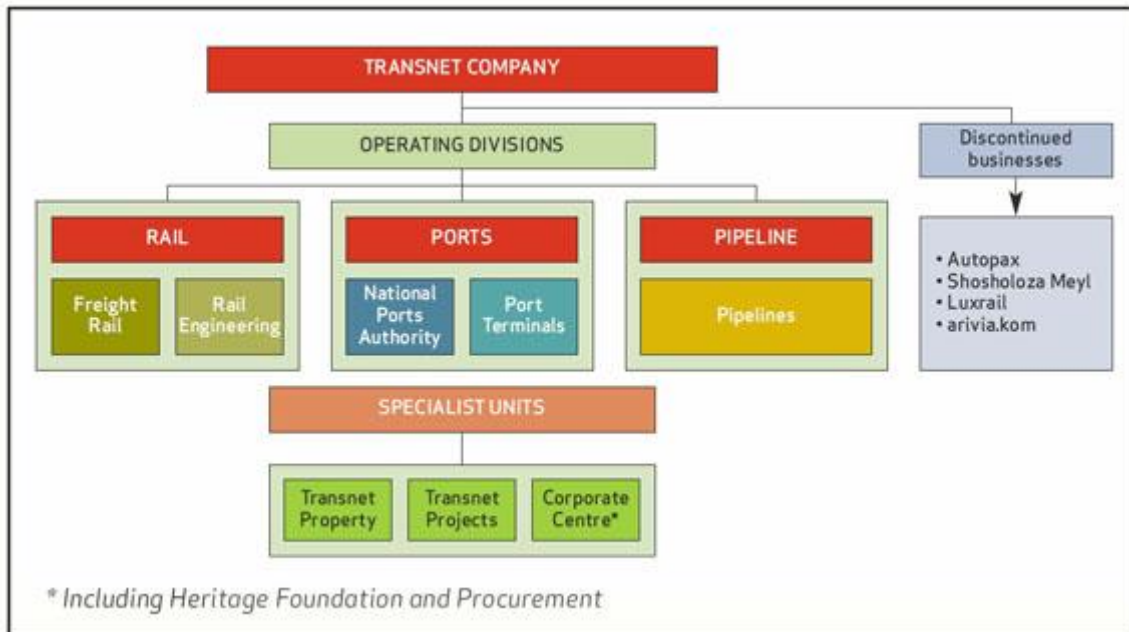
Murray and Dainty (2013) explained how governments utilise procurement for the promotion of sustainable principles and social responsibility within the construction industry, therefore investigating construction SMMEs that are contracted to executing projected SOEs is imperative. As highlighted by Bryan and Majoro (2010),

government's deterrent in reaching their targets and increasing spend towards previously disadvantaged communities is as a result of the poor state of the process, to monitor and control procurement activities in the construction sector. Organisations are pushed towards continual procurement systems improvement because of the incentive to track the contribution towards construction project contracts (Chimwani, Iravo and Tirinmba, 2014).

Preferential procurement focuses on individuals who participate in socio-economic activities and were historically disadvantaged, including those living with disabilities. According to Shakespeare and Officer (2011), one of the world's objectives includes removing the obstacles preventing people living with disabilities to participate and their empowerment. Barriers associated with the infrastructure construction projects discourage the preferential procurement beneficiaries due to the demanding nature of the industry.

### **2.5.3 Transnet's Background**

Transnet is a national logistics company that transports bulk commodities for export and domestic use. Transnet State Owned Company (SOC) consists of five (5) Operating Divisions namely, Transnet Freight Rail, Transnet Engineering, Transnet Port Terminals, Transnet Port Authorities, and Transnet Pipeline. These operating divisions, which also do business amongst each other, work as separate functional businesses. There are also three (3) Specialist Units, which, the Operating Divisions utilise to assist them with charity work, as property management and acquisition and Project Management expertise. These Specialist units are Transnet Foundation, Transnet Property and Transnet Group Capital (formally known as Transnet Capital Project). See Fig 2.6 below.



**Figure 2.6: Transnet Organisation Structure (Transnet, 2015)**

As the project management subsidiary, it is the mandate for Transnet Group Capital to execute the majority of infrastructure projects within Transnet. Transnet Group Capital (TGC) is the specialised unit responsible for multi-disciplinary design services and project and construction management. TGC carries out all construction projects with values greater than R 300 million. During the tendering process, it is compulsory that Transnet abide by DTI regulations that are set out for all parastatal organisations. Hence, compliance to preferential procurement is amongst one of the greatest elements measured on Transnet's BBBEE scorecard.

According to Zeng, et al. (2018), infrastructure mega-projects are regarded as significant measures to improve a nation's comprehensive strength and sustainable development capacity. In comparison to the manufacturing industry, an infrastructure mega-project is usually a one-time, unique endeavour, resulting in a short-term owner-supplier relationship. This differs significantly to the repetitive nature of manufacturing systems and process. Infrastructure mega-projects are categorised by a large supply of resources, extensive construction periods, extensive influence, high quality and technical standards and specifications, and enormous investments. It is due to these heightened production and delivery capacities, and product quality requirements, that the improvement of construction supplier's capacity is such a huge challenge in infrastructure mega-projects.

The authors continued by stating that Supplier Development characteristics in infrastructure mega-projects are analysed in terms of selection of the supplier, the motives for development, mode of production, management of quality, participation of owner and risks. Bilateral communication, collaboration, trust, incentives, and future market are identified as the main critical factors influencing the construction Supplier Development. The differences in focus of both parties may affect the partnership between the owner and supplier because the one considers short term interests of the current construction project like timeous supply of high quality materials, while the other concerns themselves with both the long term market return and short-term project income, respectively.

Mead and Gruneberg (2013) stated the importance of incentive mechanisms as a tool for Supplier Development and co-operation enhancement. A great deal of supplier's investment in materials, manpower and a lot of funds in employee training, technology research and upgrade in production equipment are required, should the supplier's production capacity or technical level not adhere to the project specifications. These investments are usually very difficult to recover through the project that is executed.

## **2.6 Supplier Development within an SOE**

### **2.6.1 Transnet's Supplier Development Programme**

The Supplier Development Programme is a Department of Public Enterprises initiative designed to meet the Government's economic development policies (NGP, NDP and IPAP) goals. The aim is to transform South Africa and empower previously disadvantaged enterprises and individuals by increasing South Africa's supply base capacity, competitiveness, and capability where there is potential and comparative advantage for regional or local supply.

Procurement is leveraged to influence the Supplier Development of local industry and is vital to realising government's equality, growth and employment creation objectives. Key benefits to achieving Supplier Development objectives for both the South African society and Transnet include:

- Transnet's improved B-BBEE rating
- Acceleration of local business transformation by technology transfer promotion, local capacity and capability building, job creation and skills development



- Creation of greater opportunities for black and/or locally owned suppliers through supplier dominance transformation from large national or international monopolies
- Rural communities upliftment and focused regional development
- Increased Local Content – Supply chain costs, foreign currency exposure and cycle time reductions and supply security

Economic development policies such as the IPAP, NGP and National Development Plan, have allowed government to increase their focus on leveraging procurement processes within SOCs such as Transnet, to achieve national goals of local Supplier Development, ensuring industrialisation and unemployment reduction. Transnet's goal is for the provision of a service that is competitive, while concurrently, implementing its Supplier Development mission to stimulate the creation of jobs and opportunities for new entrants to the market. Transnet is on a supplier base transformation mission by engaging BBBEE initiatives or targeted Supplier Development to support capacity and capability building and industrialisation of local suppliers, whilst ensuring meaningful opportunities are provided to South Africans, particularly to: (Transnet, 2015)

- Black small businesses
- Rural development, integration, and upliftment
- Black women
- Black people with disabilities
- Black youth

Transnet's contribution to Supplier Development was by positioning itself, developing competitive local industries in its supply chain via procurement to improve its long term commercial terms and to remedy the challenges experienced by SMMEs in the railway industry (Transnet, 2010). Transnet Freight Rail (TFR) integrated down-stream Supplier Development by procuring 100 General Electric locomotives, to ensure it built its CSDP foundation (Van der Walt, 2011).

Transnet supports another DPE initiative called the Supplier Development Programme. The NGP objectives form the basis for and are aligned with the Supplier

Development practiced within Transnet. The combination of the Government and Transnet's objectives can be realised through:

- The improvement of the efficiency of operations
- Ensuring that previously disadvantaged groups participate in the economy by creating sufficient and accessible opportunities
- The aggressive implementation of plans for capital investment which will result in competitive local industries
- The influence of local supplier industry development via procurement

As a result, Transnet is therefore able to complement government objectives and still remain and deliver as the largest player in South Africa's freight logistics chain (Transnet, 2011). Transnet's Supplier Development Plan details the benefits associated with local supply versus import (Transnet, 2010):

- Communication ease
- Delivery times are shortened
- Exposure to foreign currency fluctuations, relating to pricing, is removed
- Increased responsiveness
- Stock level requirements are lowered

Companies have become more reliant on strategic suppliers and this has forced the companies to be more involved in the activities that suppliers undertake, in an effort for capability improvement during Supplier Development (Friedl and Wagner, 2012). These activities include staff sharing, onsite visits and work teams and make an immense contribution towards improving a supplier's operational performance (Nagati and Rebolledo, 2013).

Transnet developed a Supplier Development Framework that prioritises opportunities based on the strategic importance and value and industrial leverage of commodities upon embracing the DPE CSDP programmes in 2008 (Choke and Pita, 2013).

The CSDP programmes focus on:

- Skills transfer
- Localisation
- Sustainability

Suppliers are compelled to submit their CSDP proposals with their tenders. The percentage allocated towards these points form part of the total bid score.

The abovementioned framework with which Transnet implements its Supplier Development initiatives is constituted by Transnet’s Supplier Development plan and strategy. The Supplier Development objectives are achieved by holding successful bidders accountable on their Supplier Development commitments as per their approved implementation plans (Transnet, 2015). The framework is an adaptation of the DPE’s existing framework, which allows the application of a basic set of principles to pertinently target SD initiatives. Supplier Development initiatives aim to help develop the competitive advantage of local suppliers through capacity and capability potential improvement. Transnet has therefore named their framework as the Increased Competitiveness, Capability and Capacity (IC3) Supplier Development Classification Matrix. The IC3 SD Classification Matrix epitomises Supplier Development opportunity types, which are considered by Transnet as effective; and allows Transnet to approach a framework design that encompasses general Supplier Development objectives, away from a SD structure founded by a dynamic policy environment (Transnet, 2011).

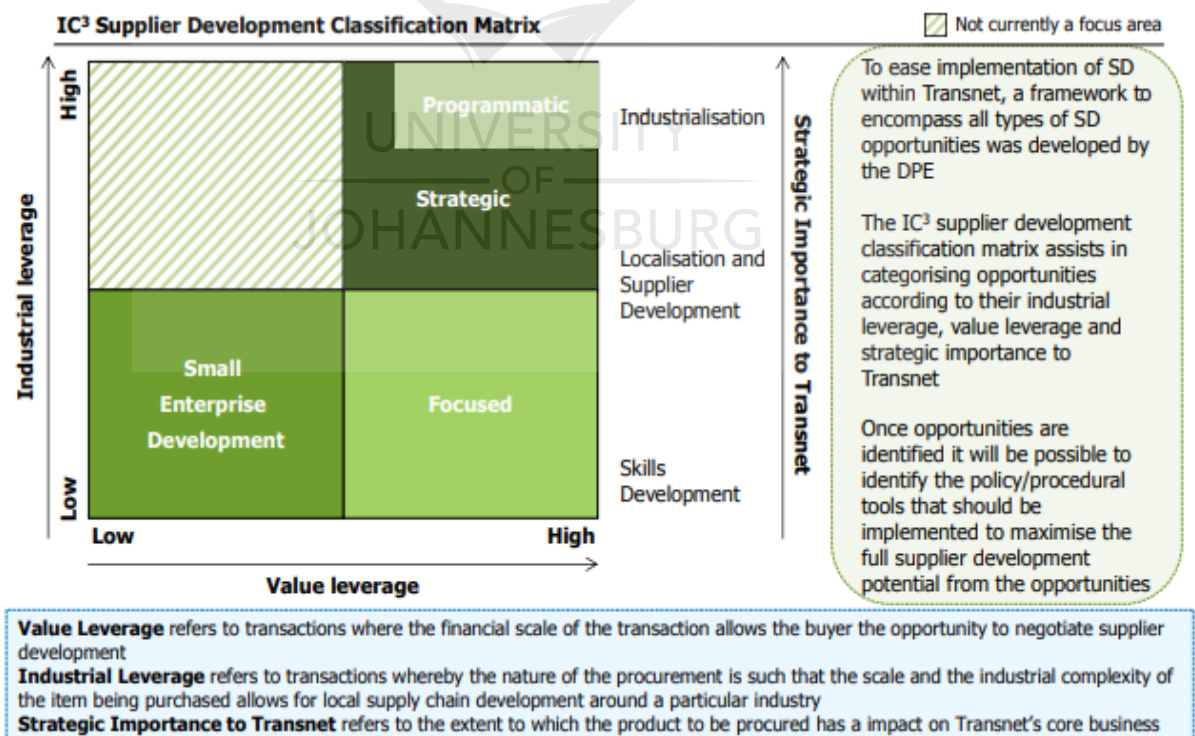


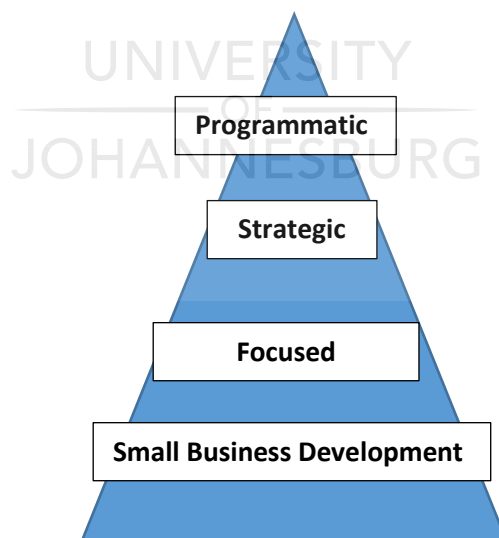
Figure 2.7: The IC3 Supplier Development Classification Matrix (Transnet, 2011)

Transnet can then also strive to meet certain objectives based on a specific transaction classification. The focus of this research on the Matrix above is on the Small Enterprise Development, which shows a low value and industrial leverage and strategic importance to the organisation.

### 2.6.2 Transnet's Supplier Development Approach

Transnet is committed to the government's B-BBEE endeavours and uses various strategies with the intention of promoting empowerment. Supplier Development (including CSDP and/or B-BBEE) is fundamental in their procurement strategy in all procurement transactions undertaken.

Transnet introduced the Market Demand Strategy in 2012, which was rolled out between 2012 and 2019, over a 7-year period. Transnet allocated R300 billion towards the strategy which encouraged that the organisation would move a step ahead and spend towards infrastructure projects so that capacity would be increased prior to customers requiring the infrastructure. Transnet Supplier Development approach is transformation promotion and economic growth fostering by leveraging the Market Demand Strategy infrastructure programme.



**Figure 2.8: The Supplier Development Approach**

The Supplier Development categories identified in the matrix are (Transnet, 2015):

- **Programmatic**

Initiatives following a longer than normal planning horizon and exceeding Transnet's funding capacity. Focused task teams are formed to achieve collaboration between SOC and government, where industrialisation and infrastructure development is attained through public spending and joint support. Competitive advantage is developed through the investment in focused technology, plant, and skills in intermediate and advanced capabilities.

- **Strategic**

Initiatives following a three to five year planning horizon, that focus on the achievement of local capacity and capability building (increased efficiency, capability, competitiveness of local suppliers), by investing in technology and/or skills in intermediate capabilities. May sometimes focus on advanced capabilities, however require Government support.

- **Focused**

Short to medium term contract initiatives with medium to low strategic importance and medium to high value transactions with limited industrial leverage. They enhance local industries' ability to supply strategic services and existing local industrial capacity by investing in technology or skills, specifically of previously disadvantaged individuals. Competitive local suppliers are created that permit the improvement of the socio-economic environment to further the objectives of transformation, rural upliftment, empowerment and regional development.

- **Small Business Development**

Transactions with typically low value and no industrial leverage as it is characterised by high competition and low complexity goods. They focus on quality job creation, local employment improvement, basic skills provision and target previously disadvantaged communities and individuals. They involve numerous non-financial and financial services that aid entrepreneurs to grow existing businesses and start new ones.

## **2.6.2.1 Economic Transformation Supplier Development Objectives**

### **2.6.2.1.1 *Transnet's Supplier B-BBEE Improvement Plan***

Before project execution commences, Transnet requires their suppliers to submit a B-BBEE Improvement Plan indicating the extent to which enterprise and Supplier Development, skills development and ownership will be maintained or improved over the contract period.

The left side of Transnet's Supplier Development Approach above (figure 2.7), indicates that the B-BBEE Improvement plan forms part of the objective to drive economic transformation. This encourages the supplier to improve their B-BBEE rating and is in the effort of ensuring that the contractor grows during the time it is contracted with Transnet during construction project implementation. There is also a penalty clause attached that stipulates penalties that Transnet may encounter, should the contract be non-compliant and failure to achieve targets set in the plan warrant Transnet ground to terminate on the basis of "breach of contract". The Supplier Development Department monitors and evaluates to track that the commitments are successfully undertaken by the Supplier Development department (Transnet, 2015).

### **2.6.2.1.2 *Transnet's Enterprise and Supplier Development (ESD)***

The Generic B-BBEE scorecard consists of an ESD element, which measures specific initiatives that favour EMEs and QSEs (at least 51% black owned beneficiaries), to meet and achieve the following objectives for the beneficiaries:

- Sustainability
- Development enablement or acceleration
- Financial independence
- Operational independence

ESD is a development programme for SMMEs, referred to as beneficiaries, via capital, time and money investments, to contribute towards the sustainability, development, operational and financial independence of the beneficiaries. The contributions are either non-monetary or monetary and non-recoverable or recoverable.

During the execution process, this development programme ensures that the main contractor awarded the contract of works, subcontracts a certain percentage of it to

qualifying beneficiaries. This therefore ultimately allows Transnet the control in ensuring that small local companies, within the vicinity of where the construction projects are being executed, have an opportunity to benefit, grow and develop their businesses (Transnet, 2015).

**Table 2.13: Construction Sector Codes Thresholds for EMEs, QSEs and Large Enterprises (CIDB, 2010)**

Type of enterprise	Annual turnover contractor	Annual turnover Built Environment Professional (BEP)	Number of elements scored on the B-BBEE Generic Scorecard
Large	Larger than R35 million	Larger than R11.5 million	All seven elements
Qualifying Small Enterprise (QSE)	Larger than R15million and equal to or less than R35 million	Larger than R1.5million and equal to or less than R11.5 million	Any four elements (equal weighting of 25% each)
Exempted Micro Enterprise (EME)	R5 million or less	R1.5 million rand or less	Deemed 100% compliant. Automatic level four rating irrespective of ownership

Transnet’s approach for Enterprise Supplier Development, addresses both non-financial and financial ESD initiatives. Enterprise Development beneficiaries are provided with the following, inter alia, support:

- Capacity Building
  - a) Transnet School of Academy learnerships
  - b) Finance and building (shorter payment terms)
  - c) On site mentoring
  
- Mentorship Support
  - a) Technical support
  - b) Business Development
  - c) Business compliance

d) Tendering skills support

#### **2.6.2.1.3 Transnet's Enterprise Development Hub**

Transnet invested R60 million to established operational Hubs in four provinces; Gauteng, Northern, Western and Eastern Cape and the establishment of two other Hubs in Mpumalanga and Limpopo are underway. The pilot Hub established as a means to test the success of the system, was initially established at Transnet's Head Office in the Carlton Centre in Johannesburg. The Hubs aim to assist black-owned micro and start-up enterprises with a turnover of R35 million or less, in identified rural areas. The Hubs will specifically be focusing on youth and women owned SMMEs and people living with disabilities owned, by providing those enterprises with overall training, funding and business incubation support.

Transnet's Enterprise Development Hubs are a collaboration between Transnet and the BEE Verification Agency (BEEVER), National Youth Development Agency (NYDA), Gauteng Enterprise Propeller (GEP), South African Revenue Services (SARS), Small Enterprise Development Agency (SEDA), Department of Small Business, together with the Companies and Intellectual Property Commission (CIPC) as a reflection of Government's co-ordinated effort around Enterprise Development.

According to Chief Supply Chain Officer for Integrated Supply Chain Management, Mr Gary Pita, the Hubs were a part of Transnet's aggressive drive to propel black-owned entities into new market entrants and increase opportunities for small enterprises. They were opened to resolve the multifaceted challenges experienced by small businesses and/or start-up businesses by offering different services under one roof. These challenges may involve, not having access to funding, tax compliance issues, business start-up issues, or business administration issues and not knowing how to get BEE verification.

In a statement in Vukuzenzele, in October 2013, Mr Gary Pita said:

*"The problem that small businesses are faced with is that when they go to different Hubs or enterprise development centres in the country, they will only be assisted with one or two aspects of their issues. With new Hubs all services are offered in one place"*

SMMEs can expect the following typical services to be offered at the Transnet Hubs:



- Central Supplier Database Queries and Registration (CSD) Services
- Business development and support Services
- VAT, PAYE, tax and other related services
- Training and skills development
- Financial support
- Procurement Advisory services
- Other Transnet related programmes

Each of the partners play a role in providing the SMMEs with the following specific services according to their area of expertise.

1. NYDA provide the following specialised services:

- Programme for Entrepreneurial Development
- Programme for National Youth Service
- Programme for Business Consultancy Services
- Programme for Volunteer Business Mentorship
- Second Chance Programme
- Solomon Mahlangu Scholarship Fund
- Youth Build Programme
- Grant Programme
- Co-operatives support
- Services for Business opportunity support
- Career Guidance
- Youth volunteering
- Mentorship
- Matching and jobs database service

2. GEP provides the following specialised services:

- Guidance, advice, and information on business issues, for improvement of the efficiency of enterprise business
- Access to capabilities and support skills that are normally only accessible to large businesses
- Funds, support and developing co-operatives and SMMEs in Gauteng

- Pre and post investment business support services in line with its legislated mandate
3. SARS provides the following specialised services:
- Taking comments, enquires and suggestions concerning numerous related issues in respect of taxes and services available to SMME's
  - Guidance, support and advise on initiatives, documents and policies relating to SMMEs
4. SEDA provides the following specialised services:
- Technologies or systems
  - Legal issues
  - Human Resource Management
  - Business Management
  - Business diagnostic tools and assesSMMEnt
5. SEDA also facilitates the provision of the DTIs services below:
- The SEDA Technology Programme
  - The Black Business SD Programme
  - The Critical Infrastructure Programme
  - The Manufacturing Competitiveness Enhancement Programme
  - The Co-operative Incentive Scheme
  - The Capital Projects Feasibility Programme
6. CIPC provides these specialised services:
- Sworn Affidavits and BBBEE Certificates
  - Annual returns
  - Registration of business

#### **2.6.2.2 Economic Growth Supplier Development Objectives**

The Supplier Development criteria are identified in the approach matrix above and the supplier is measured on these during and towards the end of execution. This involves the achievement of growth objectives through leveraging high-value procurement by

including: Industrialisation – Measuring historical spend on existing procurement, value spent on new plant, and value invested in future expansion of plant.

- Local capacity and capability building – Measuring value spent on procuring construction works, services and goods from SA suppliers and the number of local suppliers utilised in fulfilling the contract.
- Technology transfer and sustainability – Measuring the introduction of new or improved manufacturing methods and new technology; ICT, copyrights, patents, and trademarks transfer and processes.
- Skills development – Measuring the number of skilled and semi-skilled black employees trained by the supplier over the contract duration. Of the training provided to the employees, the supplier is also measured on certified skills training percentage, value spend percentage of contract value for skill development and training, number of higher education bursaries.
- Enterprise and Supplier Development – Measuring the percentage procurement spend of procuring from small business QSEs and EMEs over overall procurement spend and non-financial support to small businesses.
- Local Economic Development (local to site development) – Measuring number of local employees, value spent on local businesses, CSI spent on rural community development projects.
- Job creation/preservation – Measuring the number of jobs created for black, skilled and unskilled, youth and the jobs preserved through contract award.

After a contractor completes their first project contracted to them by the SOE, they are included in the database as preferred suppliers, which provides them with more procurement opportunities.

## **2.7 Chapter summary**

This Chapter analysed the construction industry as a whole and what causes and effects arise from the delays. An international overview of the SMMEs, their challenges

and barriers and an overview of Supplier Development globally. Furthermore, an investigation was undertaken on South African construction SMMEs and the challenges faced by SMMEs that are contracted by SOEs. Moreover, this chapter clearly highlighted the criteria that best inform effective Supplier Development based on best practice and zoomed into government initiatives for SMME development and the existing programme being implemented within an SOE.

## **CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY**

### **3.1 Introduction**

This chapter is an outline of the design and the method that was adopted in undertaking the study. The approach of conducting the research, geographic area, and population where the research is conducted, sample selection and size and lastly, the data collection and analysis are clearly discussed. Furthermore, the reasoning for the researcher's chosen research method is discussed. This study adopts the quantitative research approach, and according to McLeod (2019), quantitative research is used for theory testing and the results ultimately reject or support that initial theory. The quantitative research approach is undertaken in this study to provide a critical perspective on the research topic to indicate the thoroughness with which the research was investigated and therefore highlights the research validity. Moreover, to ensure that the questionnaire samples chosen would provide accurate research that is unbiased, the field procedure and research protocol were also examined.

### **3.2 Research philosophy**

The research philosophy is merely a description of the nature of knowledge and explains the development of the same knowledge. Zikmund, Babin, Carr and Griffen (2013) defined research as a scientific procedure used to objectively and accurately search for truth regarding a specific problem, subject or phenomena. The researcher was concerned with the attitudes and feelings of the subjects and thus the notion of being a "feeling researcher" was adopted (Creswell, 2012; Saunders and Lewis, 2009).

### 3.3 Research Design

Research protocol calls for decision on the research methodology, as the initial step. As a quantitative approach was used to conduct the research, the design of study was determined before it began. Sekaran and Bougie (2009) defined the research design as a strategy formulated to find anticipated solutions to a problem statement and objectives that were initially recognised and prompted objectives from the beginning of the study.

The design was based on information gathering through extensively reviewing related theories and literature on firstly what the construction industry entails as a whole, what makes a construction project successful, what hinders success, causes delays and the effects of these delays. Secondly, SMMEs were interrogated both from an international and national context, with the effort to highlight differences and/or similarities in the challenges faced by these SMMEs across the globe. Furthermore, to investigate if there was a link between the causes of project delays and those barriers experienced by SMMEs worldwide. Next, the research moved to a generic investigation of Supplier Development as this was, and still is, considered a significant tool that could be used to diminish the barriers faced by SMMEs everywhere. An overview of achieving effective Supplier Development was given by disintegrating the processes, programmes and activities involved then it zoomed into the importance of Supplier Development in South Africa. The link between SOEs being a conduit to carry out the South African government SMME development is also highlighted and lastly, a South African SOEs Supplier Development Approach is investigated. This is in the effort to see if it does consider the generic processes and activities identified for effective Supplier Development in its approach and if there are any gaps within the practice.

The focus of this broad research was on the issue that SMMEs contracted by SOEs are failing to execute construction projects successfully. It therefore set out to find out what the reasons are for these failures, what remedial actions could be taken and to investigate if the Supplier Development Programme and approaches being taken in practice, are actually providing SMMEs with what they need to succeed.

There is a need to develop the SMMEs to decrease their reasons for failure and therefore their success lies upon effective Supplier Development. The factors that

contribute to effective Supplier Development are identified to compare if an existing Supplier Development approach being employed in an SOE, does in fact provide the correct and best support for SMMEs to overcome their challenges, lower construction project delays effects and ultimately lead to SMMEs success.

The basis of the design was also based on the measurement and evaluation of responses provided in the questionnaire distributed amongst the construction project execution sector in the Gauteng, Kwa-Zulu Natal, Western Cape and Eastern Cape Provinces. The approach adopted permitted a solid foundation for results and conclusions because it allowed the cross scrutiny of research and theory.

### **3.4 Survey Design**

#### **3.4.1 Population Sampling**

One of the major challenges that have been identified during conducting research is the researcher reaching the entire population that they are interested in. Therefore, the recommendation was that a researcher rather use a sample as a means for data collection (Thomas, 2013). Thomas (2013) adds that a sample is regarded as a controllable size of representatives representing a larger population. According to Etikan, Musa, and Alkassim (2016), samples represent a portion of a universe of population, furthermore De Vos (2011) elaborated by stating that samples are representatives of the greater population as they are a subdivision of the population of interest that is being studied. Samples allow inferences to be drawn about the whole population while not measuring the total population.

There are two types of sampling techniques identified; probability and non-probability sampling. This study utilises the Non-probability Sampling technique, which has been said to be limited by its subjective nature of sample choosing and thus does not indicate a good representation of the population. However, the researcher opted for the technique due to the limited workforce, resources, and time (Etikan, Musa, and Alkassim, 2016).

##### **3.4.1.1 Target Population**

The population of this research report comprised professionals involved in the execution phase of construction projects implemented within Transnet Group Capital

infrastructure projects. The study targeted professionals occupying middle to senior management positions with interest in targeting employees who are decision makers within their space. The targeted population consisted of 100 employees based on the assumption that contact and enquiries were with about five employees, from each of the mentioned disciplines. The questionnaire was issued to one hundred participants and the targeted professionals were those holding a minimum qualification of diplomas or undergraduate degrees, with a minimum of four years' post-graduation experience within the company. Employees who work in the specially formulated Transnet Supplier Development Hubs were also included in the survey. The study focused on Gauteng, Eastern Cape, Kwa-Zulu Natal, Western Cape Provinces, in South Africa, particularly Johannesburg, Port Elizabeth, East London, Durban, Richards Bay, Cape Town and Saldhana offices.

#### **3.4.1.2 Sampling Method**

A list of professional working in the Gauteng, Eastern Cape, Kwa Zulu Natal, Western Cape Regions, specifically those based in the Johannesburg, Port Elizabeth, East London, Durban, Richards Bay, Cape Town and Saldhana Transnet Group Capital offices was obtained from the Transnet Intranet Website. From the website, a filter was placed on the list of employees to highlight specifically all Senior Project Managers, Project Managers, Construction Managers, Quality Officers, Engineers, Planners, Quantity Surveyors, Engineering Managers, Supplier Development specialists and all other employees forming part of the project team and working closely with SMMEs during the implementation of projects - Safety Officers, Environmental officers, Contracts Administrators, Industrial Relations employees. Information gathering was undertaken using a purposive sampling method.

The non-probability purposive sampling method was utilised as the researcher had certain participants in mind and intended to include only participants suiting the study purpose (Etikan, Musa, and Alkassim, 2016). Purposive sampling allows the researcher to use their best judgement to actively select the respondents and get information from a population sample that one believes knows most about the topic investigated and explored (Saunders and Lewis, 2012).

### 3.4.1.3 Sample Size

The researcher considered a sample frame of 100 participants that were targeted from the different disciplines mentioned above. The structured questionnaire was dispersed to one hundred participants for the study. Denscombe (2010) stated that a more accurate analysis is dependent on the greatness of the sample size, meaning that the larger the sample frame, including a higher data quantity, then the more reliable the analysis is considered.

#### 3.4.1.3.1 Margin of error in sample size:

The non-probability sampling method does not base its sample on application but results in samples that are formed based on convenience or cost-effectiveness and this selection process may result in some of the population sections being excluded.

The industrial standard for confidence level is 95% and the z-score corresponding to 95% confidence level is 1.96. The survey had a sample size of 100 respondents and therefore a margin of error percentage of 10% applies.

The universal formula for the margin of error for a sample is:

$$z^* \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

Where:

$\hat{p}$  = Sample proportion ("P-hat")

$n$  = Sample size

$z$  = Z-core corresponds to your desired confidence levels

As the margin of error is plus or minus 10% in a confidence interval of 95%, in 100 respondents, it can safely be concluded that the sample results from the 93 returned questionnaires, represented the target population very well. This can be presented as follows:

$$= 1.96 \sqrt{\frac{\frac{93}{100} \left(1 - \frac{93}{100}\right)}{100}}$$



$$= 1.96 \sqrt{\frac{0.93(1 - 0.93)}{100}}$$

$$= 1.96 \sqrt{\frac{0.93 - 0.8649}{100}}$$

$$= 1.96 \sqrt{\frac{0.0651}{100}}$$

$$\approx 0.005$$

It is indicated that the margin of error for the sample is 0.005, which is very low. Margin of error is inversely proportional to level of confidence and higher confidence levels are yielded by a low margin of error. It can therefore be concluded that the readers, can trust results from the survey.

### **3.5 Research Method**

The research methodology denotes the process taken to collect data from the participants and analyse it. Though the methodologies of most research differ, the planning of most research studies is usually similar (Leedy and Ormrod, 2009). Mostly, a quantitative research approach was used for this study and a bit of qualitative approach. The research method can be seen as a structured survey supplemented by archival records.

#### **3.5.1 Quantitative method**

Unlike the descriptiveness and observation of unmeasurable phenomena in qualitative data, quantitative research is information about quantities. It involves the numerical gathering of data that can be ranked, categorised or measured in units of measurement, which can further be used as an input for the construction of raw data tables and graphs. Experiments, rating scales or questionnaires with closed questions, yield quantitative data as they generate data that can be categorised (e.g. “yes”, “no” answers) or numerical data.

Quantitative researchers aim for objectivity, without bias because they are cognisant that the reality that exists outside them, is objective and anyone is capable of seeing it (McLeod, 2019).

### **3.5.1.1 Strengths of quantitative research**

Replication: Others can check quantitative data as it is numerical data based on measured values and is therefore less prone to ambiguities of interpretation. Hypothesis testing is also possible because of the use of statistical analysis (McLeod, 2019).

Scientific objectivity: Statistical analysis is used to interpret quantitative data and since statistics are based on mathematic principles, a quantitative approach is thus regarded as scientifically rational and objective. It is useful to test and validate existing theories (Denscombe, 2010).

Rapid analysis: The need for prolonged data analysis especially with large data volumes is eliminated by sophisticated software (McLeod, 2019).

### **3.5.1.2 Limitations of quantitative research**

Confirmation bias: The researcher may overlook the observation of phenomena because their focus is on testing their hypothesis or theory, instead of theory of hypothesis generation (McLeod, 2019).

Data quantity variability: Denscombe (2010) stated that quantitative studies conducted on a smaller scale, with a low quantity of data, are considered less reliable. Findings to such studies can also not be generalised to wider populations because of their sample size.

### **3.5.2 Qualitative method**

Furthermore, in addition to the quantitative approach used, the study also focuses briefly on qualitative data, where the data was collected through the review of related literature, and information gathering through construction magazines, books and peer reviewed journal articles. There were also certain open-ended questions in the questionnaire that required written answers from the respondents. The study is also based on the empirical work of other writers.

Critical literature review on the construction industry, delay causes and effects, as well as challenges faced by SMMEs all over the world was utilised. Data analysis and the most relevant factors contributing primarily to Supplier Development were identified as secondary and primary sources. Furthermore, the use of past studies on Supplier

Development initiatives and SOE involvement in implementing such initiatives in South Africa was also investigated. The researcher then composed a study report combining the results of practical exploration done, with all the relevant previous research and theory.

### **3.6 Survey Instrument**

Lune, Pumar and Koppel (2010) defined survey instruments as tools that allow for the facilitation of the collection and analysis of data. Observation guides, focused group discussions, questionnaires, schedules for data analysis and personal interviews have been identified as part of the numerous instruments for data collection that can be used as tools for primary data collection.

This study conducted its survey via an internet-based questionnaire, which was designed to obtain data from the individuals who were selected to partake in the survey. An introductory statement outlining the research purpose, the researcher's contact information and instructions to be followed when partaking in the survey and filling out the questionnaire are also briefly stated.

#### **3.6.1 Survey Questionnaire**

The central point of the study was the survey questionnaire designed and utilised for the effective collection of data and essential facts from the participants, in line with the literature review. According to Thomas (2013), a questionnaire consists of a set of written questions from which answers that are given by the selected participants are recorded. The answers are either briefly written or indicate given alternatives. The use of a questionnaire aimed to inspire complete transparency and accuracy in the information supplied by the respondents (Rahman, Loo and Wang, 2012)

The questionnaire comprised a combination of research related and biographical questions (Dudovskiy, 2013). The questions were taken from the review of the literature under the supervision of Professor H. Nel, as no standardised questionnaire was found. The questionnaire was distributed to Senior Project Managers, Project Managers, Construction Managers, Quality Officers, Engineers, Planners, Quantity Surveyors, Engineering Managers, Supplier Development specialist's and others; (Safety Officers, Environmental officers, Contracts Administrators, Industrial Relations

employees) who have been working at Transnet Group Capital within the Project execution space, for four years and more. The distribution to these employees was over a 1-month period and the primary focus was based on their interaction with the construction SMME contractors contracted on Transnet Group Capital projects. The research participants selected were and/or are active in projects and are directly involved with the SMMEs during the pre-and-post-implementation and management stages of construction projects within Transnet Group Capital.

Table 3.1 below tabulates and presents the respondents' area of expertise, the number of questionnaires distributed, the number returned with responses and the response rates.

**Table 3.1: Survey Questionnaire Response (Ramabodu, 2014)**

Response Group	Sent	Received	Percentage (%)
Senior Project Manager	10	10	10.87
Project Managers	20	20	21.74
Construction Manager	15	15	16.30
Engineering Manager	5	4	4.35
Quantity Surveyors	10	7	7.61
Planner/ Scheduler	5	3	3.26
Quality Officers	6	6	6.52
Engineers	10	10	10.87
Supplier Development Officers	4	2	2.17
Other (please specify)	15	15	16.30
<b>Total</b>	<b>100</b>	<b>92</b>	<b>92%</b>

The calculated total response rate for the overall sample was 92%.

### **3.6.2 Design of questionnaire**

This research utilised a self-administered questionnaire with a simple order arrangement. The beginning of the questionnaire consisted of questions that were relatively easy, to allow the responded to gain interest as they were getting into the

questionnaire (Fowler, 2014). The following principles were used to design the questions (Fowler, 2014):

- Clear layout design
- Self-explanatory questions
- Limited to a few number of questions for each section
- Most of the questions were limited to closed answers
- Introduction of visual cues to guide participant about which question to answer next

The manner in which the questionnaire was designed, was in such a way that it took no longer than 13 minutes for the respondents to complete the survey. The questionnaire format consisted of three sections. The first section consisted of the respondents' demographics, where no mention of gender or race of the participants was mentioned, to ensure no ethical boundaries were crossed and the second section encompassed the body of the questionnaire. The demographics questions were set up in such a way that any perceived prejudice was eliminated. The respondent's length of service in the organization formed part of the demographic questions and was divided into four categories. The first three categories had 5-year intervals because the first fifteen years of an employee's career are regarded as their time to acquire experience, thereafter, a professional starts applying the experience.

The questionnaire sections were sorted in the following way:

- Academic information and experience
- Challenges experienced by SMMEs during construction project execution
- Supplier Development practice

The questionnaire is found in Annexure A of this report.

### **3.7 Reliability and validity**

According to Thomas (2013), one cannot separate validity from reliability, when conducting research. Reliability relates to a measure's consistency and consists of three attributes; equivalence, stability and homogeneity (Heale and Twycross, 2015). The questionnaires, they were checked and rechecked to rule out any mistakes.

Research reliability is the degree in which the research instrument utilised, gave results that were similar, on different occurrences.

Heale and Twycross (2015) defined validity in a quantitative study, as the degree to which a concept is accurately measured in the research. There are three major types of validity; content validity, criterion validity and construct validity. Research validity refers to the degree to which the study findings were precise and accurate in representing what was happening in the situation.

To ensure that the study findings resonated with not just the researcher, but also with other potential readers, the researcher utilised a peer debriefer for the validity of this study. Moreover, situations were thoroughly described and detailed to allow the readers to draw their own conclusions (Leedy and Ormond, 2010). Four construction managers from different TGC offices also pilot-tested the questionnaire as a means to test the validity of the tools. Responses from the test were used to evaluate the validity of the questionnaire. The test group's feedback was also integrated into the final survey.

### **3.8 Data collection**

The modes for collecting data include multi-mode, face-to-face, self-administered and telephone surveys (Ornstein, 2013). A structured survey questionnaire was established using a type-form survey website for this study. A link format was shared to access the questionnaire and distributed via email to the selected professionals within the sample. Participants responded to the questionnaire online. The selected employees consisted of those occupying middle to senior management positions within Transnet Group Capital, who are involved during execution of construction projects, in project planning, project support, operations and capital projects. The type-form survey tool enables simpler data analysis as it allows for the download of data directly to Microsoft Excel, for analysis.

Prior permission to engage the respondents was obtained before consultation and the collection of data, which necessitates access to the company database to obtain the pertinent personnel. All collected information was kept confidential and collected anonymously.

Just as Leedy and Ormrod (2009) highlighted how important it is to collect data which is consistent with ethical principles, all the participants were informed about the confidentiality, purpose of the survey and it was noted that they were voluntary participants. The instructions leading to the questionnaire clearly specified voluntary participation and that the respondents were free to withdraw at any time, without any penalty. Therefore, respondents indicated voluntary participation in this research by continuing to complete the questionnaire.

One disadvantage of such a survey may be the researcher receiving a low response rate because the respondents are not compelled to respond, however, Ornstein (2013) explains the advantages of using an internet based questionnaire in a self-administered survey as:

- A large surface area can be covered the survey, at no additional cost
- Answers for previous questions can be reviewed and changed by respondents
- They are cheaper than the other data collection modes
- Each respondent gets to answer the questions at their own pace

### **3.9 Data Analysis**

McLeod (2019) stated how statistics aid in the process of converting quantitative data into useful information to assist with decision-making. They can be used for data summarisation, connection, pattern and relationship description. Statistics can either be inferential and be used to identify differences with statistical significance between groups of data or can be descriptive and help to summarise data.

After the researcher receives and sorts the data, the process of translating the data into an appropriate form will begin, to allow the data to be read, administered, and analysed (Fowler, 2014). Punch (2007) specified the process as; proofreading the questions once they are completed and identifying any unclear responses; the export of data into a suitable data analysis programme; the reduction and summary of data to create variables; the identification of the distribution of variables through the collected sample; and the analysis of the relationship between variables.

The statistical method used to analyse and measure the data gathered from the survey questionnaires, was the descriptive statistical procedure. Lund Research Ltd

describes it as a term given to data analysis that aids and allows for the meaningful presentation, summary, and description of data, such that patterns may emerge from the data and enable simpler interpretation of data. However, Laerd statistical guide emphasised that descriptive statistics are simply a method to describe the data and do not allow the researcher to reach conclusions regarding their hypotheses. It continued by stating that when utilising descriptive statistics, it is more useful to use a combination of graphical description (i.e., charts and graphs), tabulated description (i.e., tables) and statistical commentary (i.e., discussion of results) to summarise the group of data.

Research stated that some researchers favour the use of graphs instead of tabular format during data analysis because of the opinion that tabular data presentation is distracting, whilst those for tabular presentation say it makes the comparison of information much easier (Sekaran and Bougie, 2014). Descriptive statistics use indexes such as the standard deviation or mean to summarise data from a sample.

### **3.9.1 Statistical Procedure and Measuring instruments**

Descriptive statistics enable data to be categorised based on its properties. Descriptive statistics consist of four major types of measures: the measures of position, central tendency, variation or dispersion and frequency. This study is concerned with both sets of properties of the distribution, central tendency measures and variability or dispersion measures. To measure the biographical data and make the utilisation of the descriptive statistics more useful, a combination of all the tabulated and graphical descriptions were used and the statistical commentary was utilised in chapters 4 and 5 where the results and findings are discussed then finally conclusion are drawn by comparing theory to practice.

#### **3.9.1.1 Biographical Data**

- Use of Tables

This study used tabulation to display numerical data gathered in a limited space. The use of tables is the simplest method of indicating the observation frequency of each response to each variable under investigation. Tables are effective methods used for comparing data values amid items that are related or share variables. Tabulation is



also useful to indicate the presence or absence of some characteristics (Rodrigues, 2013).

- Use of Figures

The study utilises pie charts and histograms (bar charts) and illustrates trends, common relationships and patterns between the gathered data sets. The figures enabled the researcher to summarise the results and create a visual explanation of the findings, for easier interpretation (Rodrigues, 2013). The pie chart areas represent respondent's proportions in percentages and the bar heights indicate the frequency proportions.

### **3.9.1.2 Measures of Central Tendency**

The central tendency measurement was used as the index to group the data obtained from the respondents to enable a systematic interpretation of the results. The Mean was calculated to indicate the most commonly indicated response. To show the average of all the values in the data set, the number of values in the group divided the sum of all the values. An average close to five shows that the majority of respondents selected strongly agree or most likely or to a very large extent to the questionnaire.

A previous study by Ayodele and Alabi (2011) also used the Mean Item Score index (MIS) method to rate the study criteria and was adopted for the analysis of the data collected from the questionnaire survey.

### **3.9.1.3 Measures of Variation**

The second index that was used to summarise data from the sample was standard deviation. Standard deviation is used to indicate how "spread out" data is around the mean by showing the difference mean and score being observed, so the degree of spread of measurements for a group from the mean is seen. The higher the standard deviation, the more spread out the numbers are, and a lower standard deviation means most of the numbers are quite close to the mean.

### **3.9.1.4 Likert Scale**

Originally developed by Rensis Likert, a sociologist at the University of Michigan who was concerned with the measurement of psychological attitudes in a scientific way. Likert scales were gradually developed after trying numerous alternatives and

measuring a person's attitude through the combination (averaging or adding) of all their responses across all items. The averaging or summing across several items was vital for Likert's contribution towards genuine measurement. Likert scale is one of the most essential and commonly used psychometric tools for social sciences and educational research (Joshi, Kale, Chandel and Pal, 2015).

Characteristics defining a Likert scale:

- Horizontal arrangement of response levels
- Attitude measurement in terms of disagreement/agreement level towards target statement
- The scale comprises several items
- The symmetrical and bivalent nature about a neutral middle of verbal labels
- Verbal labels that connote more-or-less gradations that are evenly-spaced anchor response levels
- Consecutive integers anchor response level

The questionnaire consisted of a list of significant factors contributing primarily to the development of a supplier, as per critical review of literature. These factors were placed in the questionnaire so the subject matter experts would rate which of these they regarded as having the most effect on the success of Supplier Development programmes and activities, thus indicating the level of importance of each factor in their organisation how each was being done. The magnitude of these factors and their level of importance was measured by means of a five-point Likert Scale and adopted to gauge the opinions of the respondents.

The 5-Point Likert Scale was utilised in the survey questionnaire. This is a type of psychometric response scale in which the responders were required to specify their level of agreement towards factors contributing to the non-completion of construction projects executed by SMMEs within their organisation (SOE), typically in the five points:

- (1) Strongly disagree
- (2) Disagree
- (3) Neither agree nor disagree
- (4) Agree

(5) Strongly agree

Furthermore, the respondents were also required to specify the extent that the challenges experienced by SMMEs had towards the non-completion of construction projects executed within their organisation (SOE), typically in the five points:

- (1) To no extent
- (2) To small extent
- (3) Moderate
- (4) To large extent
- (5) To very large extent

### **3.10 Research ethics**

The researcher considered research ethics throughout the various stages of this research to ensure that the best outcome would be obtained and paid great attention to the sensitivity of issues of confidentiality, while conducting the research.

One of the methods used during the study process was informed consent where written permission to conduct research was applied for and granted by the organisation, Transnet Group Capital. The submission for the application letter included an explanation of the research topic background and also stated that the research content, findings and conclusion would be shared with the organisation should they wish it.

Leedy and Ormrod (2014) mentioned how, depending on the nature of the research, ethics may arise. This may be because of the type of data, the procedures to be applied and its context, the participants of the research, methods of data collection and for what the data will be used.

### **3.11 Limitations**

Limiting conditions to this study are that it only focused on clients and construction professionals involved with SMMEs during project execution such as Project Managers, Construction Managers, Quality Officers, Engineers, Planners, Safety Officers, Quantity Surveyor, Contracts Administrators and Supplier Development specialists within the Transnet Group Capital offices in Gauteng and Eastern Cape,

South Africa. The views indicated are only those for the Gauteng and Eastern Cape Province, South Africa. However, since the Transnet Group Capital specialised division operates on a one Supplier Development Approach, then the views may be associated for all Project Managers, Construction Managers and Supplier Development professionals across Transnet Group Capital.

### **3.12 Chapter summary**

Chapter 3 discussed the introduction, research philosophy and design, which then proceeded to an overview of the approach followed through the survey instrument used to conduct the research. Careful consideration of all the factors was done when the researcher decided on the research approach to be employed. Evidence shows that this study followed a linear research methodology process with a series of scientific steps. The study utilised a quantitative research approach via a self-administered internet based questionnaire. The stratified sampling technique was selected as a sampling plan to target employees involved in the execution phase of construction projects implemented within Transnet Group Capital infrastructure projects. The study targeted professionals occupying middle to senior management positions with qualifications diplomas or junior degree qualifications, with four years or more post-graduate experience. Data received from the survey was sorted, analysed, and the results are presented in the following chapter four.

## CHAPTER 4: RESEARCH FINDINGS AND RESULTS

### 4.1 Introduction

The research methodology that was used for data collection has been discussed in the preceding chapter. This chapter analyses and reports on the results obtained from the self-administered questionnaire. The analysis is presented by a combination of graphical and tabulated descriptions, in the form of graphs and tables, respectively.

The survey questionnaires that were distributed comprised three phases. Section one was used for the determination of the respondents' demographics and technical capacity in the company. Section two was used to identify what challenges they were experienced by SMMEs during construction project execution and section three assessed if the Supplier Development criteria identified in the literature review were prevalent in the Supplier Development approach utilised in an SOE.

The questionnaire design was formulated to provide replies to the three secondary research questions, which are stated below, for ease of reference:

**RQ1:** What are the causes and effects of project delays executed by small businesses within the construction industry?

**RQ2:** What are the challenges faced by SMMEs that are contracted by SOEs?

**RQ3:** What are the criteria that best inform an effective framework for SMME Supplier Development within an SOE?

A consolidated assessment of the response to the three secondary research questions and critical literature review assisted in answering to the primary research question, which has been stated below, for ease of reference:

**RQ4:** Are there any improvements that can be made to Supplier Development programmes employed within an SOE?

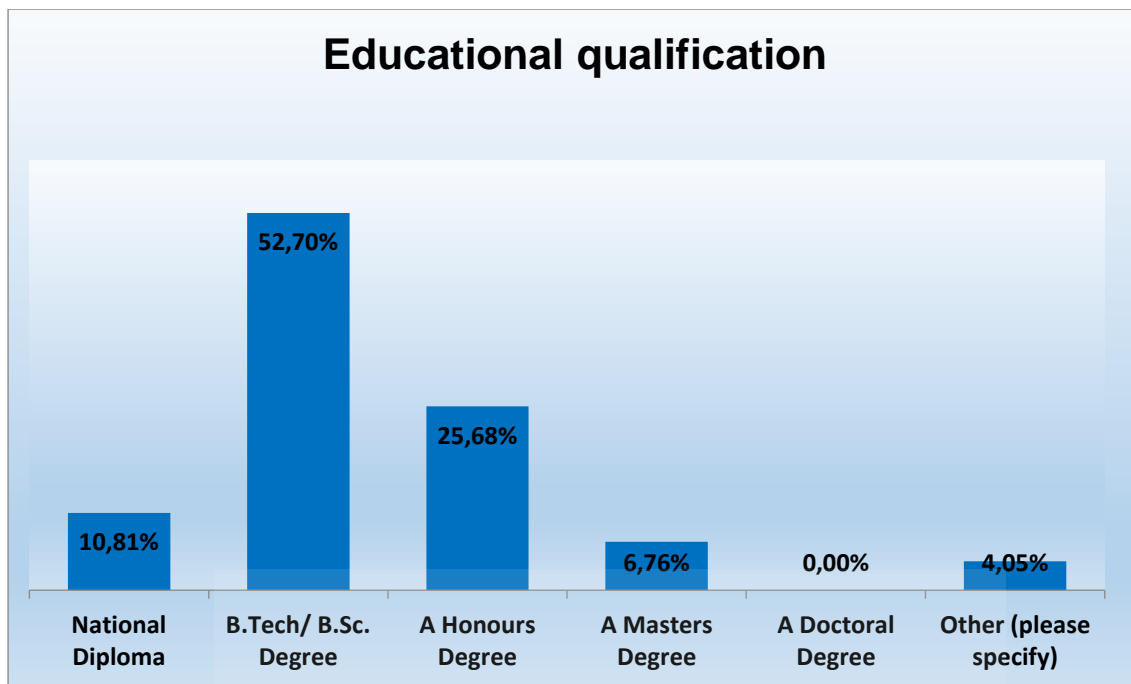
## **4.2 Data Analysis**

The research questions were self-administered in English. A total of 100 questionnaires were distributed to Senior Project Managers, Project Managers, Construction Managers, Quality Officers, Engineers, Planners, Quantity Surveyors, Engineering Managers, Supplier Development specialists and all other employees forming part of the project team and working closely with SMMEs during the implementation of projects; Safety Officers, Environmental officers, Contracts Administrators, Industrial Relations employees. A number of 92 questionnaires were returned, of the 100 questionnaires distributed. This represented 92% of the total that was distributed.

## **4.3 Findings**

### **4.3.1 Demographics, technical capacity, and capability of respondents**

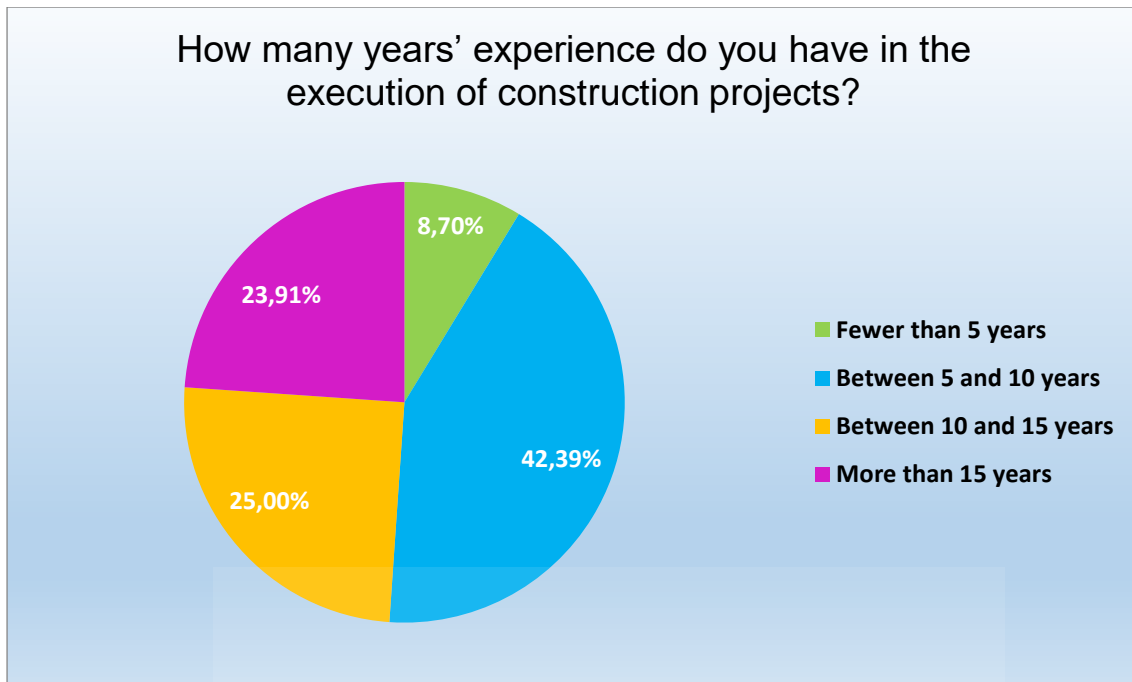
The first section gives an indication of the respondents' academic background and experience. The results of the capabilities of the respondents such as their qualifications, previous experience, and skills, are presented under demographics and technical capabilities. These results determine the duration that the respondents have worked within the construction sector as a whole, the length of service within the SOE and the period within their current positions. This indicates their post-graduate experience to see if they form part of the targeted professionals. It also indicates the duration they have been occupying middle to senior management positions, as decision makers in dealing with the challenges faced by SMMEs in project execution that hinder their project success and the adequacy of the Supplier Development initiatives within their organisation to aid SMMEs.



**Figure 4.1: Highest Educational Qualification**

It is anticipated that a high educational level of a professional is directly proportional to the number of skills they will have in managerial positions. Figure 4.1 demonstrates the qualification levels of all the targeted professional respondents. It is evident that 52.70%, which represents slightly over half of the respondents indicated that they have a B.Tech or B.Sc Degree; 25.68% which represents one-fourth of the respondents hold an Honours Degree, followed by a National Diploma and Masters Degree with 10,81% and 6,78% respectively; and 4,05% of the respondents specified they held other educational qualifications. Amongst these was a Post Grad Diploma, BEng Degree and PrTech Eng ECSA registration. None of the respondents indicated to having a Doctoral Degree. Most of the respondents have Degrees and only 10.81% hold Diplomas. This is contrary to a study undertaken by Aigbbavboa and Thwala (2014), at the Mbombela Municipality, where it was indicated that a majority 33% of the sample had Diplomas, while only 27% had Bachelor degrees.

Evidence above indicates that these are an educated group of individuals, hence the supposition that they are qualified in the positions they occupy and well aware of methods of running projects, in relation to their experience.

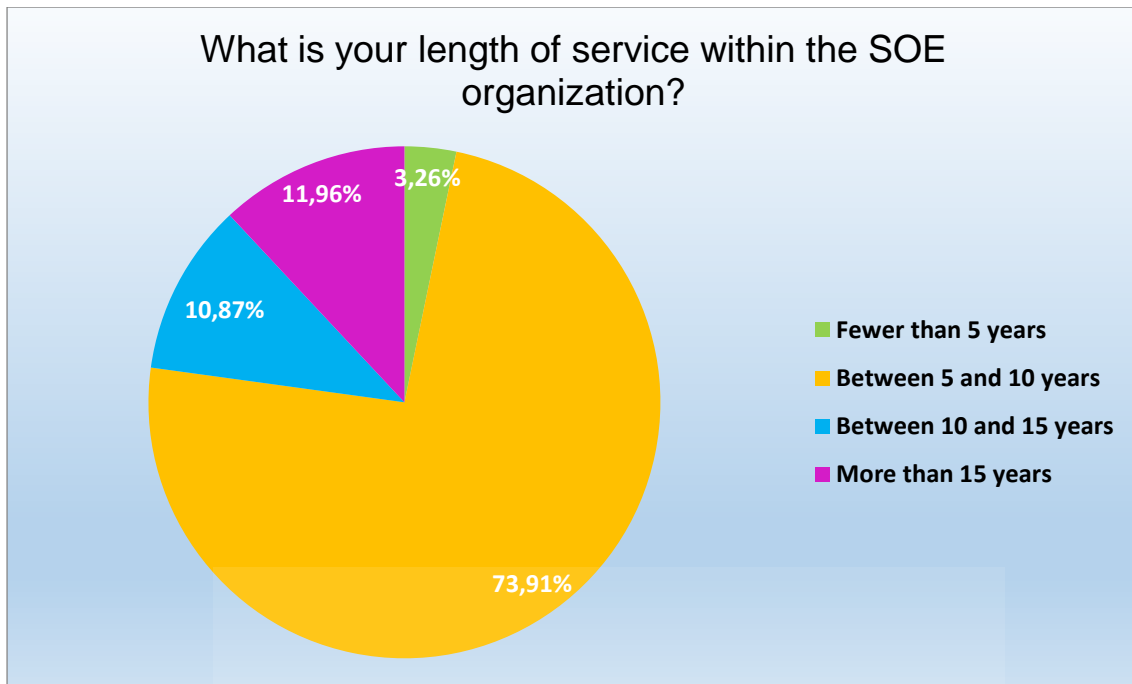


**Figure 4.2: Experience in Construction Sector**

Most, if not all industries, highlight the importance of having experience in order for any role to be performed to excellence. Thwala and Mofokeng (2012) highlighted that only 12% of those in the construction industry have greater than 15 years' experience and that 40% of them have between six and 10 years' experience.

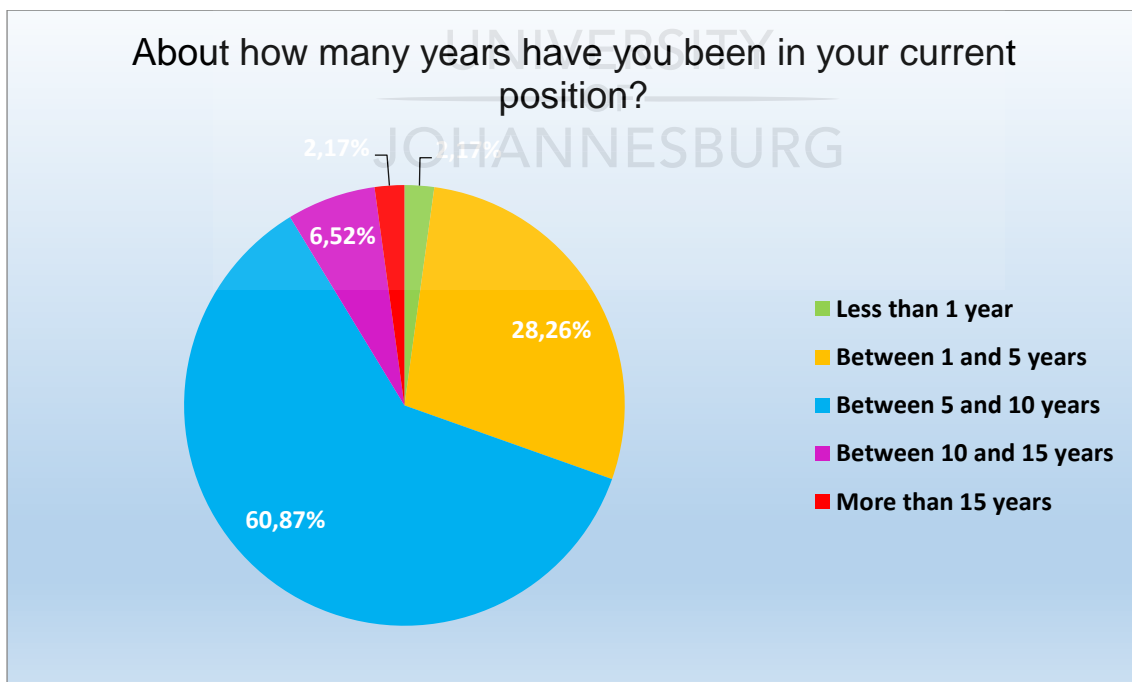
Figure 4.2 depicts the experience that respondents have in the construction industry, the majority of 42.39%, have between 5 and 10 years, followed by the 25% who indicated between 10 and 15 years' experience; 23.91% with over 15 years' experience and 8.7% of the respondents indicated fewer than five years' experience in the construction sector.





**Figure 4.3: Length of Service within SOE**

Figure 4.3 illustrates that 73.91% of the respondents have experience ranging between 5 and 10 years working for the SOE, 11.96% had more than 15 years within the SOE, 10.87% had experience ranging between 10 to 15 years and 3.26% had been employed within the SOE for less than five years.



**Figure 4.4: Experience in current position**

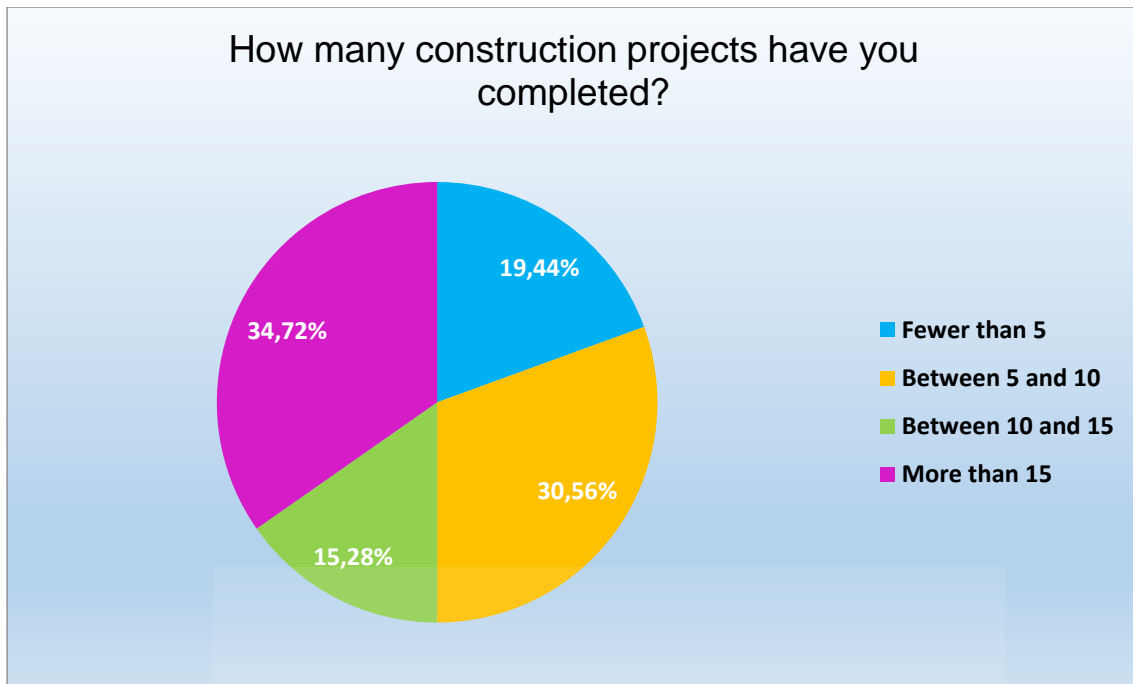
Figure 4.4 shows that 2.17% of the respondents have been occupying their current positions for less than a year and others for more than 15 years each. Moreover, 28.26% have between 1 and 5 years' experience, the 60.87% majority of respondents indicated between 5 and 10 years, and 6.52% have more than 15 years of experience.

It is evident that the larger sample of respondents are not yet specialist in the positions they assume. The 60.87% majority of respondents are still within the one to 10 years' information collection stage, where they are filling their buckets of knowledge.

The research findings on the data relating to the current role that is assumed by the respondents within a running project is presented using frequency distribution. Table 4.1 indicates that the majority of the respondents are Project Managers. This accounts for 21.74% of the respondents, followed by Construction Managers and other (health and safety, environmental, procurement and contracts administration) which constitute 16.30% of the sample each. Both Senior Project Managers and Engineers make up 10.87% of the sample each, Quantity Surveyors are 7.61%, Quality Managers are 6.52%, Engineering Managers are 4.35%, Planners with 3.26% and lastly Supplier Development Specialists at 2.17%.

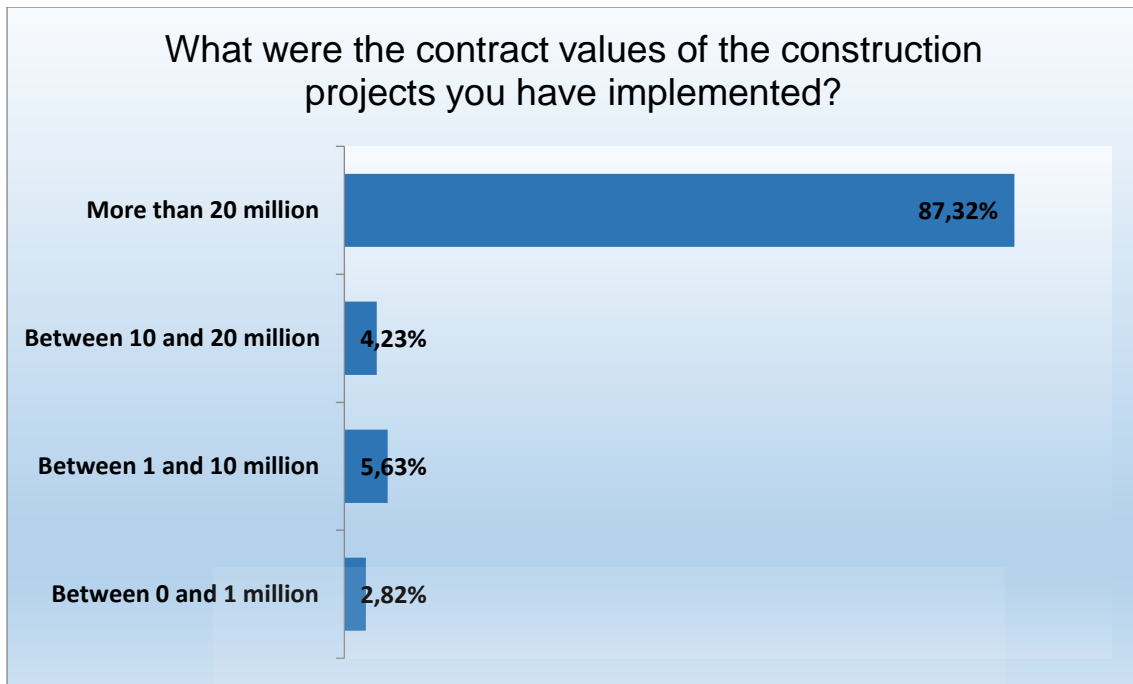
**Table 4.1: Frequency Distribution of Current Project Role**

	<b>Response Group</b>	<b>Number (N)</b>	<b>Percentage (%)</b>
<b>Valid</b>	Senior Project Manager	<b>10</b>	<b>10.87</b>
	Project Managers	<b>20</b>	<b>21.74</b>
	Construction Manager	<b>15</b>	<b>16.30</b>
	Engineering Manager	<b>4</b>	<b>4.35</b>
	Quantity Surveyors	<b>7</b>	<b>7.61</b>
	Planner/ Scheduler	<b>3</b>	<b>3.26</b>
	Quality Managers	<b>6</b>	<b>6.52</b>
	Engineers	<b>10</b>	<b>10.87</b>
	Supplier Development Specialists	<b>2</b>	<b>2.17</b>
	Other (please specify) Health and Safety <b>5</b> Environmental <b>5</b> Procurement <b>2</b> Contracts Administration <b>3</b>	<b>15</b>	<b>16.30</b>



**Figure 4.5: Number of Construction projects completed**

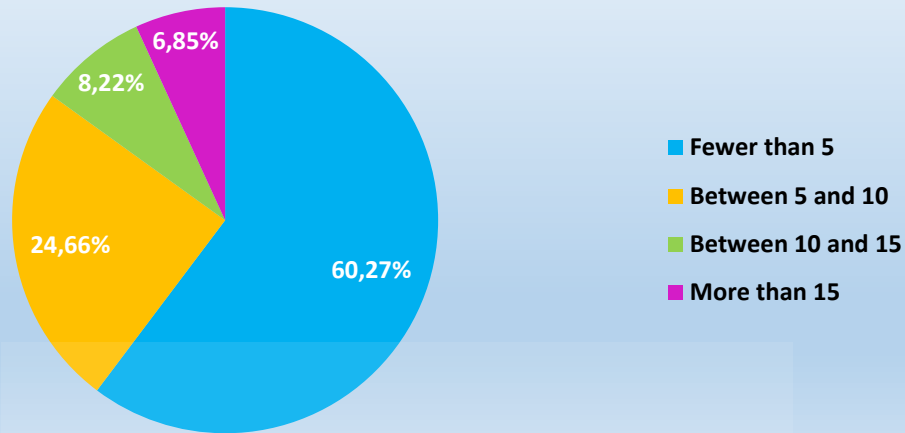
Figure 4.5 illustrates that 34.72% of the respondents say they have completed over 15 construction projects, 30.56% have completed between five and 10 projects, 19.44% have completed fewer than five projects and 15.28% have completed between 10 and 15 projects at that point in time.



**Figure 4.6: Contract values of Construction projects completed**

Figure 4.6 shows the contract values of the construction projects completed by the respondents, as shown in figure 4.5 above. The majority 87.32% of the projects completed by the respondents had values of over 20 million rand, 5.63% of the projects were between 1 and 10 million rand, 4.23% were between 10 and 20 million rand, and only 2.82% had projects values ranging from zero and one million rand.

Of the construction projects mentioned in question 6 above, how many of these projects were completed successfully (within budget, time and expected quality)?



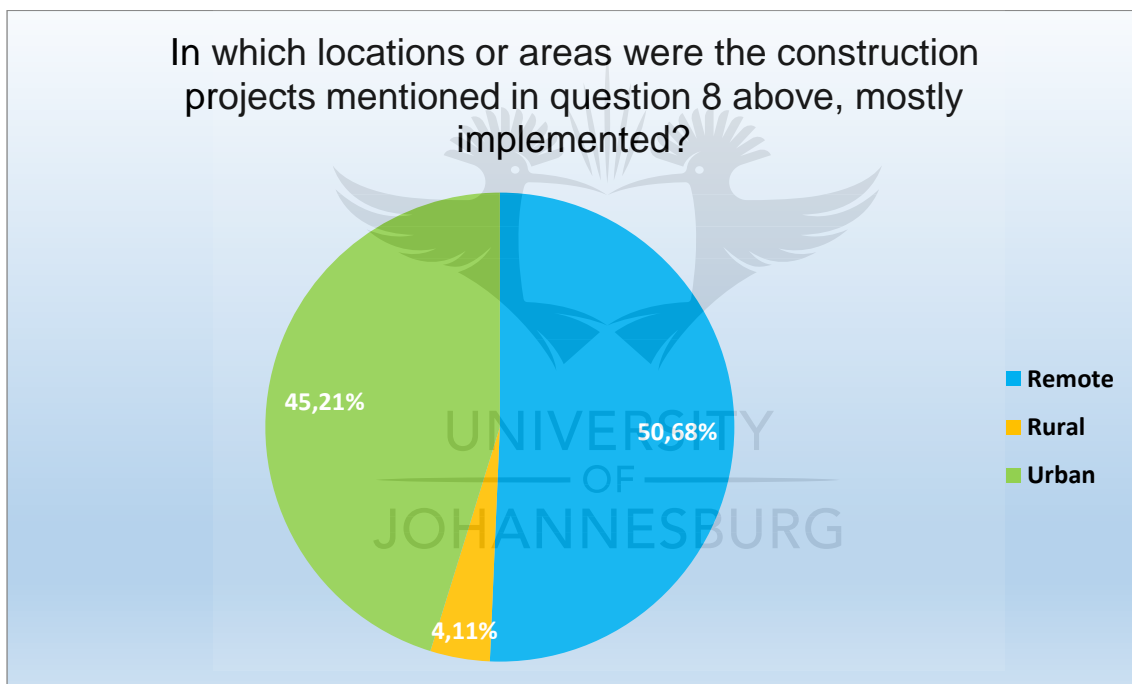
**Figure 4.7: Number of Construction projects completed successfully**

Figure 4.7 represent the number of construction projects that were completed successfully amongst those completed by the respondents, as shown in figure 4.5 above. The majority 60.27% of the sample indicate that fewer than five construction projects were completed successfully; 24.66% of the respondents stated between five and 10 projects completed successfully, 8.22% say between 10 and 15 projects and 6.85% of the respondents stated the completion of more than 15 projects successfully.

This indicates that most of the projects executed by the respondents had failed and this can, furthermore, be seen by referring to figure 4.5 above as well. From the 34.72% of the respondents who had indicated they completed more than 15 construction projects it can be concluded, that though the number of completed projects by each individual was high, these projects were however either over budget, over the time allocated for the project and/or not within the specified quality at the time of completion.

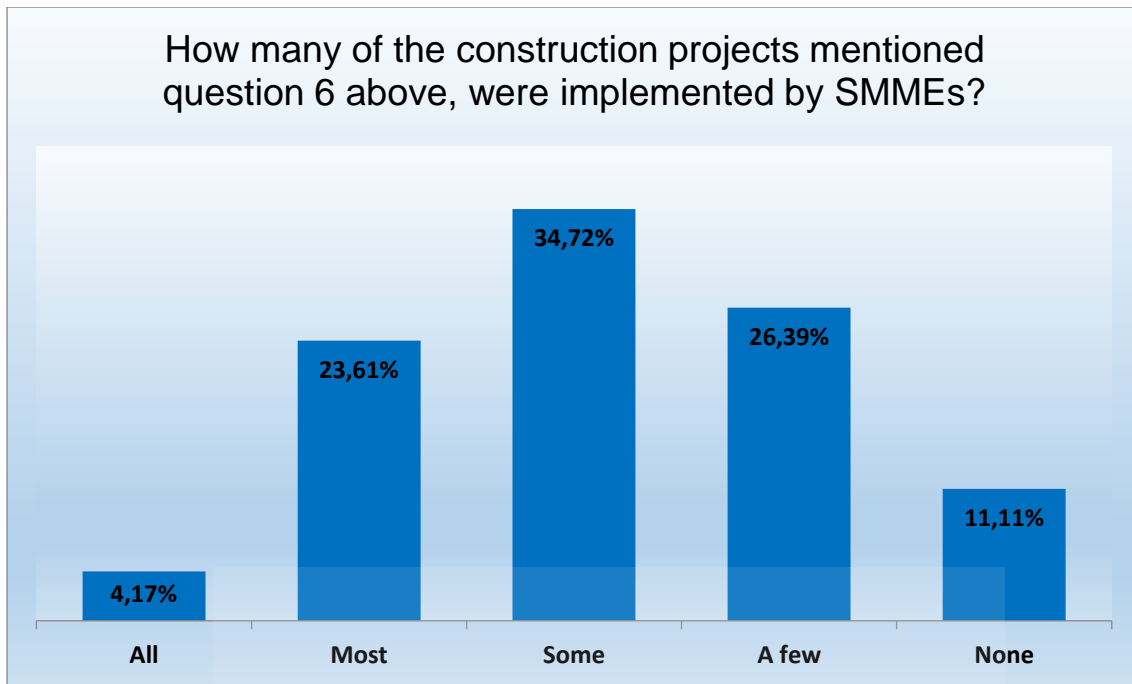
### 4.3.2 Challenges experienced by SMMEs during project execution

The challenges that are experienced by the SMMEs when implementing projects are now discussed. This section presents results, which represent two of the secondary objectives for this research, as discussed in Chapter 1. The different causes and effects of project delays within the construction sector are identified and the challenges that are faced by SMMEs in implementing construction projects and their consequences thereafter are highlighted. Ultimately, Likert scales, ranging from 1 for no extent to 5 for very large extent, or 1 for strongly disagree to 5 for strongly agree were used to rank the respondents' level of agreement towards the importance of these previously identified SMME challenges and their effects on project success within the SOE.



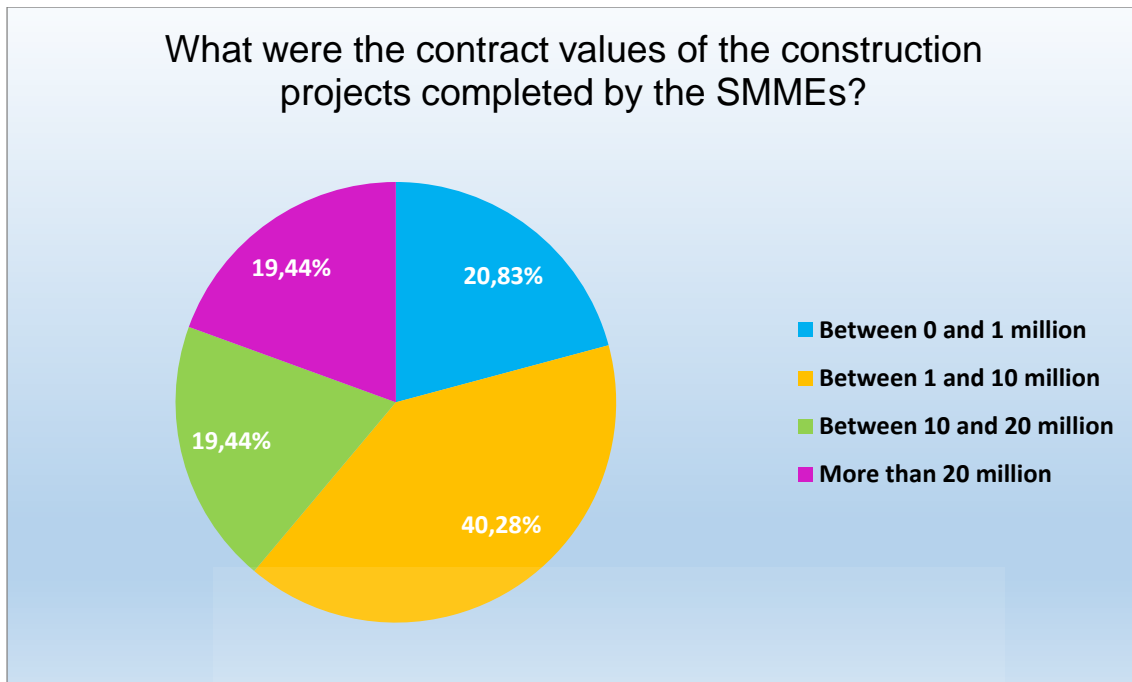
**Figure 4.8: Project locations**

This figure depicts that 50.68% of the respondents stated that most of the projects that were completed successfully were executed in remote areas, while 45.21% of the respondents say that the successfully completed project were situated in urban areas. Only 4.11% respondents, which accounts for the minority, stated that projects executed in rural areas were successfully completed.



**Figure 4.9: Number of projects implemented by SMMEs**

Figure 4.9 displays which of the projects, whether successfully or unsuccessfully completed as shown in figure 4.5 above, were contracted to SMMEs. The data shows 34.72% of the respondents state that some of the projects were executed by SMMEs, 26.39% say a few of the completed projects were by SMMEs, 23.61% say most of the number of projects they completed were by SMMEs, followed by 11.11% who say none of their projects were by SMMEs and the minority 4.17% state that all the projects they have completed to date, were executed by SMMEs.

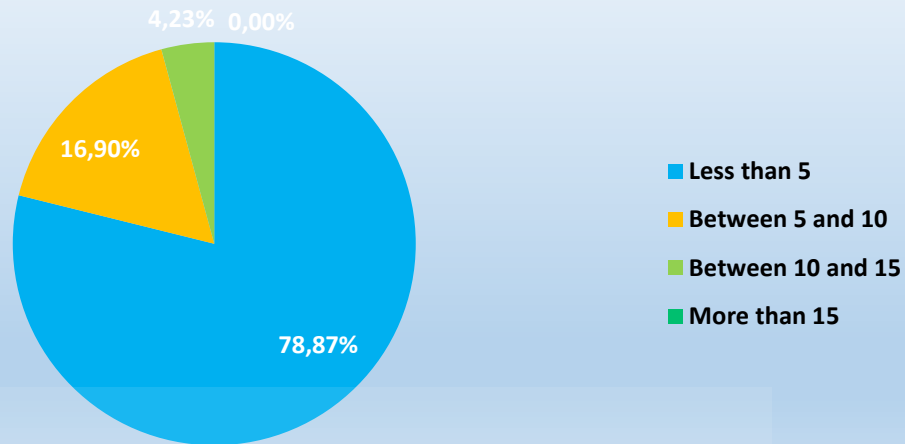


**Figure 4.10: Contract values of Construction projects by SMMEs**

Figure 4.10 indicates the contract values of the construction projects completed by the SMMEs, as shown in figure 4.9 above. Most of the respondents, 40.28%, state that the contract amounts of the projects implemented by the SMMEs were between one and 10 million rand, 20.83% say the SMME contracted amounts were between zero and one million rand and an equal 19.44% of the sample state values between 10 and 20 million rand and values greater than 20 million each, for the projects completed by SMMEs.



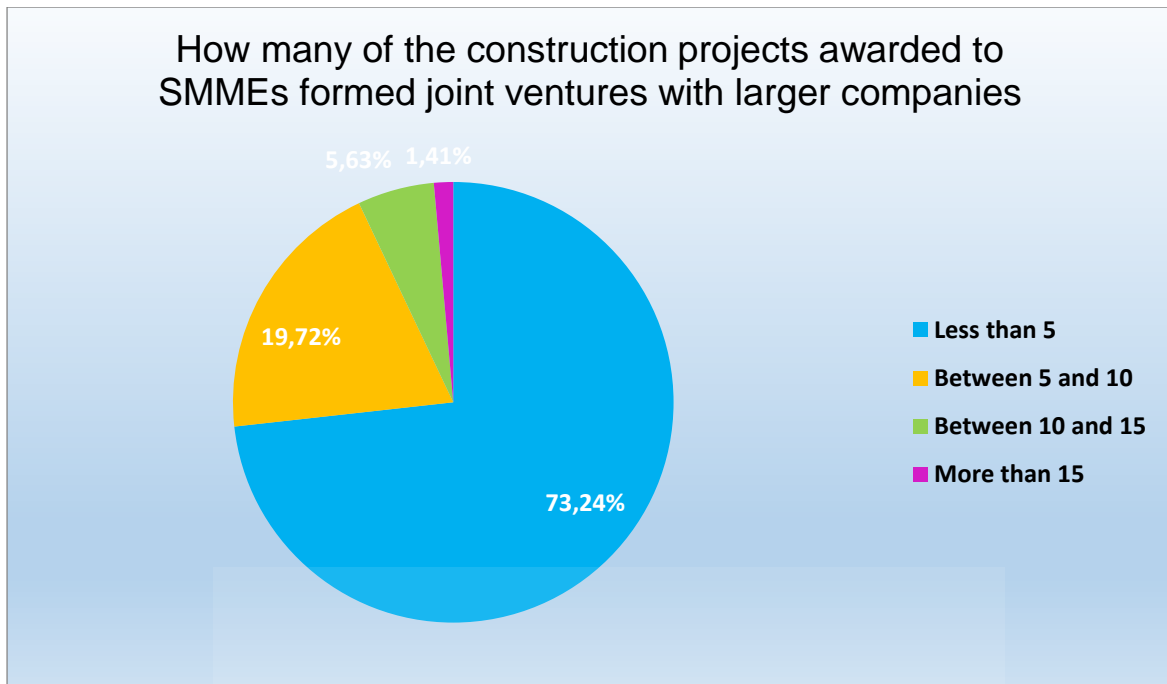
How many of the construction projects implemented by SMMEs mentioned in question 10, were successfully completed (within budget, time and expected quality)?



**Figure 4.11: Number of successful projects by SMMEs based on locations**

Figure 4.11 represents the number of construction projects that were completed successfully amongst those completed by the SMMEs, as shown in figure 4.9 above. The majority 78.87% of the sample state that fewer than five construction projects implemented by the SMMEs, were completed successfully, 16.90% of the of the sample state between five and 10 projects that were completed successfully by SMMEs, 4.23% say between 10 and 15 projects and none of the respondents state a successful project completion of number greater than 15 projects by the SMMEs that were awarded contracts.

This indicates that most of the projects executed by the SMMEs had failed and this can furthermore, provide further evidence by referring to figure 4.9 above as well. From the 23.61% and 4.17% respondents who stated that most and all their projects were completed by SMMEs, respectively it can be concluded, these projects were however either over budget, over the time allocated for the project and/or not within the specified quality at the time of completion.



**Figure 4.12: Number of projects awarded to Joint Ventures**

Figure 4.12 represents that 73.24% of the respondents specify that fewer than five of the projects awarded consisted of SMMEs who formed joint ventures with larger companies, 19.72% reported a number between five and 10 projects, 5.63% specify a number between 10 15 projects and the minority 1.41% report that more than 15 projects that were awarded consisted of SMMEs forming joint venture with larger companies.

#### **4.3.2.1 Disadvantages of joint ventures**

The written responses to the open-ended questions depicted a trend of common responses that were mentioned by a majority of the respondents. The common responses were categorised according to their similarity and by the number of times they were mentioned. The percentages were calculated using the standard statistical formula, as follows:

$$\% = \frac{\alpha \times 100}{\sum \mu}$$

**$\alpha$  = Number of times mentioned**

**$\sum \mu$  = Total respondents**

The number of times they were mentioned was presented as follows:

**Table 4.2: Disadvantages of Joint Ventures**

Disadvantages of joint ventures	Number mentioned	Rank
SMMEs deprived of much needed responsibility, exposure, skills transfer and experience due to larger company either having lion's share of scope or not being active at all during project execution.	30.65%	1
Lack of support and guidance from larger companies, poor co-ordination and miscommunication leads to disputes	19.35%	2
Ambiguous lines of responsibility and accountability negatively affects decision making and effectiveness of joint venture	14.52%	3
Financial challenges: financial instability and irresponsibility, cash flow issues for SMMEs due to payment distributions, disputes that lead to project delays. Liquidation of one company affects JV	12.90%	4
Lack of skilled personnel or consistency with skilled personnel, poor workmanship and imbalance of expertise resulting in higher positions of employment being dominated by larger company	11.29%	5
Interface management challenges, culture, value, and style of either management or doing works due to difference in core business speciality areas, leads to poor integration and co-operation and results in delivery challenges	9.68%	6
No disadvantages or JVs formed within running projects	4.84%	7
Unfair practice relating to profit sharing by larger member of JV	3.22%	8
The expense of forming and running as a JV is high	1.56%	9

When asked about the disadvantages that came about from having SMMEs form joint ventures with larger companies, in open-ended questions, the most common response from the respondents was:

*“SMMEs were deprived of the much needed responsibility, exposure, skills transfer and experience due to the larger companies either doing most of the specialised work themselves or not being active at all once the project started”*

This statement was correlated by 30.65% of the respondents; 19.35% respondents mentioned the lack of support, guidance, miscommunication and poor co-ordination that lead to disputes as a disadvantage of joint ventures; 14.52% stated ambiguous and undefined lines of reporting, responsibility and accountability lead to decisions not

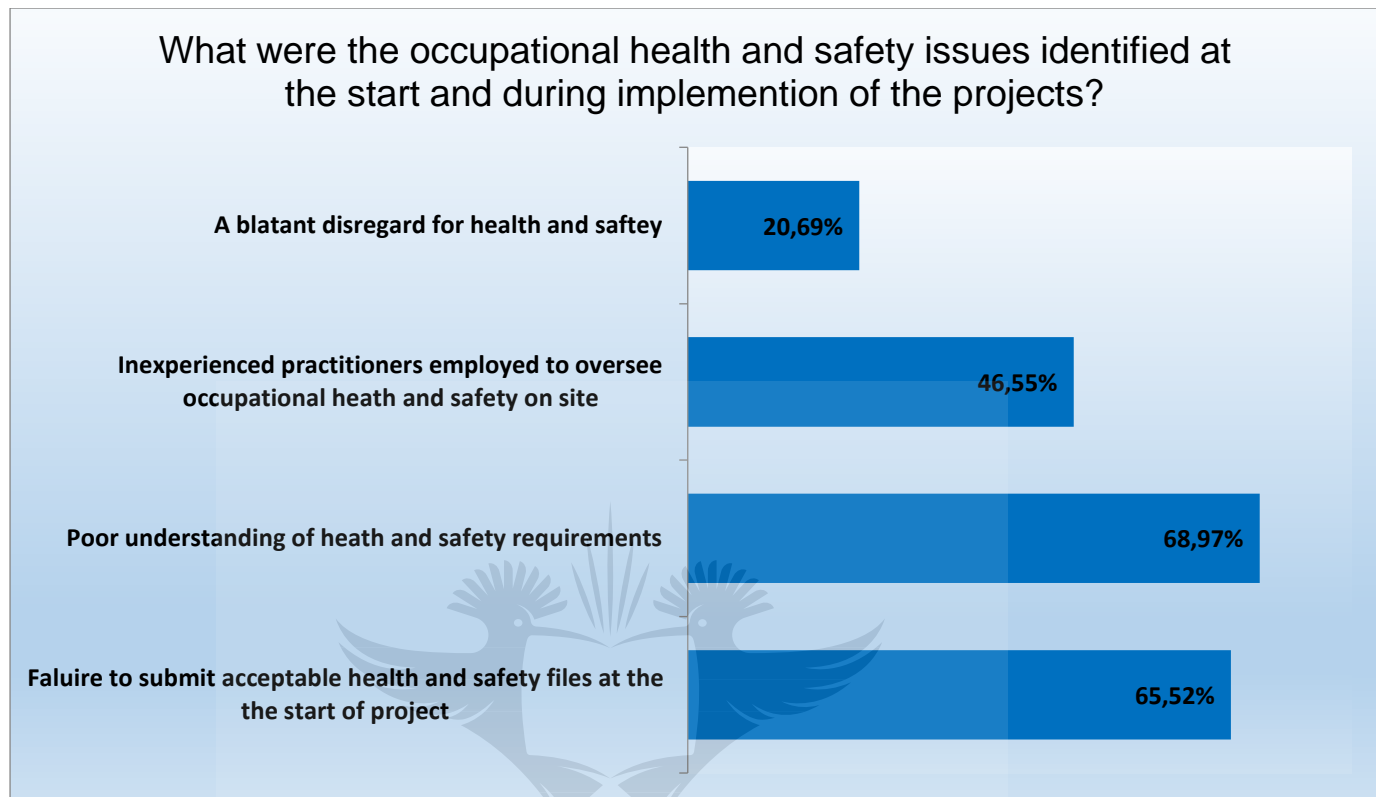
being made accordingly and affecting the effectiveness of joint ventures. A further 12.90% identified financial challenges caused by financial irresponsibility and instability of one company, which could result in liquidation and affect the whole joint venture negatively. In addition, the cash flow issues of larger companies and SMMEs due payment distributions, disputes that ultimately lead to project delays. 11.29% of the sample mentioned the lack of skills or inconsistency of skilled personnel, poor workmanship, and imbalance of expertise, which resulted in most management positions being filled by larger company personnel. Furthermore, 9.68% respondents stated the poor co-operation and integration lead to project delivery challenges, forming from interface issues, cultural differences and difference in management styles or manner in which works were undertaken and possibly aligned it to the company's core business speciality areas. No joint venture disadvantages were experienced or JV's were formed within the projects that 4.84% respondents partook in and 3.22% and 1.56% of the respondents said unfair practice of profit sharing by the larger companies to SMMEs and that running as a joint venture was expensive, respectively, were disadvantages of the joint ventures that were formed.



**Figure 4.13: Health and Safety issues**

Figure 4.13 indicates that the majority of sampled population agreed that they encountered occupational health and safety issues at the beginning of the project and during execution. The majority, 80.28%, of the respondents say health and safety

issues were identified and the minority, 19.72%, say that health and safety did not present any issues during the start and implementation of the projects. All they did was adhere and comply but it did not propose any challenges for them.



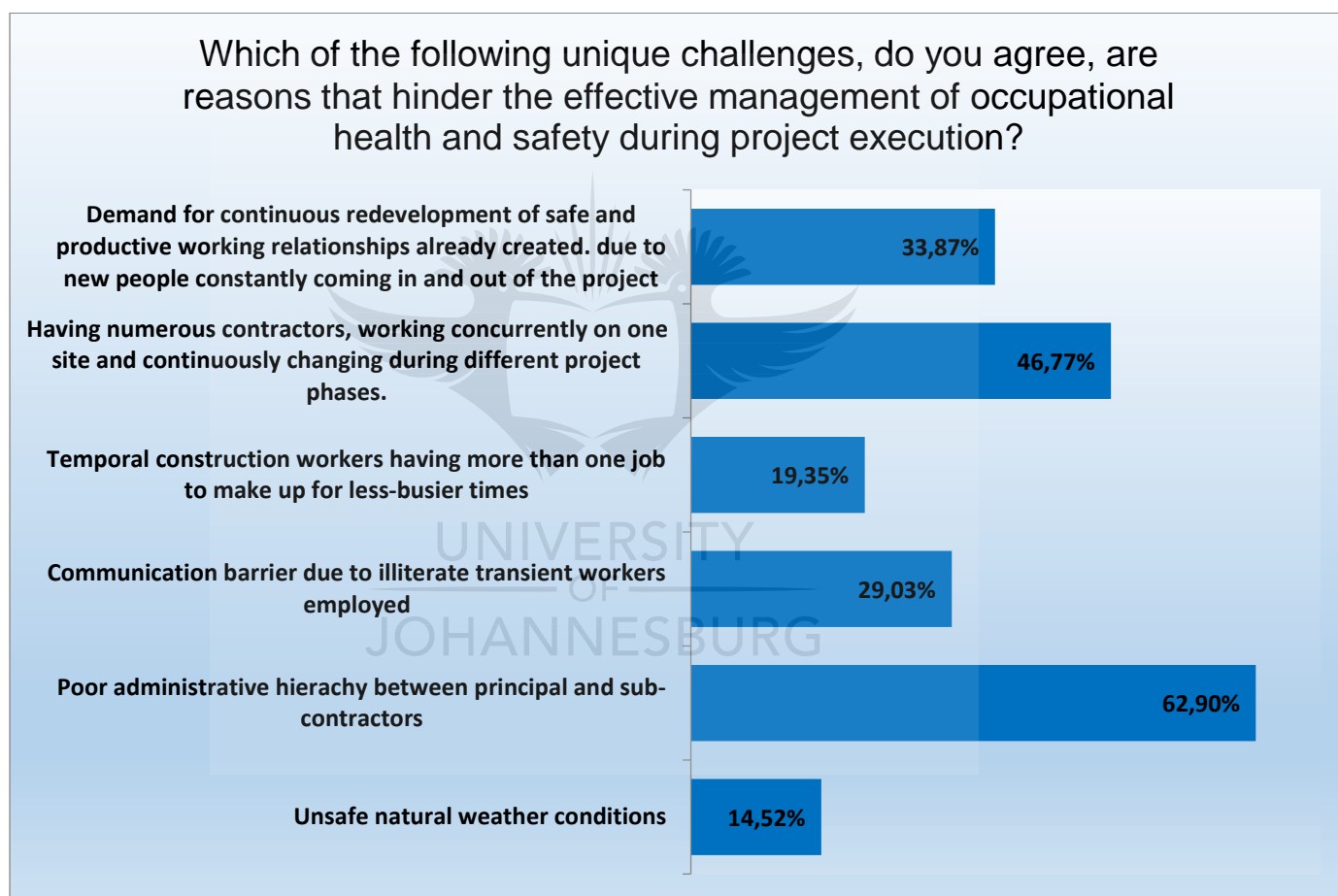
**Figure 4.14: Types of Health and Safety issues**

Over three thirds of the sampled population said their projects did experience occupational health and safety at project start and during execution. The most common issues as identified by literature were presented to the respondents to show which problems they experienced and depict what practice would rank as the most common challenges to the lowest. The results were presented as follows:

**Table 4.3: Occupational Health and Safety Issues**

Occupational Health and Safety issues experienced	Number mentioned	Rank
Poor understanding of health and safety requirement	68.97%	1
Failure to submit acceptable health and safety files at project start	65.52%	2
Inexperienced practitioners employed to oversee occupational health and safety on site	46.55%	3
A blatant disregard for health and safety	20.69%	4

From the 80.28% respondents, who mentioned they identified occupational health and safety at the beginning and during implementing projects, 68.97% of them mentioned the SMMEs' poor understanding of the health and safety requirements as an issue; 65.52% stated the SMMEs failure to submit acceptable health and safety files at the project start; 46.55% say the employment of inexperienced practitioners to oversee occupational health and safety on site as an issue during the start and execution of projects and 20.69% of the respondents mentioned the issue of their contractors blatantly disregarding health and safety and therefore not complying and adhering to safety regulations and requirements.



**Figure 4.15: Challenges resulting in poor Health and Safety management**

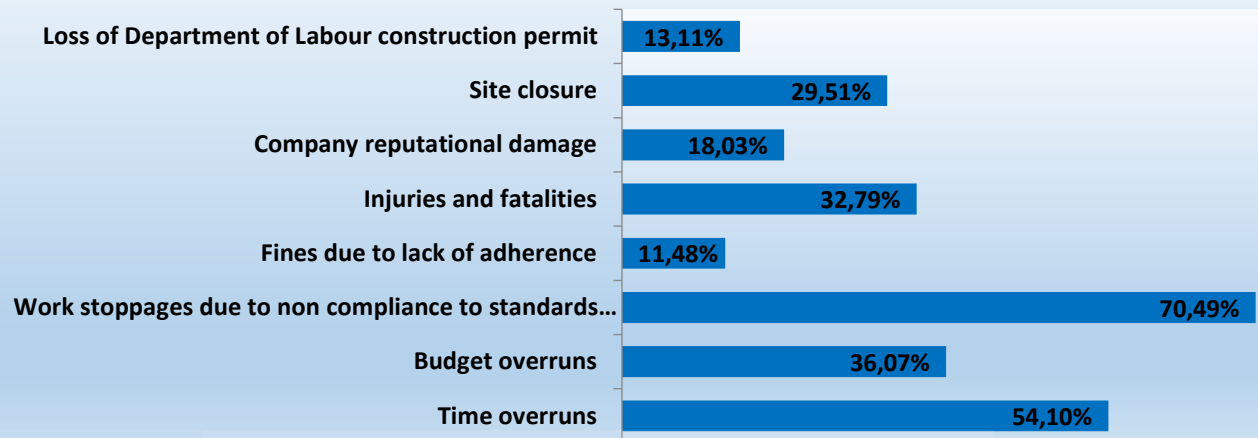
Literature identified challenges that result in poor health and safety management, these were presented to the respondents to represent the results in practice and the common ones were presented as follows:

**Table 4.4: Challenges resulting in poor Health and Safety Management**

Challenges resulting in poor health and safety management	Number mentioned	Rank
Poor administrative hierarchy between principal and sub-contractors	62.90%	1
Having numerous contractors, working concurrently on one site, and continuously changing during different project phases.	46.77%	2
Demand for continuous redevelopment of safe and productive working relationships already created, due to new people constantly coming in and out of the project	33.87%	3
Communication barrier due to illiterate transient workers employed	29.03%	4
Temporary construction workers having more than one job to make up for less-busy times	19.35%	5
Unsafe natural weather conditions	14.52%	6

From the 80.28% respondents, who mentioned they identified occupational health and safety at the beginning and during implementing projects, table 4.3 shows that 62.90% of them agree that poor administrative hierarchy between the principal and sub-contractors is a common challenge; 46.77% revealed the interface due to numerous contractors working concurrently and constant change during project phases; 33.87% saw the demand for continuous redevelopment of safe and productive working relationships that had already initially been created within the projects. This is due to the continuous change in resources, coming in and out of the project; 29.03% of the respondents stated the communication barrier that existed amongst the SMMEs employees due to illiterate transient general workers that are employed by the contractors; 19.35% of the respondents mentioned that temporary employees having more than one job to make up for less-busy times as a challenge, hindering effective health and safety management and 14.52% said unsafe natural weather condition played a role.

What effects did the health and safety issues experienced have on the overall project (what did they result in)?



**Figure 4.16: Effects of poor Health and Safety management**

Literature identified the effects that resulted from the challenges that hindered the effective management of health and safety management. These were presented to the respondents to represent the results in practice and the common ones were presented as follows:

**Table 4.5: Effects of poor Health and Safety Management**

Effects of poor health and safety management	Number mentioned	Rank
Work stoppages due to non-compliance to standards and/or specifications	70.49%	1
Time overruns	54.10%	2
Budget overruns	36.07%	3
Injuries and fatalities	32.79%	4
Site closure	29.51%	5
Company reputational damage	18.03%	6
Loss of DoL permit	13.11%	7
Fines due to lack of adherence	11.48%	8

From the 80.28% respondents, who mentioned they identified occupational health and safety at the beginning and during implementing projects, 70.49% of the respondents mentioned work stoppages due to non-compliance to standards and/or specifications as an effect of the health and safety challenges experienced; 54.10% said the effects were time overruns; 36.07% stated it resulted in budget overruns; 32.79% stated



injuries and fatalities; 29.51% of them reported that sites were closed; 18.03% said the SMME company's reputation was damaged; 13.11% mentioned their projects lost their construction permits from the DoL and 11.48% of the respondents stated that the health and safety challenges experienced resulted in fines being charged against the contracts or contractors for failing to adhere and non-compliance to health and safety regulations and legislature.



**Figure 4.17: Reasons for SMME Construction project failure**

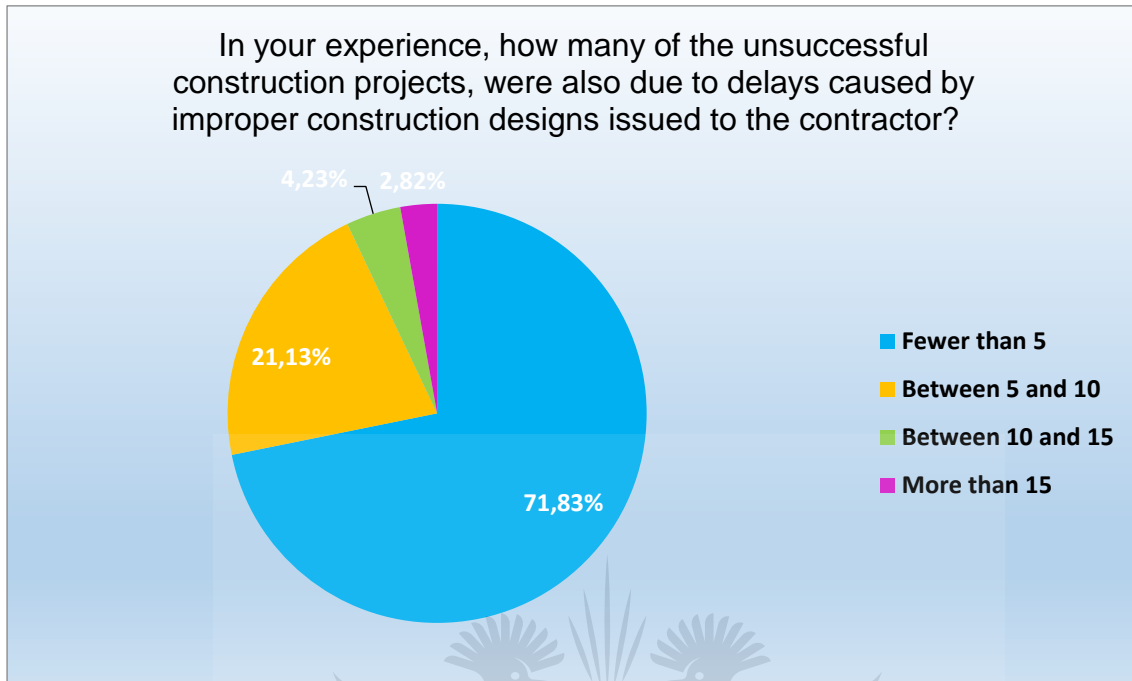
The main causes of SMME project failure were stipulated in the literature review of this study. These were presented to the respondents to represent the results in practice and the common ones were presented as follows:

**Table 4.6: Reasons for SMME Construction project failure**

Reasons for SMME construction project failure	Number mentioned	Rank
Inadequate planning	75.81%	1
Insufficient contractor experience	58.06%	2
Poor sub-contractor co-ordination	58.06%	2
Incompetent contractor and site management	50.00%	3
Lack of communication	45.16%	4
Errors during construction	41.94%	5
Inappropriate construction methods	37.10%	6
Unavailability of capital funds	35.48%	7
Poor quality materials	35.48%	7
Poor project understanding	33.87%	8
Unskilled site manpower	33.87%	8
Material shortages	19.35%	9
Material price escalation	17.74%	10
Improper equipment and faulty plant	14.52%	11
Labour disputes	14.52%	12
Lack of modern equipment	9.68%	13

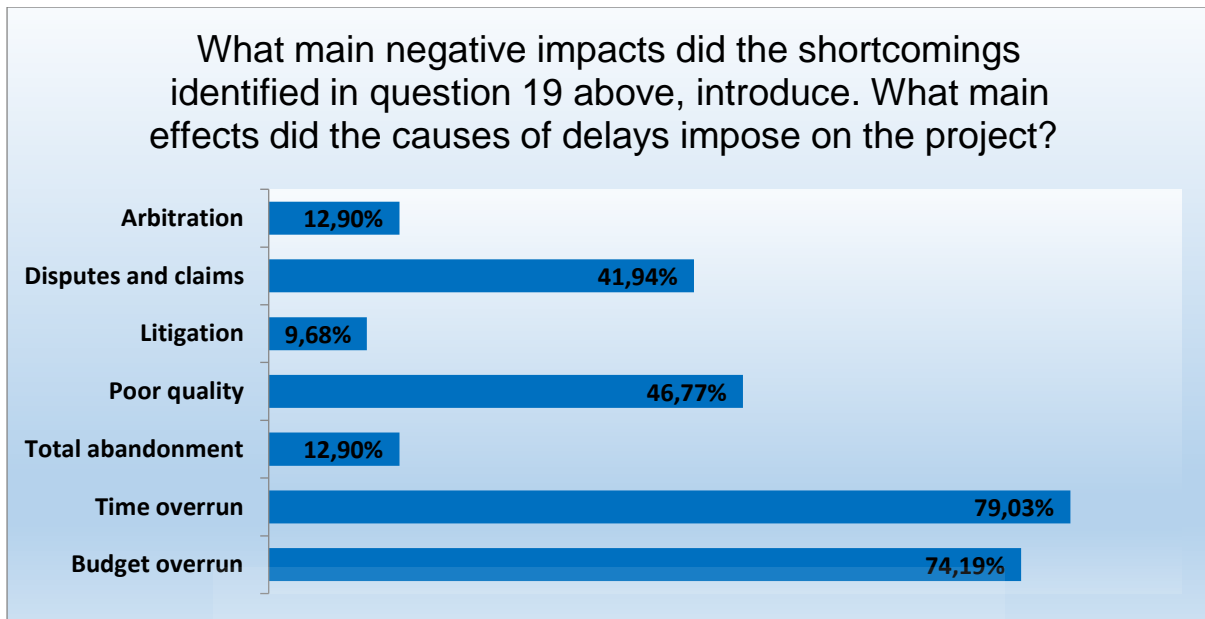
Table 4.5 indicates that 75.81% of the respondents identify inadequate and poor planning as the most common reason for SMME project failure; 58.06% stated both the subcontractors' poor co-ordination and the contractors' insufficient experience as equally common; 50% of them stated that the failure was due to the contractors incompetence and that of their site management; 45.16% blame it on the lack of communication. Errors during construction and the use of inappropriate construction methods were also reported as root causes of failure by 41.94% and 37.10% of the respondents respectively; 35.48% said the unavailability of capital funds and poor quality materials were equally common; 33.87% saw the issue of unskilled site work force and a poor project understanding as equally common. Material shortages were identified by 19.35% of the respondents as a reason for the unsuccessful completion of SMME construction projects; 17.74% mentioned material shortages; 14.52% identified labour disputes and improper and faulty equipment as equal reasons and

9.68% respondents stated that the lack of modern equipment played a crucial role in the unsuccessful completion of construction projects implemented by SMMEs.



**Figure 4.18: Number of delays due to improper construction designs**

Figure 4.18 depicts that 71.83% of the respondents specify that fewer than five of the projects that were unsuccessful were due to delays caused by improper designs issued by the client to the contractor, 21.13% reported a number between five and 10 projects, 4.23% specify a number between 10 and 15 projects and the minority 2.82% report that more than 15 of infrastructure projects that were awarded, experienced delays due to incorrect construction drawings issued for construction.



**Figure 4.19: Effects of project delays**

The shortcomings that SMMEs possess lead to certain negative effects, which result in project failure. The effects of project delays were presented to the respondents to represent the results in practice and the common ones were presented as follows:

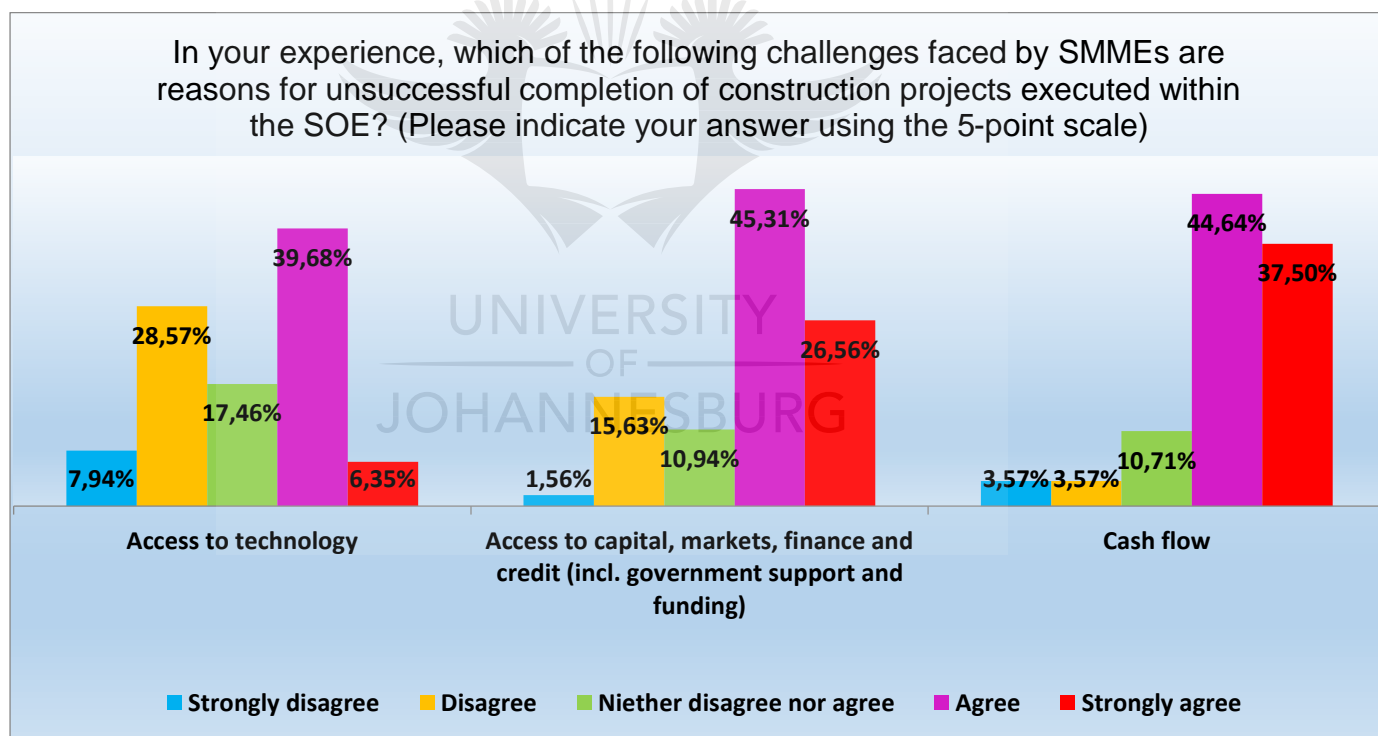
**Table 4.7: Effects of project delays**

Effects of project delays	Number mentioned	Rank
Time overrun	79.19%	1
Budget overrun	74.19%	2
Poor quality	46.77%	3
Disputes and claims	41.94%	4
Total abandonment	12.90%	5
Arbitration	12.90%	6
Litigation	9.68%	7

Table 4.6 indicates that 79.19% of the respondents stated that most projects commonly experience schedule overruns; followed by 74.19% who said their projects experienced budget overruns; 46.77% identified poor quality; 41.94% of the respondents went through disputes and claims due to the delays experienced; 12.90% stated they went through arbitration and experienced total abandonment of the

projects as equally common and 9.68% experienced litigation as an effect of the project delays experienced during project execution.

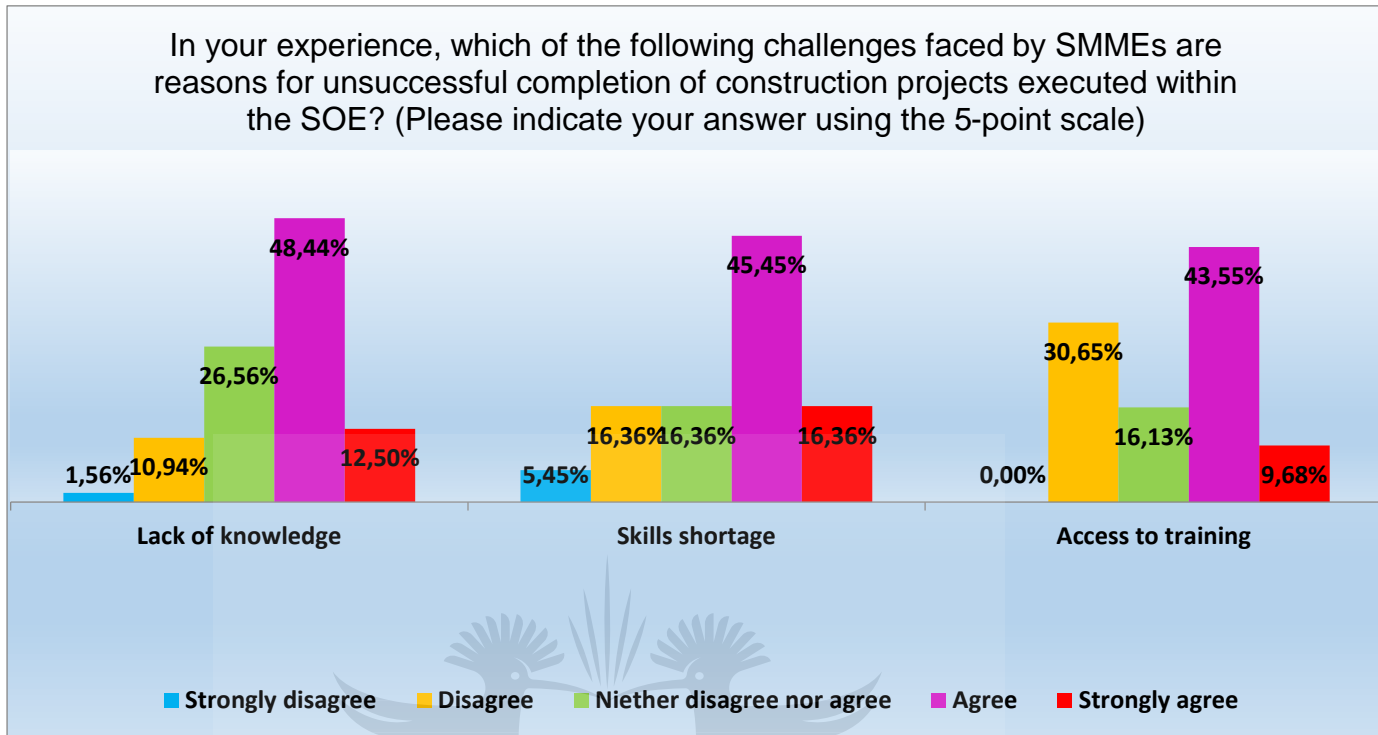
The key challenges experienced by SMMEs that lead to construction project failure were stipulated in the literature review of this study. The respondents were questioned, based on their level of agreement towards factors contributing to the failure of construction projects executed by SMMEs within their organisation (SOE). These were presented to the respondents to represent the results in practice, and were presented using a Likert 5-point scale, ranging from one for strongly disagree to five for strongly agree. The five-point scale was thereafter converted to a Mean Item Score (MIS) for each of the factors of which hindrances and challenges were faced by the SMMEs that were contracted to the respondents' projects. Furthermore, the indices were utilised for the ranking of each item to enable the cross comparison of the relative importance of the items, as perceived by the respondents.



**Figure 4.20: Challenges in implementing projects - 1**

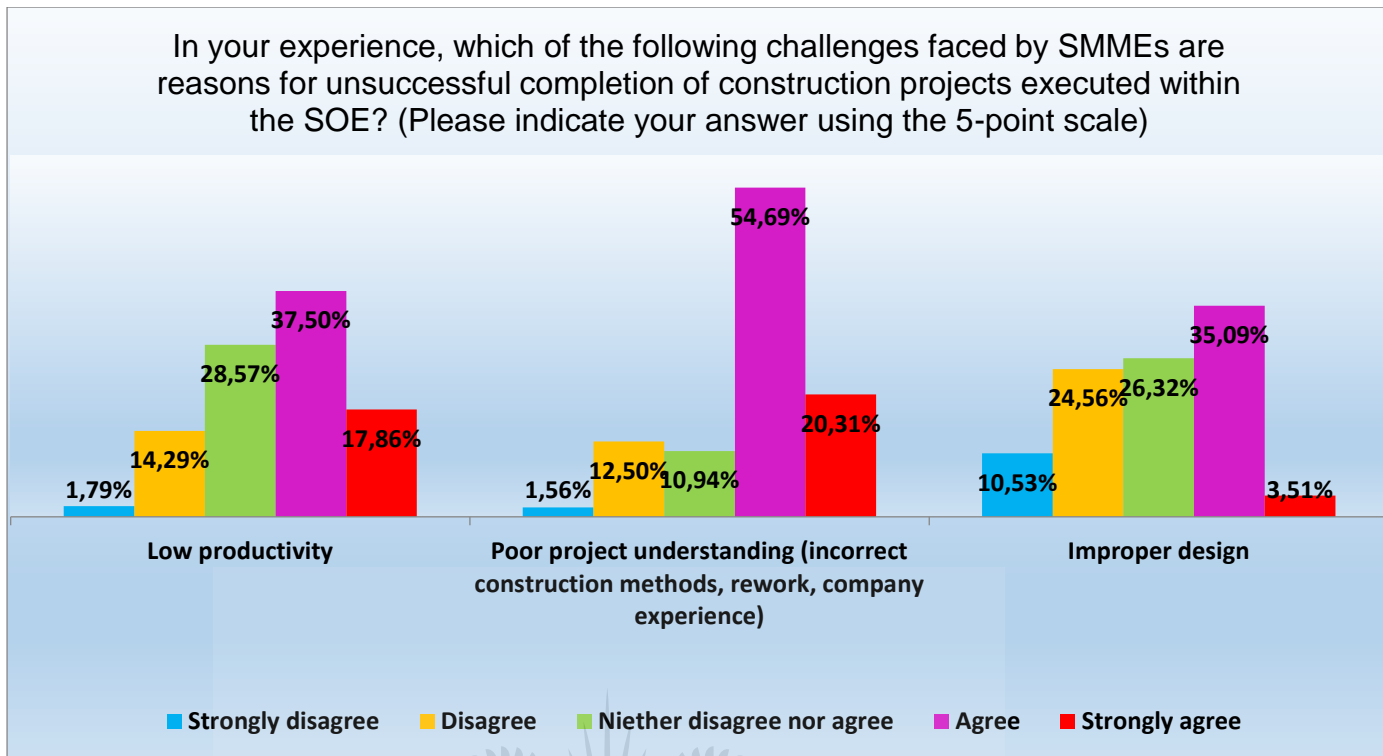
Figure 4.20 illustrates that the SMMEs face numerous challenges while implementing projects. It indicated that the majority, 45.31%, of the respondents stated that they agreed that the SMMEs had limited access to capital, markets, finance and credit and this hindered their project success. Further, 44.64% of the respondents agree that the

SMMEs were affected by the cash flow when they implement the projects and 39.68% of them indicate the limited access to technology as a contributing factor.



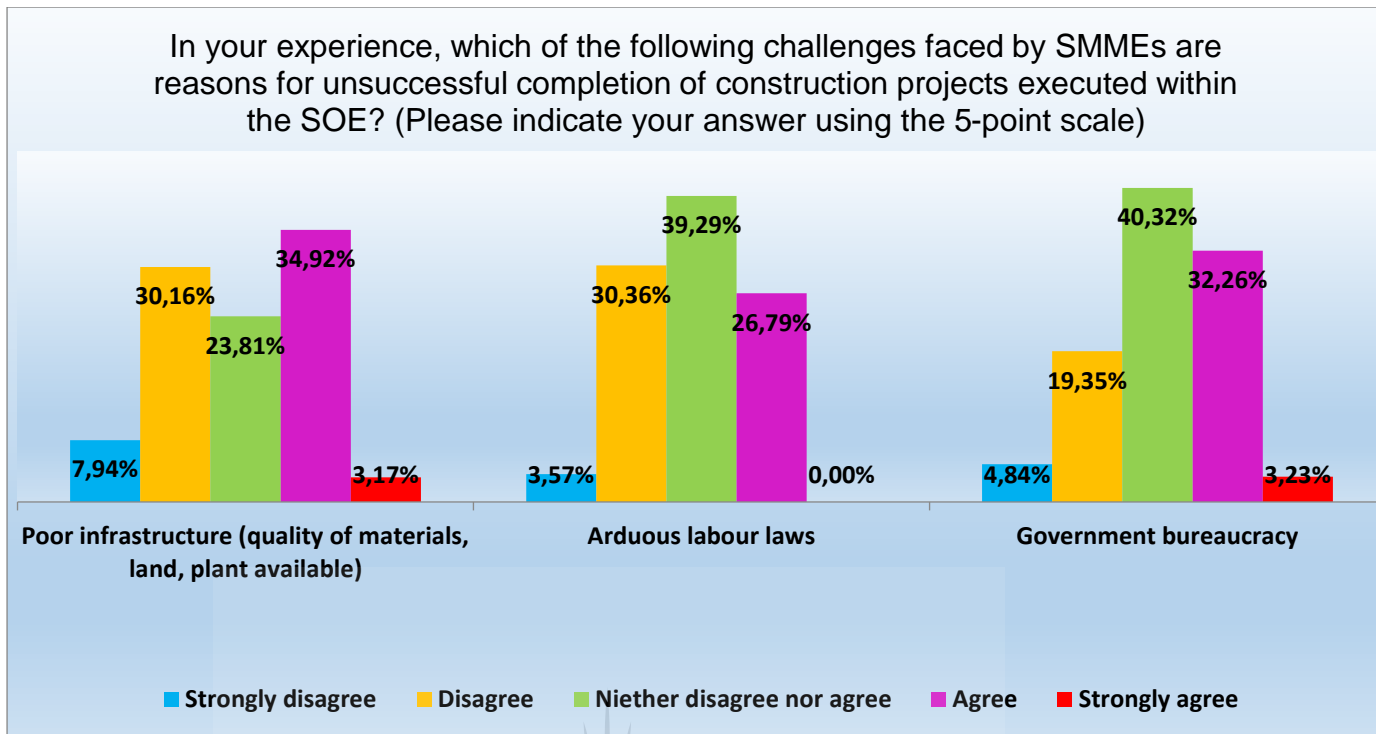
**Figure 4.21: Challenges in implementing projects - 2**

Figure 4.21 shows that 45.45% of the respondents agree that the SMMEs lacked skilled people. Furthermore, 48.44% of the respondents said the SMMEs lacked knowledge, however 30.65% of the respondents disagree that the SMMEs had limited access to training, which hindered their success in project execution.



**Figure 4.22: Challenges in implementing projects - 3**

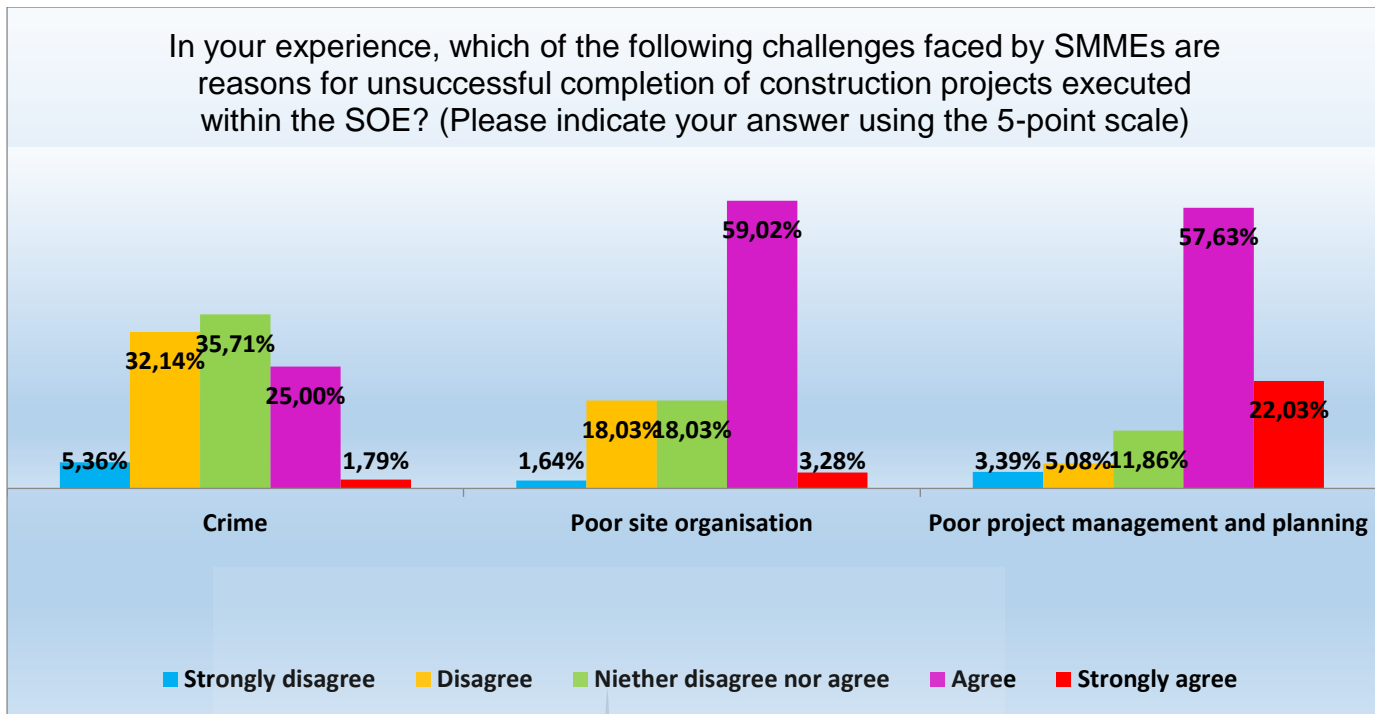
Moreover, Figure 4.22 illustrates that over half the target population, 54.69% of the respondents agree that the SMMEs were failing because of a poor understanding of the project; 37.50% of the respondents indicated low productivity and 35.09% agree that SMME project execution failures are also due to improper designs and the constant need to amend the designs during construction.



**Figure 4.23: Challenges in implementing projects - 4**

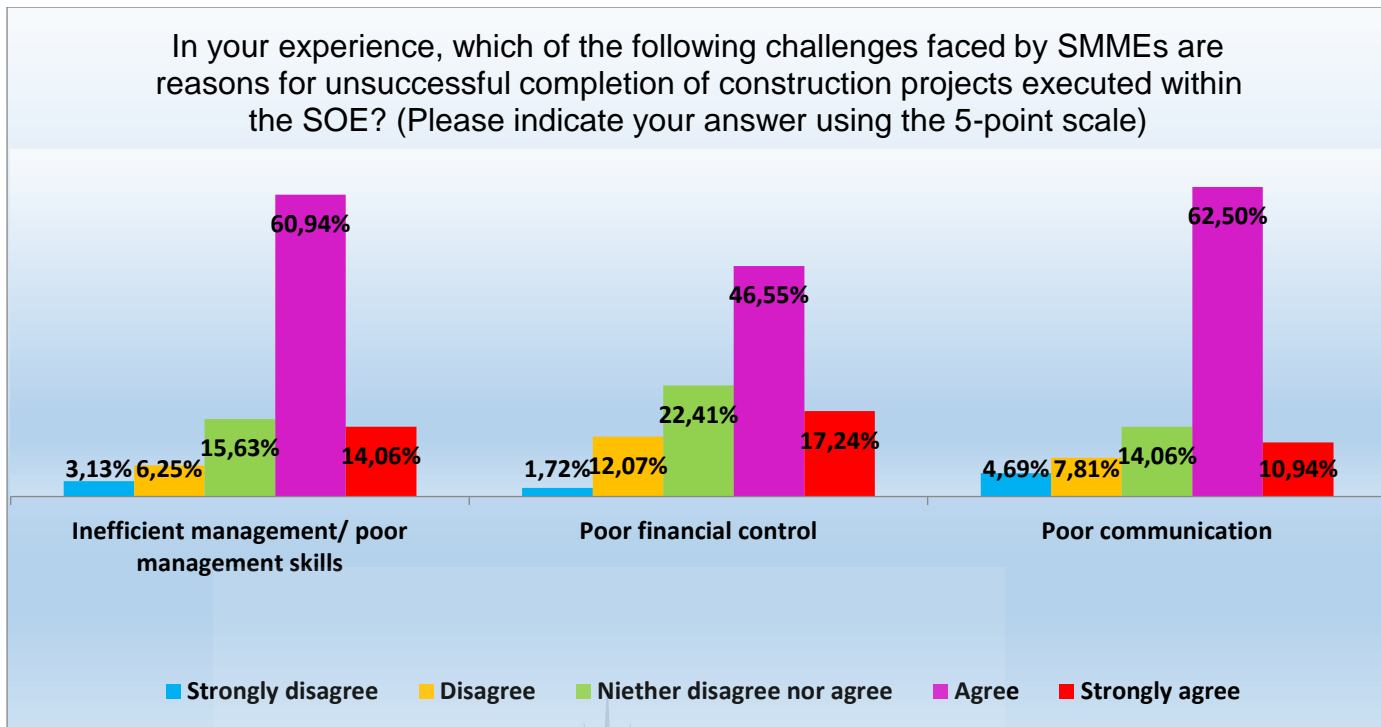
Figure 4.23 demonstrates that 32.26% of the respondents agree that government bureaucracy negatively affects the SMMEs. The SMMEs are expected to meet certain CIDB requirements before tendering for government jobs, NHBRC regulations, and meet Supplier Development and BEE targets. A sum of 30.36% of the respondents disagree that they are affected negatively by the arduous South African labour laws and 34.92% agree that quality of poor infrastructure available or at the contractor's disposal during construction, play a huge role in their failure.





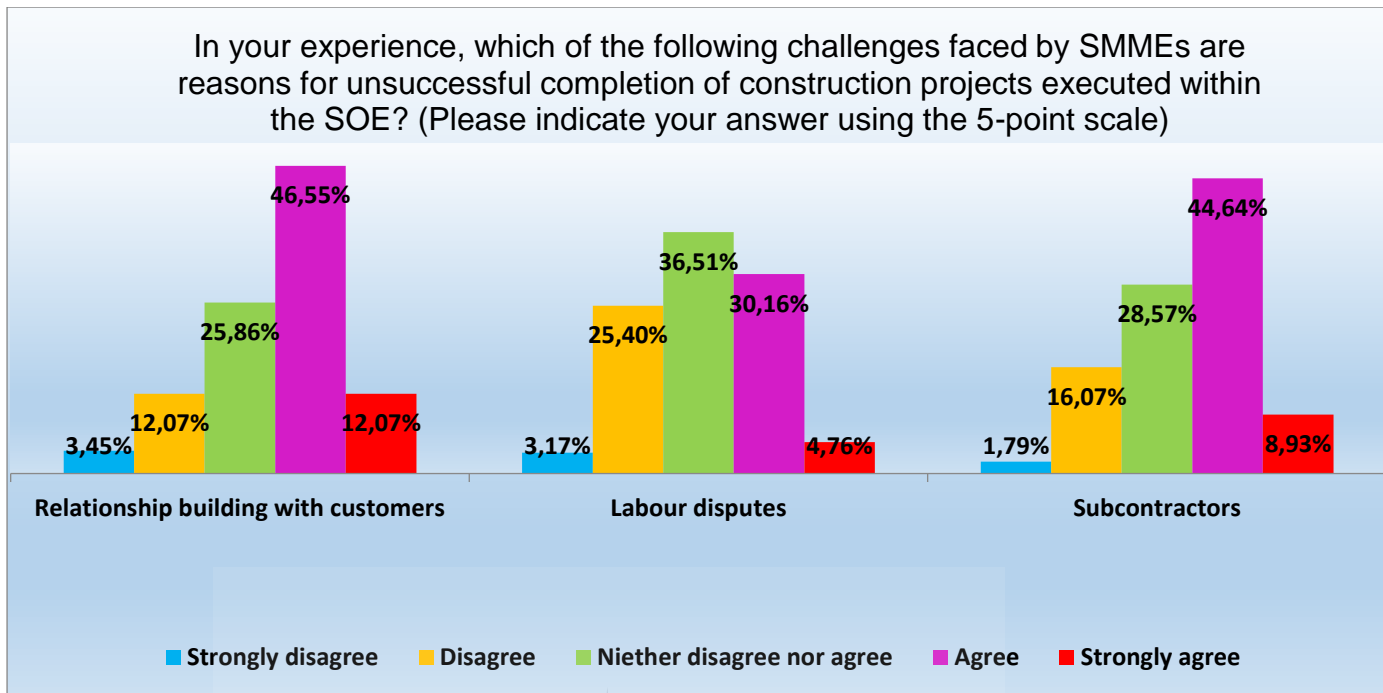
**Figure 4.24: Challenges in implementing projects - 5**

In addition, Figure 4.24 specifies that over half the sample population, 59.02% and 57.63% agree that poor site organisation and poor project management and planning led, respectively, to the SMMEs unsuccessful completion of construction projects executed within their organisation. As much as crime was identified as one of the challenges faced by South African SMMEs during construction, however though it exists, only 25% of the respondents agree and 32.14% disagree that the prevailing crime in South Africa is a valid or substantial enough reason and that hinders SMMEs to complete their projects successfully.



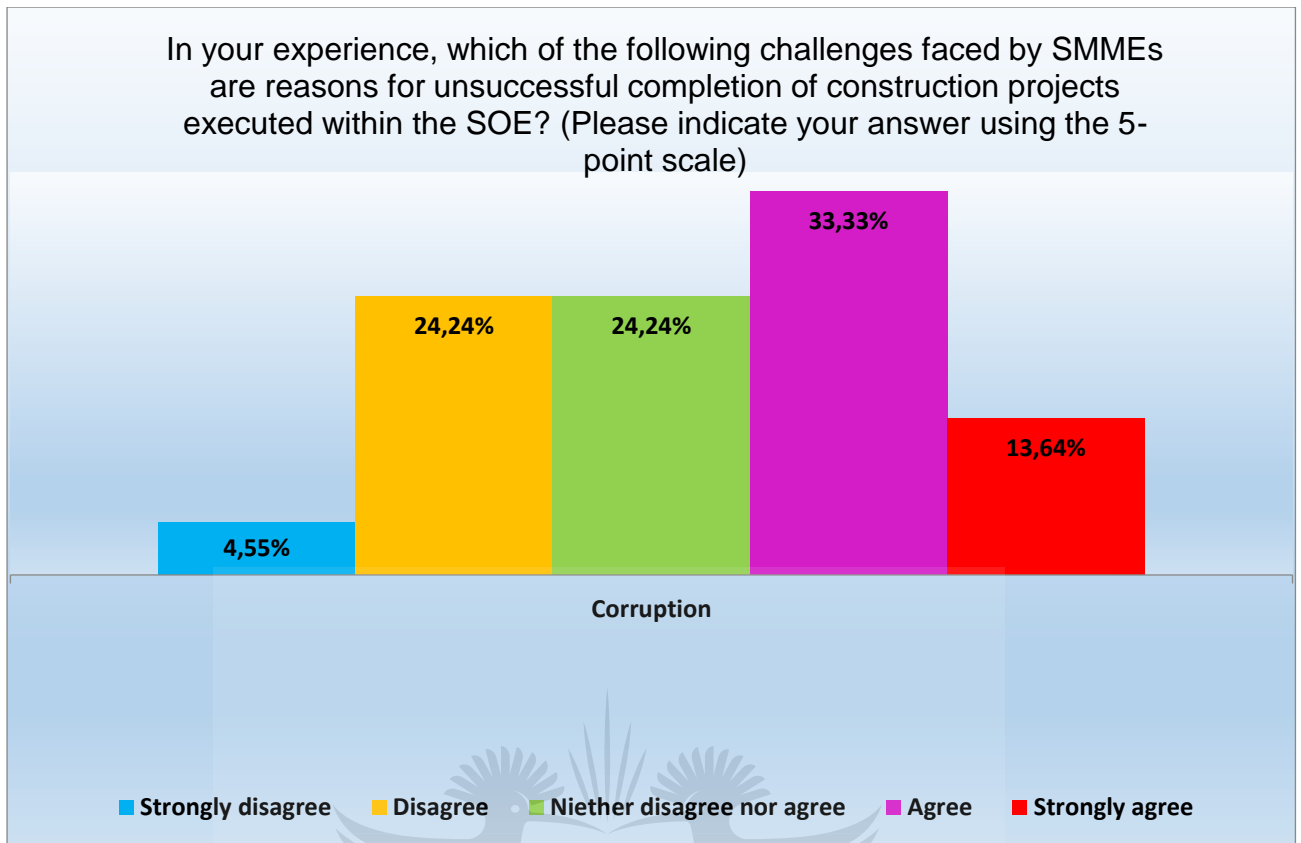
**Figure 4.25: Challenges in implementing projects - 6**

Moreover, Figure 4.25 shows that a majority 62.50% and 60.94% of the respondents believe that poor communication and inefficient management or poor management skills possessed by the SMME employees are crucial factors that leads them to failure, respectively. A further 46.55% agreed and identified poor financial control as a contributing factor.



**Figure 4.26: Challenges in implementing projects - 7**

Figure 4.26 depicts the majority of the population sample support the notion of the importance of good relationship building between buyers and suppliers, for effective Supplier Development. They believe the relationships SMMEs build with their clients could positively affect their success. A total 46.66% of the respondents agree that the poor relationship that existed between the SMMEs and their customers affected them negatively, 44.64% identified the subcontractors, which let the main contractors down either due to a lack of skills, poor quality and/or low productivity. Lastly, 30.16% agreed that labour disputes that occurred during the execution phase also led to the projects not being completed on time, within budget or with the specified quality.



**Figure 4.27: Challenges in implementing projects - 8**

Finally, Figure 4.27 displays that the majority respondents, 33.33% agree that the predominance of corruption in South Africa definitely hindered the success of some projects implemented by SMMEs. An equal number of 24.24% of the respondents were either neutral or disagreed that corruption was a contributing factor during project execution, which led to project failures. 13.64% of them strongly agreed and 4.55% strongly disagreed to the impact of corruption.

Furthermore, the respondents stated other reasons that in their experience, they felt were challenges faced by SMMEs, which lead to unsuccessful completion of construction projects executed within the SOE. Amongst these, the respondents identified racism, nepotism, the type of contract being the one that determines the pace of completion, adherence to applicable registered professional bodies not being enforced for key members.

#### **4.3.2.2 Challenges in SMME project execution (MIS)**

The MIS computation was calculated using the sum of all the weighted responses in relation to the total responses on a specific aspect. The basis was the principle that

the scores of the respondents on all the selected criteria, considered together, are the empirically determined indices of relative importance. The index of MIS of a specific factor is the sum of the respondents' actual scores (on the 5-point scale) given by all the respondents as a proportion of the sum of all maximum possible scores on the 5-point scale that all respondents could give to that criterion.

Weighting was allocated to each response, ranging from one to five for responses of “*strongly disagree*” to “*strongly agree*” and was expressed mathematically as follows using Lim and Alum’s (1995), method:

$$MIS = \frac{1n1 + 2n2 + 3n3 + 4n4 + 5n5}{\sum N} \dots\dots\dots equation 1$$

Where;

**n1** = number of respondents for strongly disagree:.....1

**n2** = number of respondents for disagree: .....2

**n3** = number of respondents for neither agree nor disagree: .....3

**n4** = number of respondents to agree: .....4

**n5** = number of respondents to strongly agree: .....5

**N** = total number of respondents

Following the mathematical computation, the criteria were ranked in descending order of their MIS. Table 4.8 presents the response analysis of the respondents' answers to question 22.

**Table 4.8: Challenges in implementing projects Index Table**

Effects of project delays	Weighted average	Rank
Cash flow	4.09	1
Poor project management and planning	3.90	2
Access to capital, markets, finance, and credit (incl. government support and funding)	3.80	3
Poor project understanding (incorrect construction methods, rework, company experience)	3.80	3
Inefficient management/ poor management skills	3.77	4
Poor communication	3.67	5
Poor financial control	3.66	6
Lack of knowledge	3.59	7
Low productivity	3.55	8
Relationship building with customers	3.52	9
Skills shortage	3.51	10
Poor site organisation	3.44	11
Subcontractors	3.43	12
Access to training	3.32	13
Corruption	3.27	14
Government bureaucracy	3.10	15
Labour disputes	3.08	16
Access to technology	3.08	16
Improper design	2.96	17
Poor infrastructure (quality of materials, land, plant available)	2,95	18
Arduous labour laws	2.89	19
Crime	2.86	20

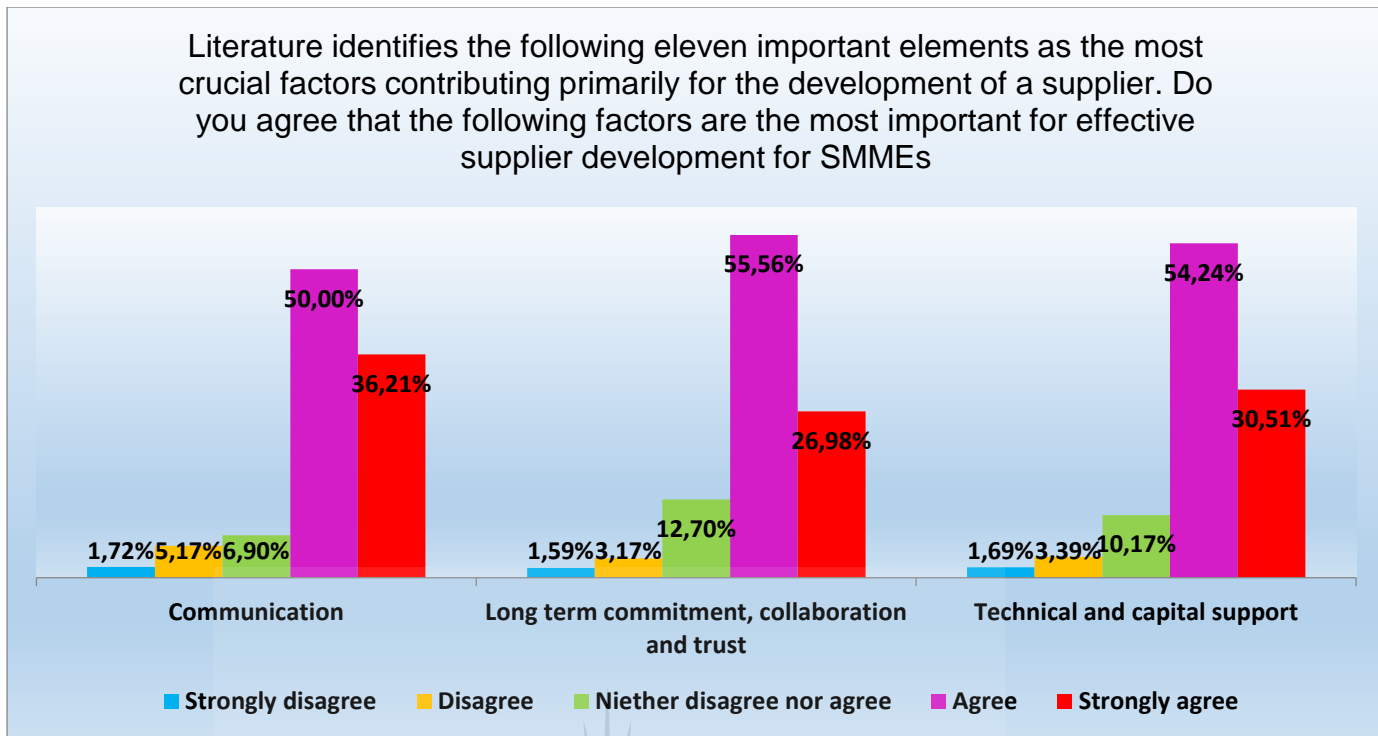
### 4.3.3 Supplier Development practice

This section initially presents what best practice regards as crucial elements to ensure effective Supplier Development, as the primary objective of the study. It indicates a framework of primary tools that a supplier needs to be given or enhanced, that are best believed to lead a supplier to success. The respondent's level of agreement towards factors contributing to effective Supplier Development as identified by literature, is presented using a Likert 5-point scale, ranging from one for strongly

disagree to five for strongly agree. These results represent a primary research objective, as discussed in Chapter 1.

The literature review also indicated that one of the main challenges faced by SMMEs is cash flow and funding. In Chapter 2, it is highlighted that the SOEs approach for Enterprise Supplier Development addresses both non-financial and financial ESD initiatives. Amongst the two sub-categories is capacity building, where the beneficiaries are provided training, skills improvement, and certification, using Transnet School of Academy learnerships; skills transfer by on-site mentoring; finance, and building support via shorter payment terms. Therefore, this section further presents the results to determine the truth of an existing relationship between payment periods, cash flows and the success of the projects by SMMEs.

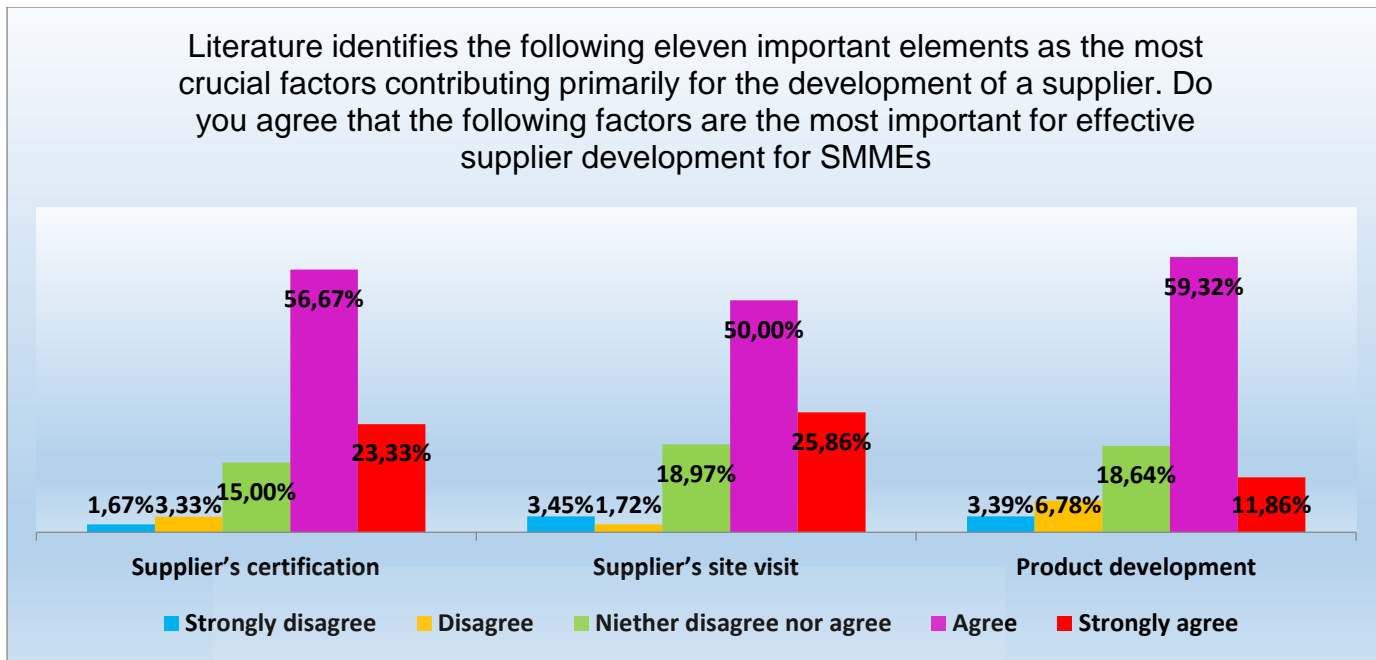
Lastly, the role of government in developing sustainable SMMEs in the construction industry, using initiatives outside and within the SOE, is unpacked. The literature review highlighted that government has a National Contractor Development Programme that provided funding and training for SMMEs and Enterprise Development Hubs within the SOE to tackle challenges of access to funding, tax compliance issues, business start-up issues, or business administration issues and not knowing how to get BEE verification. The results of the government programmes is presented.



**Figure 4.28: Crucial factors contributing to effective Supplier Development - 1**

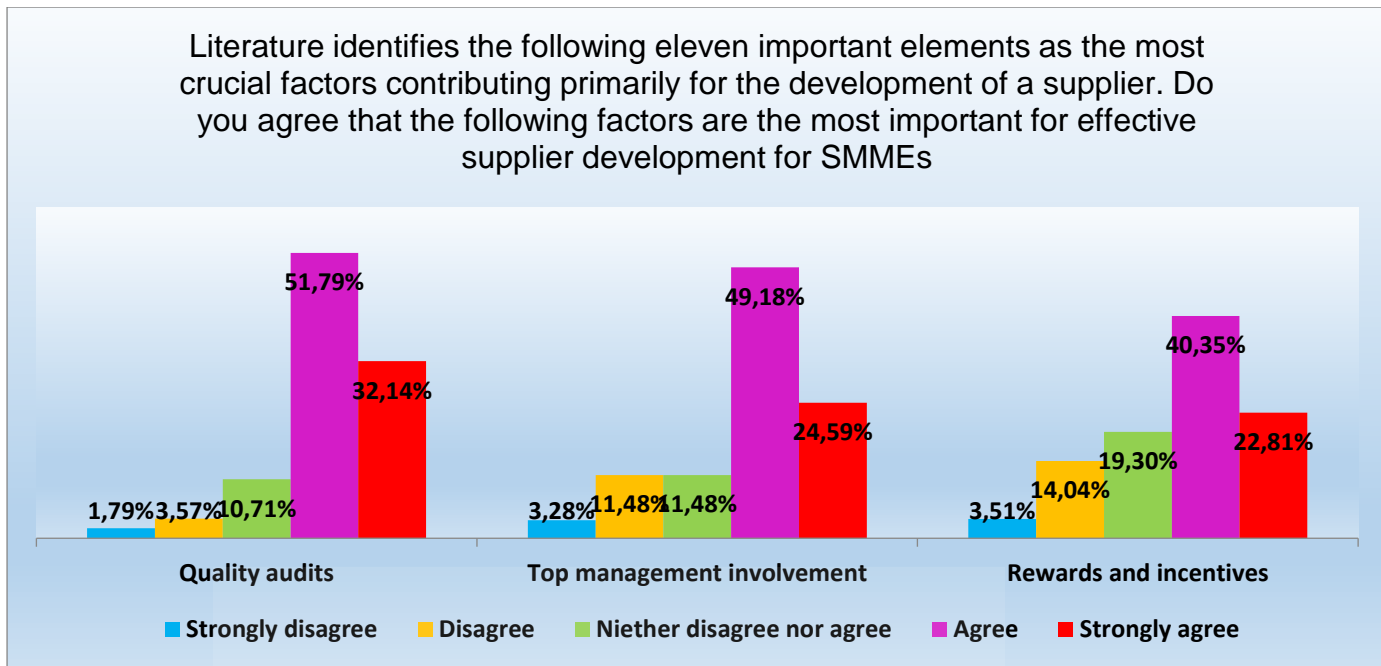
Figure 4.28 demonstrates that about or over half of the population of the target sample population, believe that long-term commitment, collaboration and trust, technical and capital support and communication are equally important factors, which play crucial roles in the development of the suppliers. It is illustrated that 55.56% of the respondents stated long-term commitment, collaboration, and trust; 54.24% agree that technical and capital support and 50% agree that communication is primary for effective Supplier Development of SMMEs.





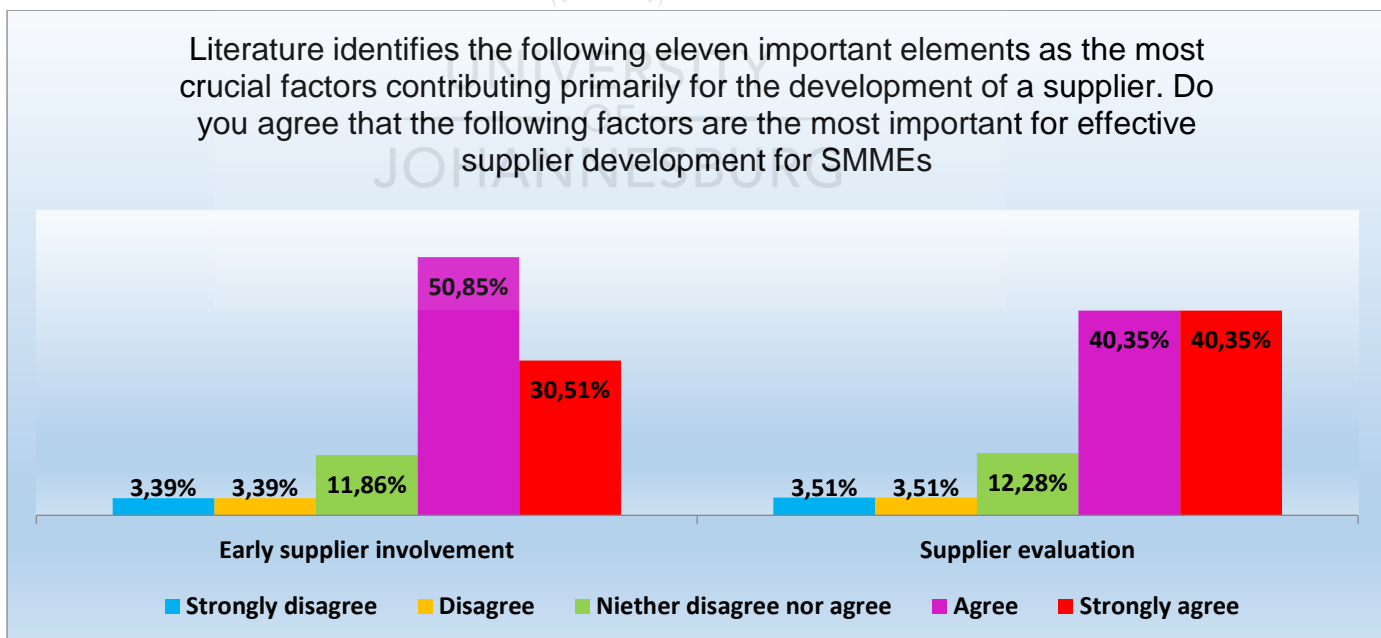
**Figure 4.29: Crucial factors contributing to effective Supplier Development - 2**

Figure 4.29 also validates the importance of supplier certification, involving the supplier during the product development stages and visiting the supplier's sites. Literature is validated because 59.32%, 56.67% and 50% of the respondents agree on product development; supplier's certification and supplier's site visits respectively, being crucial factors.



**Figure 4.30: Crucial factors contributing to effective Supplier Development - 3**

Figure 4.30 demonstrates that 32.14% strongly agree that quality audits are vital; 24.59% stated involvement of top management and 22.81% of the respondents believe rewards and incentives would enable and/or result in the effective Supplier Development for the SMMEs.



**Figure 4.31: Crucial factors contributing to effective Supplier Development-4**

Figure 4.31 establishes that 40.35% of the respondents both agree and strongly agree that the evaluation of a supplier is a critical and crucial factor for effective Supplier

Development for SMMEs in South Africa and within their organisation. Amongst these, 50.85% of the respondents agree on early supplier involvement and 30.51% strongly agree on this factor.

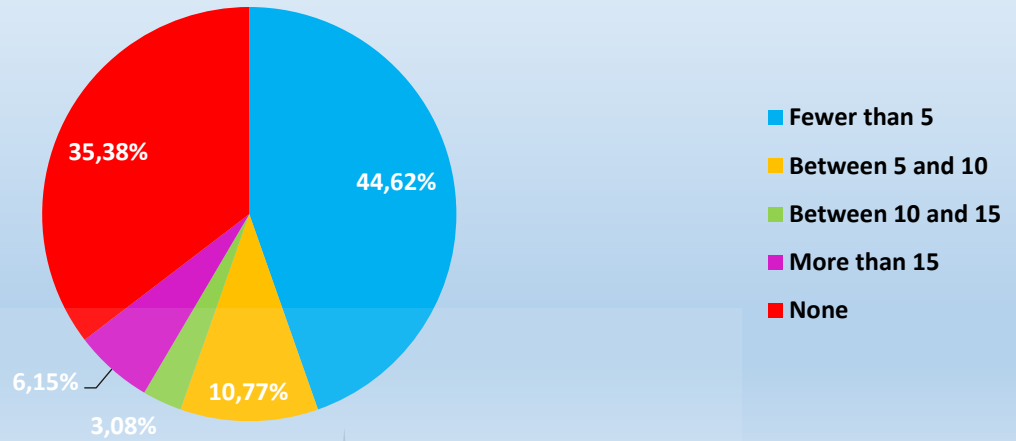
#### 4.3.3.1 Factors for effective Supplier Development MIS

Following the mathematical computation previously used in question 22; the criteria were ranked in descending order of their MIS. The following table presents the response analysis of the respondents' answers to question 23.

**Table 4.9: Factors for Effective Supplier Development Index Table**

Crucial factors for effective Supplier Development	Weighted average	Rank
Communication	4.14	1
Supplier evaluation	4.11	2
Quality audits	4.09	3
Technical and capital support	4.08	4
Long term commitment, collaboration, and trust	4.03	5
Early supplier involvement	4.02	6
Supplier's certification	3.97	7
Supplier's site visit	3.93	8
Top management involvement	3.80	9
Product development	3.69	10
Rewards and incentives	3.65	11

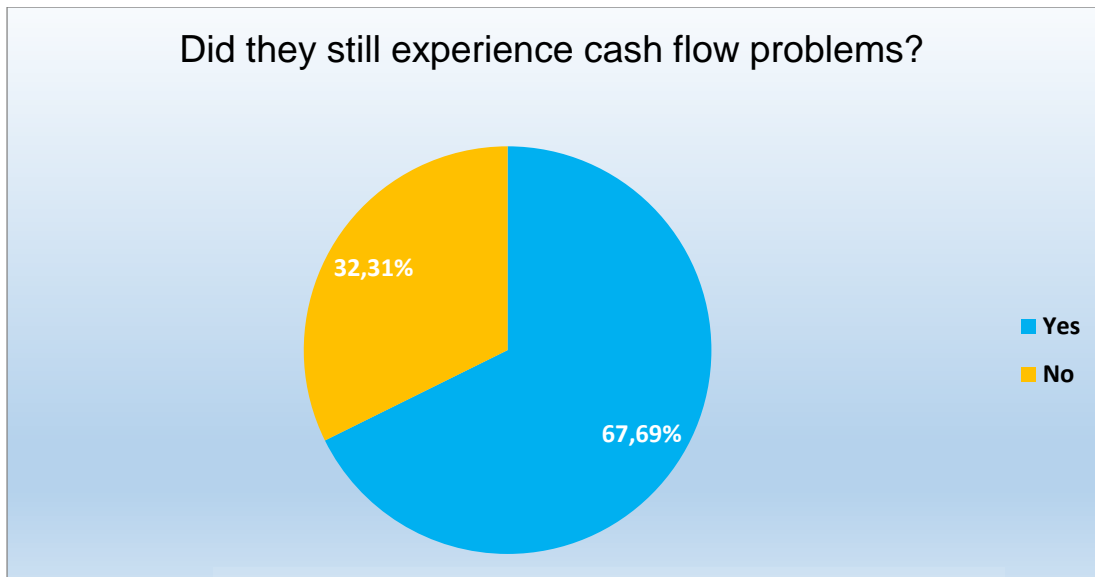
How many of the SMMEs that implemented your projects, had a shorter payment period (i.e 7 or 14 days), compared to the SOE's standard 30 days invoice payment term?



**Figure 4.32: Period for receipt of payments**

It is very important that clients pay SMMEs as soon as possible due to the small nature of the businesses. The SOE arranges shorter payment period of seven or 14 days for those SMMEs with a turnover of R500 000 per annum or less.

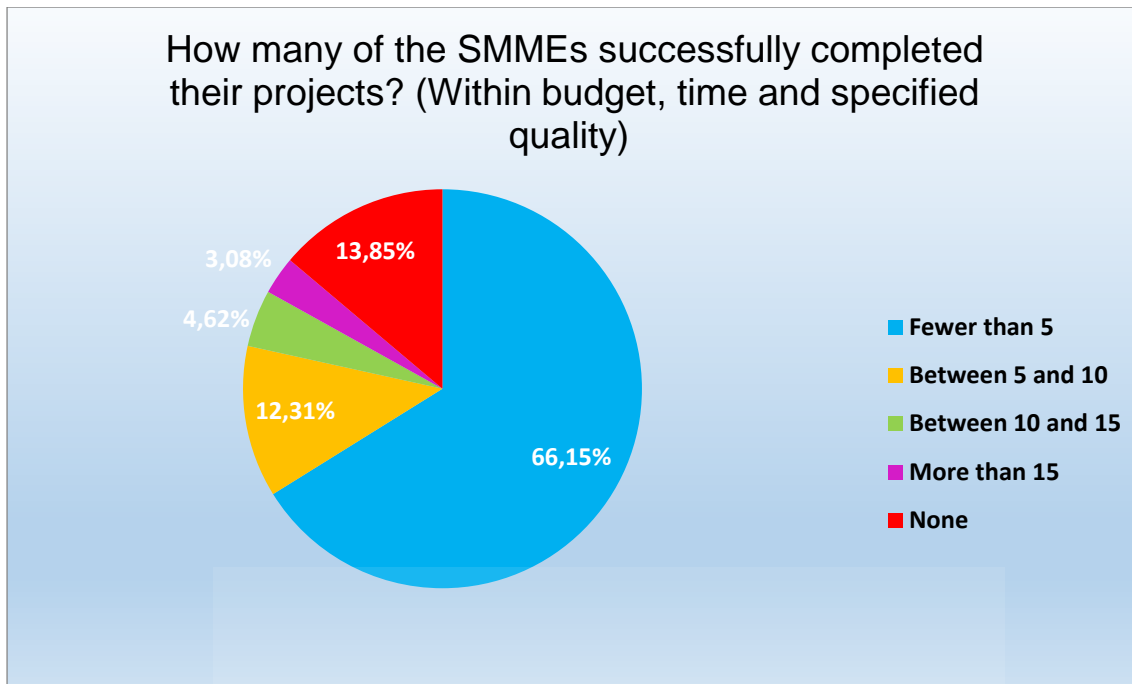
Figure 4.32 depicts that of the projects in which the respondents were involved, 44.62% of the respondents said that fewer than five SMMEs, were granted a shorter payment period and received their payments in less than a month; 35.38% said all the SMMEs they worked with were paid on the standard thirty days term; 10.77% stated a number of between five and ten SMMEs; 6.15% stated more than fifteen; and only 3.08% indicated that ten to fifteen SMMEs received payments within seven or fourteen days.



**Figure 4.33: Cash flow**

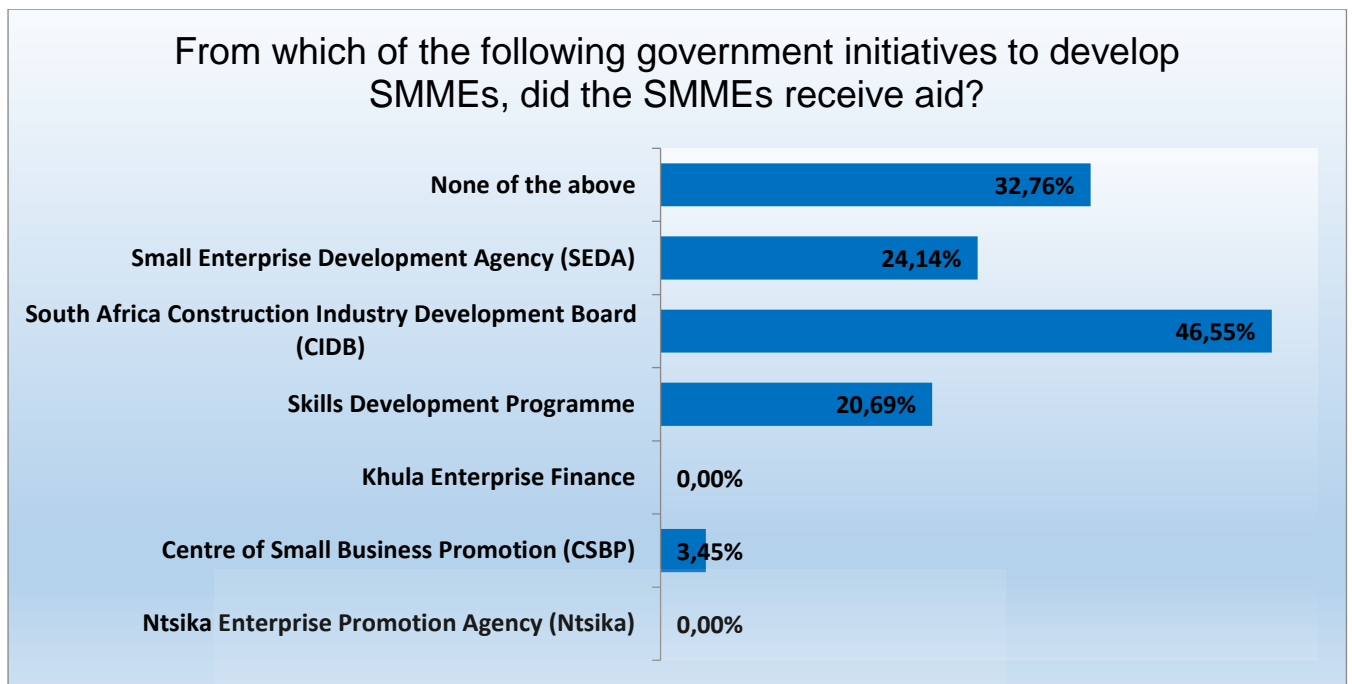
A construction company is more likely to experience problems when they have a negative cash flow because cash flow acts as one of the main drivers for a sufficiently run company. It can lead to liquidation should the company not pay its creditors. Figure 4.33 illustrates that 67.69% of the respondents stated that the SMMEs that did receive shorter payment period still experienced cash flow problems just as much as those who received payment after a month; and only 32.31%, did not experience cash flow problems.

It is evident in several studies that SMMEs view cash flow as one of the main challenges hindering their company development. A study undertaken by Eljon and Mbohwa (2015) indicated that 38% of SMMEs are experiencing high cash flow difficulties.



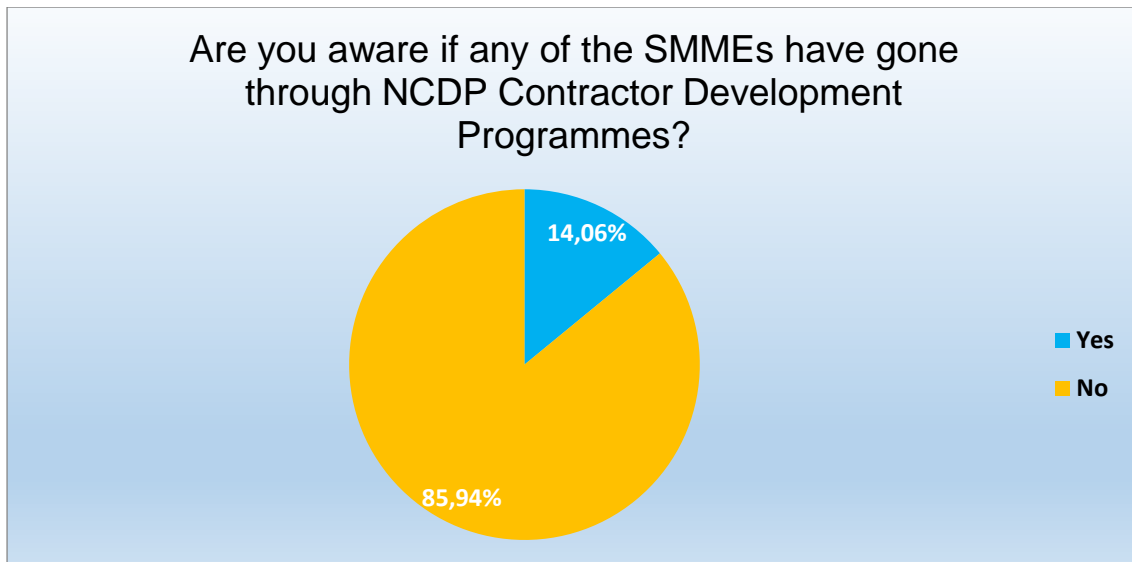
**Figure 4.34: Number of successful projects by SMME with shorter payment terms**

A longer period of payment may negatively affect the SMMEs' cash flow and this may further affect the contractor in completing their projects on time. Figure 4.34 above, indicates that 66.15% of the respondents stated that of the SMMEs that did receive shorter payment periods and received their payments in less than a month, fewer than five completed their projects successfully; 13.85% said none of the projects were completed successfully; 12.31% stated a number of between five and ten projects; 4.62% indicated between ten and fifteen projects; and only 3.08% stated that more than fifteen projects were completed successfully.



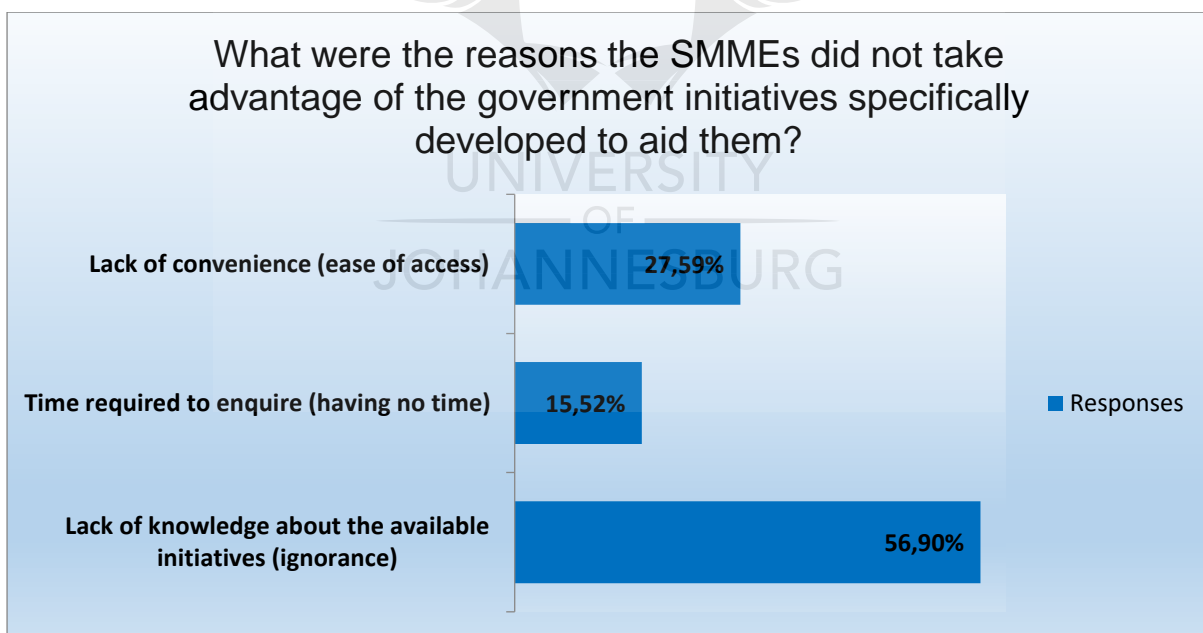
**Figure 4.35: Government initiatives for Supplier Development**

This presents the programmes provided by the government in developing sustainable SMMEs in the construction industry as identified in the literature review. The results presented by Figure 4.35 portray that the majority of 46.55% respondents stated that the SMMEs received aid from the CIDB; 32.76% said the SMMEs did not receive any aid from any of the government initiatives; 24.14% said SEDA assisted the SMMEs; 20.69% stated that the SMMEs went through the Skills Development Programme; 3.45% stated the SMMEs received aid from CSBP and none of the respondents were aware the any of the SMMEs that were contracted on their projects, had been aided by Khula Enterprise Finance and Ntsika, at any point in time.



**Figure 4.36: National Contractor Development Programmes**

Figure 4.36 divulges that the 85,94% majority of the respondents are not even aware whether the SMMEs that are contracted on their projects, have ever participated in national contractor development programmes, and that only 14,06% have the knowledge that the SMMEs have or are participating.



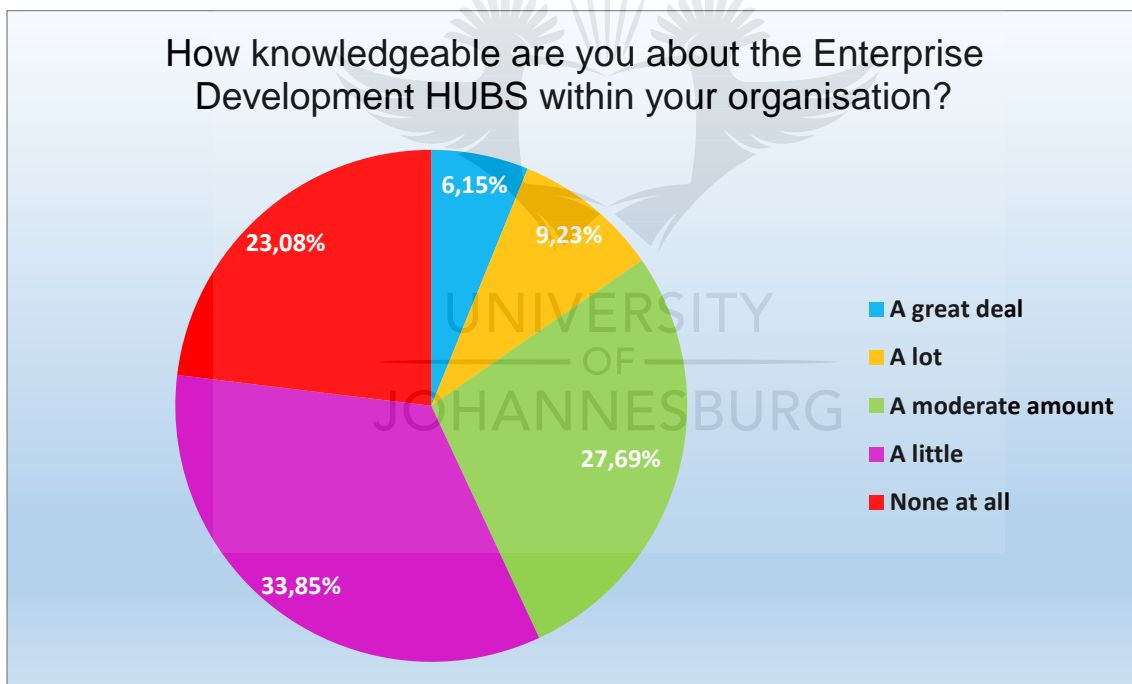
**Figure 4.37: Reasons for SMMEs not utilising government initiatives for aid**

Figure 4.37 portrays that the 56.90% respondents believe that lack of knowledge by SMMEs about available government initiatives, is the highest reason they do not take advantage of such programmes. This implies the SMMEs are not invited and/or not aware of these programmes. However, this is contradictory to the information supplied



by the CIDB office that stated that attendance is poor and unsatisfactory regardless of the invitations sent out to contractors. CIDB identified the lack of resources such as emails, as one of the contributing factors to contractors lacking awareness. A study conducted on contractors in the Free State, by Thwala and Mofokeng (2012), supports the results above because it highlighted that only 26% of the respondents attended contractor development programmes, while the majority, 74%, of the respondents did not attend because they were not exposed to contractor development programmes.

The results indicate that 27.59% of the respondents believed that the SMMEs were not using the government initiatives for Supplier Development, because of the diminished possibility to easily get access to government aid and so there is no advantage for the SMME to do so; followed by 15.52% of the respondents who indicated that the SMMEs were lazy and simply did not make time to enquire about the aid available to them.

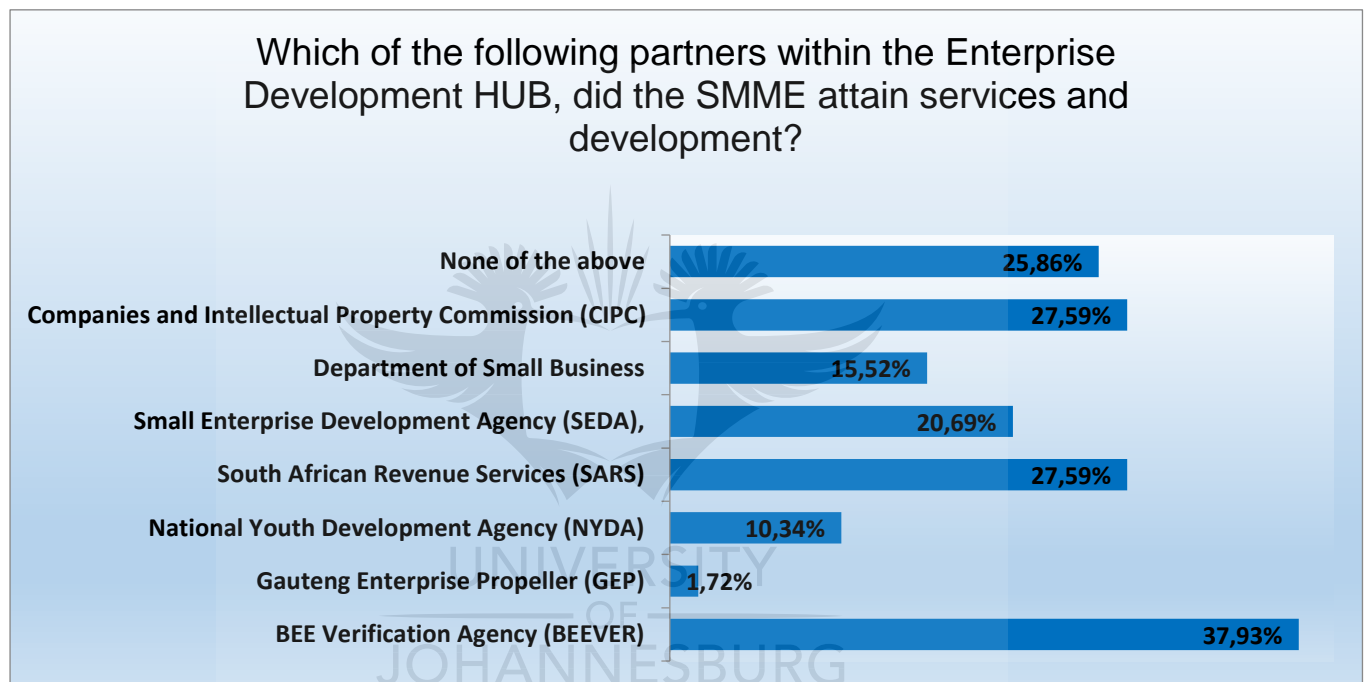


**Figure 4.38: Awareness on Enterprise Development Hubs**

The literature review structure unfolds by introducing the South African government initiatives to develop supplier and national contractor development programmes to assist SMMEs. Moreover, it indicated that other than the overall government initiatives, the South African government regulated that SOEs must have their own internal Supplier Development programme, which are in line with their objectives. The study zoomed into the Supplier Development within the SOE deeper and to reveal that the

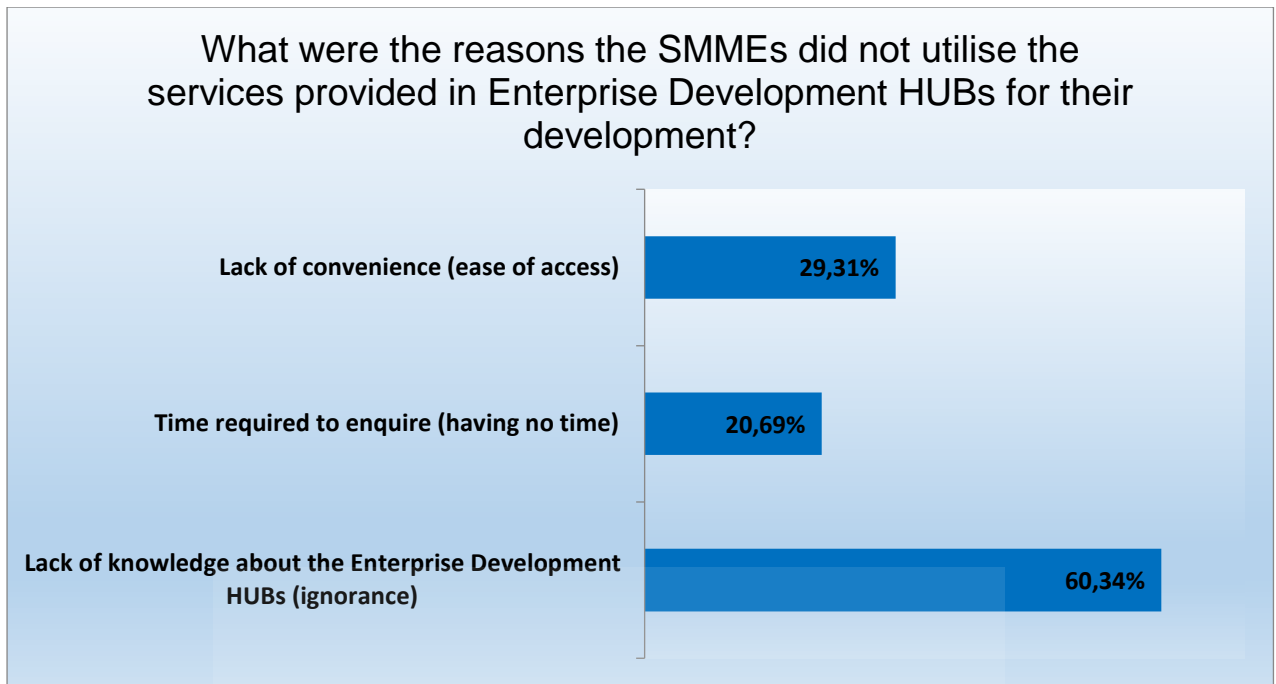
SOE had Enterprise Development Hubs initiated to assist SMMEs with all the support they may require to successfully execute projects.

Figure 4.38 reveals that the majority, 33.85% respondents have little knowledge when it pertains to these Hubs within their organisation; 27.69% respondents have a moderate amount; 23,08% have no knowledge at all; and 9.23% and 6.15% know a lot or have a great deal of knowledge regarding the Enterprise Development Hubs, respectively.



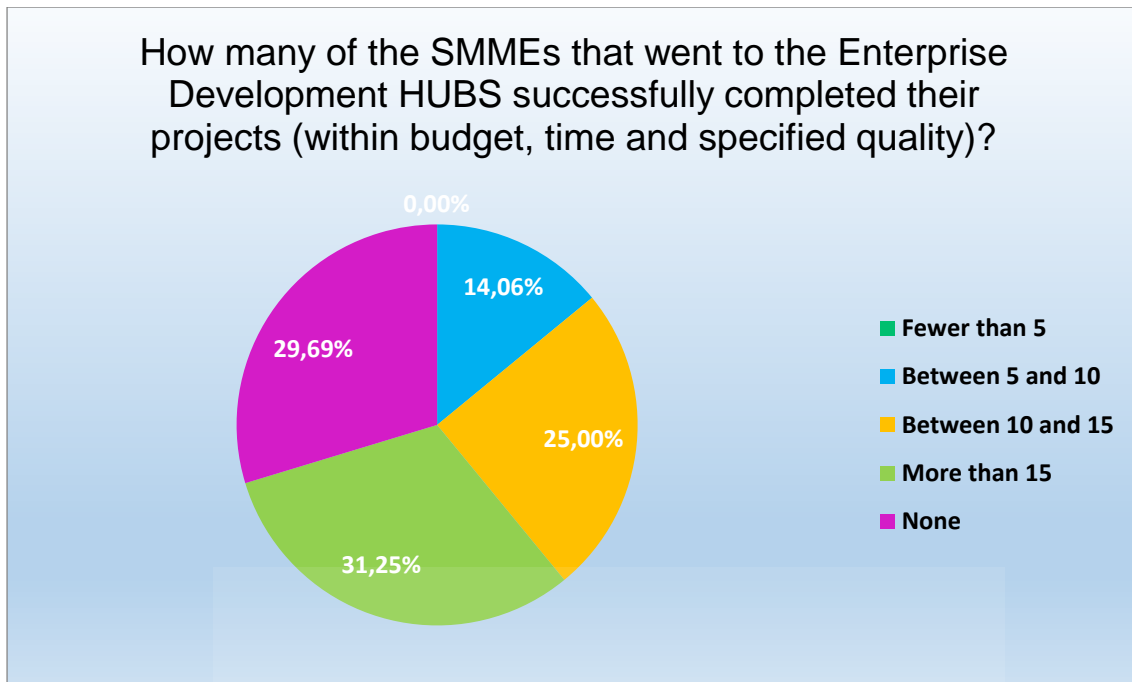
**Figure 4.39: Services offered in Enterprise Development Hubs**

There are different services offered by a of cluster agencies that collaborate to make up the Enterprise Development Hubs. The results presented by Figure 4.39 disclose that 37.93% of the respondents stated that the SMMEs attained services and development from the BEEVER; 27.59% said the SMMEs received assistance from the CIPC and SARS equally; 25.86% said the SMMEs made no use of any of the services provided; 20.69% said SEDA assisted the SMMEs; 15.52% stated that the SMMEs utilised the services provide by the Department of Small Business; lastly, 10.34% and 1.72% of the respondents stated the SMMEs sought the NYDA and GEP, respectively, as service providers.



**Figure 4.40: Reasons for SMMEs not utilising Enterprise Development HUB**

The results show that 60.34% of the respondents believe that lack of knowledge by SMMEs about the Enterprise Development Hubs, is the highest reason the SMMEs do not make use of the services provided by the companies within the Hubs for Supplier Development; 29.31% of respondents state that it is because of the diminished possibility to easily get access to the Hubs and so it is not convenient for the SMME to do so; followed by 20.69% of the respondents who indicated that the SMMEs were simply lazy and not making time to visit the Hubs and make use of the services available to them, with which they require assistance.



**Figure 4.41: Project success of SMMEs who utilised Enterprise Development Hubs**

Figure 4.41 represents the number of infrastructure construction projects that were completed successfully amongst those SMMEs who made use of the services stated in figure 4.39, from the Enterprise Development Hubs. Most of the respondents, precisely 31.25%, stated that more than 15 construction projects were completed successfully by the SMMEs who sought guidance from the Hubs; 29.69% said none of the projects were completed successfully, 25% indicated between 10 and 15 projects; 14.06% of the respondents stated the completion of between five and 10 projects successfully and none of the respondents stated a number of five or less successful projects completion.

These results indicate that most of the SMMEs who visited the Hubs were getting a better success rate for the projects they executed and completed. Though there is concern regarding the 29.69% of the respondents that stated no successful completion by the SMMEs who went to Hubs, however, we find that by adding percentages for all successfully completed projects, whether between five and 10, between 10 and 15 and more than 15, it can be seen that it makes up 70.31% of the sample that had a greater than five projects success rate. This accounts for the majority and shows that the Hubs do have a positive impact.

#### 4.3.3.2 Changes required within the SOE organisation to ensure improved frequency of SMME project success.

The written responses to the open-ended questions depicted a trend of common responses that were mentioned by a majority of the respondents. The common responses were categorised according to their similarity and by the number of times they were mentioned. The percentages were calculated using the standard statistical formula, as follows:

$$\% = \frac{\alpha \times 100}{\sum \mu}$$

$\alpha$  = Number of times mentioned

$\sum \mu$  = Total respondents

The number of times they were mentioned was presented as follows:

**Table 4.10: Changes required within SOE Organisation**

Changes or improvements required within SOE	Number mentioned	Rank
Further technical, project management training and development for SMMEs	15.22%	1
Awareness on Hubs for both SMMEs and employees, guidance and support during execution	15.22%	1
Financial support and cash flow assistance, via upfront capital provision and shorter payment durations	9.78%	2
Awareness platforms for engagements prior to tender and execution: seminars and workshops, for SOE SHEQ requirements, regulations, clarity on expectations and education on compliance	8.70%	3
Evaluation, verification, interviews, and gap analysis to identify areas of focus for Supplier Development for SMME	4.35%	4
Continuous engagement and improvement in methods of communication for effective communication	3.26%	5
Top management involvement and support	3.26%	5
Change in corrupt mind-set	2.17%	6
More opportunities to SMMEs	2.17%	6

When asked about the possible changes or improvements to be undertaken within the organisation to improve the rate of project success, in open-ended questions, the most common responses from the respondents was:

*“SMMEs require frequent proper training and developed via Supplier Development, and mentorship programmes, etc.”*

*“SMMEs need to be provided with guidance and support and awareness of available Hubs and existing services for both SMMEs and employees.”*

This statement was confirmed by 15.22% of the respondents; 9.78% respondents mentioned financial support and cash flow assistance, via upfront capital provision and shorter payment durations for SMMEs; 8.70% stated the need for awareness platforms for engagements prior to tender and execution: seminars and workshops, for SOE SHEQ requirements, regulations, and clarity on expectations and education on compliance. A further 4.35% identified a need to improve evaluation, verification, conduct interviews and the analysis of gaps by knowing the Supplier Development history, to identify areas of focus for Supplier Development for SMMEs. An equal improvement in top management involvement and support; and the requirement for continuous engagement and improvement in methods of communication for effective communication was mentioned by 3.26% of the respondents. 2.17% stated a change in the corrupt mind-set of role players in the SOE and SMMEs and a need to open more opportunities for SMMEs within the organisation, equally.

Moreover, to the possible changes and improvements mentioned in the table above, two other respondents made valid statements where they each mentioned the use of rewards and incentives and early Supplier Development. They stated:

*“Monitoring and assistance with Enterprise Development Programme (signed agreements with goals and timelines, provide rewards and incentives if projects completed within time, budget and quality)”*

*“SMMEs require training for project time and cost management and the involvement of management. The SMMEs also need to be involved during project planning and design and should receive NEC training”*

One other respondent stated:

*“People should only be able to register a SMME construction company if they have some qualification or experience in the construction industry. This may result in greater project success of SMMEs by reducing delays because the top management will have a good enough understanding of the type of works related to the projects they are awarded.”*



# CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction

This research was motivated by the high failure rate of construction SMMEs contracted by an SOE, despite the assistance that government provides and despite the Supplier Development provided within the SOE. This failure was found common with both SMMEs who had undertaken projects previously and/or those who were first time public sector project implementers. The research aimed to determine the hindrances of SMME project success within a SOE, through getting the perspective of the buyer, from the personal experience of the project teams who manage the projects contracted to the SMMEs. Furthermore, the purpose of the study was to depict the important role of Supplier Development programmes and determine the best framework to ensure the production of suppliers with outstanding operation capability, who serve their customers well and achieve supply chain list status so that the SMMEs develop sustainability within the construction industry.

The primary objective of the research was to determine the best criteria for a Supplier Development framework in developing sustainable SMMEs in the public sector. In the effort to achieve the objectives, a literature review was conducted to investigate the general causes and effects of delays in construction projects that affect project success. To understand the SMME sector as a whole, the study firstly looked at SMMEs globally and then within South Africa, which highlighted their contribution in the construction sector, their role in job creation and reducing unemployment, and the barriers and challenges faced by SMMEs that hinder their growth and project success. To obtain an effective framework for Supplier Development best practice, an investigation was conducted of Supplier Development universally and the Supplier Development programme within South Africa, provided by both the government and within an SOE.

The results that were obtained through survey questionnaires that were distributed to employees working within an SOE, the project team members who played defined roles in the infrastructure projects implemented by SMMEs, was discussed in the penultimate chapter. This chapter presents the conclusions of the field study that is guided by the study objectives and findings. The recommendations are based on the



results obtained from the research. The research significance, limitations and assumptions were discussed in detail in Chapter one.

## 5.2 Summary of the Findings

To conduct an investigation of the problem statement of the main research topic and to provide answers to the objectives which were as follows:

Objectives:

- To identify the causes and effects of project delays within the construction sector
- To briefly discuss the challenges faced by SMMEs, locally and internationally and their consequences
- To identify generic processes and activities for effective Supplier Development in best practice criteria, to best develop an effective Supplier Development framework for SMMEs within an SOE.
- To compare the framework to an existing Supplier Development matrix within an SOE.

Based on the first research objective “*To identify the causes of project delays within the construction sector*” whereby the causes of delays were ranked from one to thirteen: 75.81% of the respondents identify inadequate and poor planning as the most common reason for SMME project failure; 58.06% stated both the subcontractors poor co-ordination and the contractors’ insufficient experience as equally common; 50% stated that the failure was due to the contractors’ incompetence and that of their site management; 45.16% blame it on the lack of communication. Errors during construction and the use of inappropriate construction methods were also reported as root causes of failure by 41.94% and 37.10% of the respondents respectively; 35.48% said the unavailability of capital funds and poor quality materials were equally common; 33.87% saw the issue of unskilled site work force and a poor project understanding as equally common. Material shortages were identified by 19.35% of the respondents as a reason for the unsuccessful completion of SMME construction projects; 17.74% mentioned material shortages; 14.52% identified labour disputes and improper and faulty equipment as equal reasons and 9.68% respondents stated that

the lack of modern equipment played a crucial role in the unsuccessful completion of construction projects implemented by SMMEs.

When a question was raised to relate the issue for construction designs with project delays in construction projects, a majority, 71.83%, of the respondents specify that fewer than five of the infrastructure projects that were awarded to SMMEs, were unsuccessful due to delays caused by the queries and clarification requests by the contractor to the client. Therefore, the general feeling was that the issue of incorrect drawings for construction had no real tangible weight to project delays and project failure.

Project location was also highlighted in the literature review as a hindrance for project success and a cause for delays and findings of this research indicated a relationship between the project's success and the locations where the projects were being executed. The results from the survey questionnaire depicted that 50.68% of the respondents stated that most of the projects that were completed successfully were executed in remote areas, while 45.21% of the respondents say that the successfully completed project were situated in urban areas. Only a minority 4.11% respondents stated that projects executed in rural areas were completed successfully. This indicates that the projects implemented in remote areas had the greatest success and rural areas had the least success rate, therefore meaning rural areas contributed to project failure.

This may be based on that remote areas have minimal interface and interference based on only existing operations. The contractors are able to plan and execute their activities making use of the site as best as possible, with maximum working area and the possibility of some activities being able to be executed concurrently. Those with cash flow also are able to procure bulk material and store on site for maximum progress however, for SMMEs, remoteness of a project may be an issue due to their common cash flow problems and poor accessibility to plant, equipment, material and skilled labour. Hence the findings from the number of successful projects based on locations revealed that the majority 78.87% of the sample stated that fewer than five construction projects implemented by the SMMEs were completed successfully (Q12). This indicates that most of the projects executed by the SMMEs had failed and

evidence may be found by referring to figure 4.7 above as well. From the 23.61% and 4.17% respondents who stated that most and all their projects were completed by SMMEs, respectively, it can be concluded that these projects were however either over budget, over the time allocated for the project and/or not within the specified quality at the time of completion and this defeats the whole point of project management principles.

Also based on the first research objective “*To identify the effects of project delays within the construction sector*” whereby the effects of project delays were ranked from one to seven: indicates that 79.19% of the respondents stated that most projects commonly experience schedule overruns; followed by 74.19% who said their projects experienced budget overruns; 46.77% identified poor quality; 41.94% of the respondents went through disputes and claims due to the delays experienced; 12.90% stated they went through arbitration and experienced total abandonment of the projects as equally common and 9.68% experienced litigation as an effect of the project delays experienced during project execution.

The most significant effects of project delays identified in the literature review were budget and time overruns, disagreements, and claims. Delays also result in consequences that are undesirable, which impose risk and affect project success by also affecting safety and quality. A majority 80.28% of the sampled population agreed that they encountered occupational health and safety issues at the beginning of the project and during execution. From the 80.28%, 68.97% respondents mentioned that the SMMEs’ poor understanding of the health and safety requirements was the most common cause as an issue of occupational health and safety issues, followed by 65.52% which stated the failure to submit acceptable health and safety files at the project start. The different types of occupational issues, as identified by literature, were presented to the respondents to rank the challenges from most to least common and from a one to six ranking, 62.90% of them agreed that poor administrative hierarchy between the principal and sub-contractors was the number ranked most common challenge, resulting in poor health and safety management. A further 70.49% of the respondents mentioned work stoppages due to non-compliance to standards and/or specifications as the number one ranked major effect of poor health and safety management.

Literature highlighted the severe impact of delays in construction projects, not only affected the construction sector but also influenced the economies of countries.

Amongst Cooke's (2009) emphasis of the many dangers associated with the construction industry, the writer highlights the business's poor safety and occupational health record, the extreme dispute and litigation levels and adversarial attitudes. Certain insinuations have been made that high-priced environments yield fatalities because in environments where the main purpose is to chase profits, many accidents are bound to occur and in turn, result in injury and/or fatality. However, the reality is that safety improvement results in profit incentives.

Based on the second objective "*To briefly discuss the challenges faced by SMMEs, locally and internationally and their consequences.*" the MIS computation was calculated using the sum of all the weighted responses in relation to the total responses on a specific aspect based on the sum of all maximum possible scores on the Likert 5-point scale that all respondents could give. The research revealed cash flow as one of the main barriers and the greatest challenge experienced by SMMEs that was indicated by the majority. This is one of the main drivers for a sufficiently run company, that can make or break a company and can lead to liquidation and/or inability to complete projects.

The research indicated that 44.62% of the respondents said that fewer than five SMMEs, were granted a shorter payment period and received their payments in less than a month and 3.08% indicated that ten to fifteen SMMEs received payments within seven or fourteen days. 67.69% stated that the SMMEs that did receive shorter payment periods still experienced cash flow problems just as much as those who received payment after a month. A longer period of payment negatively may affect the SMMEs cash flow and this may further affect the contractor in completing their projects on time. The research indicates that 66.15% of the respondents stated that of the SMMEs that did receive shorter payment periods and received their payments in less than a month, fewer than five completed their projects successfully.

The universal key challenges experienced by SMMEs that lead to construction project failure were stipulated in the literature review of this study. The target sample was

questioned, based on their level of agreement towards these factors and the mention of any other factors also contributing to the failure of construction projects executed by SMMEs within their organisation (SOE). Each factor was ranked by relative importance of the items, as perceived by the respondents.

The majority of the respondents indicated cash flow as the greatest challenge, ranking it number 1 with a weighted average of 4.09. The following challenges faced by SMMEs internationally and locally during project execution, that affects their growth, were ranked from 1 to 20, with descending weighted average from 4.09 to 2.86:

1. Cash flow
2. Poor project management and planning
3. Access to capital, markets, finance, and credit (incl. government support and funding)
3. Poor project understanding (incorrect construction methods, rework, company experience)
4. Inefficient management/ poor management skills
5. Poor communication
6. Poor financial control
7. Lack of knowledge
8. Low productivity
9. Relationship building with customers
10. Skills shortage
11. Poor site organisation
12. Subcontractors
13. Access to training
14. Corruption
15. Government bureaucracy
16. Labour disputes
16. Access to technology
17. Improper design
18. Poor infrastructure (quality of materials, land, plant available)
19. Arduous labour laws
20. Crime

Crime was specifically identified in literature as one challenge unique to those challenges faced by South African SMMEs.

Based on the third objective *“To identify generic processes and activities for effective Supplier Development in best practice criteria, to best develop an effective Supplier Development framework for SMMEs within an SOE”*, the universal factors that best practice regards as crucial elements to ensure effective Supplier Development, as per literature review were presented. It indicated a framework of primary tools, support, measures and skills by the client or buyer to assist the suppliers (SMMEs) in building their capacity and capability to ensure their sustainability and success. The target sample was questioned, based on their level of agreement towards the factors contributing to the effective Supplier Development of the SMMEs contracted to the projects within their organisation (SOE). Each factor was ranked by relative importance of the items, as perceived by the respondents.

The research revealed communication as the most important factor for effective Supplier Development as indicated by the majority, ranking it number 1, with a weighted average of 4.14. The following crucial factors contributing to effective Supplier Development were ranked from 1 to 11, with descending standard weighted average order from 4.14 to 3.65:

1. Communication
2. Supplier evaluation
3. Quality audits
4. Technical and capital support
5. Long term commitment, collaboration, and trust
6. Early supplier involvement
7. Supplier’s certification
8. Supplier’s site visit
9. Top management involvement
10. Product development
11. Rewards and incentives

### 5.3 Research Conclusions

The primary objective of this research was to identify the role of government in developing sustainable SMMEs in the construction industry, using initiatives outside and within the SOE, as discussed in Chapter 1. It also aimed to identify what best practice regards as the best framework for effective development of suppliers by identifying the crucial factors which make it possible and presenting them to the respondents to compare if the government initiatives and framework being used within the SOE cater for the provision of these crucial elements to ensure sustainable and successful SMMEs.

The government has initiatives, such as the National Contractor Development Programme that provided funding and training for SMMEs and Enterprise Development Hubs within the SOE to tackle challenges of access to funding, tax compliance issues, business start-up issues, or business administration issues and not knowing how to get BEE verification. However, 32.76% of the respondents that stated that the SMMEs had not received aid from any of the government initiatives supports that the government's role in developing SMMEs in the construction sector is still minimal as the failure rate remains high.

Moreover, it is portrayed that the majority of 46.55% respondents stated that the SMMEs did receive aid from the CIDB though none of the respondents were aware whether any of the SMMEs that were contracted on their projects, had been aided by Khula Enterprise Finance and Ntsika.

Results from numerous studies conducted globally, to identify the major growth limiting challenges faced by SMMEs that hinder development and success, all identified access to finance, credit, start-up, and operating capital as one of the barriers. Results from numerous studies in South Africa identified access to credit and finance the number one barrier (table 2.9). The 0% of the respondents who were not aware whether the SMMEs had received aid from Khula Enterprise Finance or not, presents a buyers perspective which is in agreement with the supplier's perspective highlighted in Nieman and Niewenhuizen's (2014) study, that proposes access (or the lack

thereof) to government support and funding as one of the main barriers experienced by SMMEs.

The organisations that were established by the government, to assist SMMEs in terms of financing, training and information are not visible enough to ensure that the majority of the SMMEs are made aware of them and their locations. This limits the SMMEs' information acquisition and negatively affects them.

The study revealed there are Contractor Development Programmes that are available in South Africa but 56.90% of the respondents working in the SOE believe that the SMMEs lack knowledge about the government programmes and initiatives that are available, as they did not participate in those programmes. This implies the SMMEs are either not invited and/or not aware of these programmes. However, this is contrary to the information supplied by the CIDB office that stated that attendance is poor and unsatisfactory regardless of the invitations sent out to contractors. CIDB identified the lack of resources such as emails, as one of the contributing factors to contractors lacking awareness. A study conducted on contractors in the Free State, by Thwala and Mofokeng (2012), supports the results above because it highlighted that only 26% of the respondents attended contractor development programmes, while the majority 74% of the respondents did not attend because they were not exposed to contractor development programmes.

Amongst the Supplier Development programmes provided by the SOE, are the enterprise development Hubs which provide a range of support to SMMEs. However, the majority, 33.85%, of the respondents who are employed within the SOE, stated that they had little knowledge when it pertains to these Hubs within their organisation; 23,08% have no knowledge at all; and only 9.23% and 6.15% knew a lot or have a great deal of knowledge regarding the Enterprise Development Hubs, respectively. This indicates that the awareness on the available Supplier Development initiatives available within the SOE is very poor amongst its own employees who are within the project space. Hence, the expectation that the SMMEs who are contracted within the SOE, would be aware of the support structure provided and be able to take advantage of the programmes, is highly unlikely.

The study reveals the different services offered by a cluster of agencies that collaborate to make up the Enterprise Development Hubs. The results divulge that



25.86% of the respondents said that the SMMEs made no use of any of the services provided.

The results indicate that about a quarter of the respondents are aware that the SMMEs are not using the specialist services provided by the companies in the Hubs to resolve or alleviate challenges involving business start-up issues, BEE verification, not having access to funding, business administration issues and tax compliance. This indicates that it is probable that a substantial number of SMMEs, about 25 out of 100 that have been awarded contracts by the SOE, will continue to experience the same multifaceted challenges in future, even after having worked with this SOE.

## **5.4 Other Findings**

A majority, 85.94%, of the respondents working on projects within the SOE are not even aware whether the SMMEs that are contracted on their projects, have ever participated in national contractor development programmes. It indicates that the SOE seemingly only focuses on the contractor's previous experience about projects completed and the experience of their key resources, and not so much on the previous or current development the SMMEs may have undergone and received prior to being awarded an SOE contract. The availability and interrogation of this information would assist in identifying, beforehand, the contractor's strengths, weakness and gaps that need to be focused on for effective development of the supplier, enabling them to perform at their best capabilities and capacity. The project teams, based on what the respondents have stated, indicated that they are not conscious of the SMMEs previous development.

The SOE Enterprise Development (ESD) programme for SMMEs, gives support to its beneficiaries, via capital, time and money investments, to contribute towards the sustainability, development, operational and financial independence of the beneficiaries. It addresses both non-financial and financial ESD initiatives. Enterprise Development beneficiaries are provided with capacity building services (learnerships, finance and building and on-site mentorship) and mentorship support (technical skills, business development, business compliance, tendering skills). The typical services offered at the Transnet Hubs include CSD services, business development, business support services, SARS, technical and skills development, procurement advisory,

other Transnet programmes. Furthermore, the SOE acts as a consulting agent on the projects awarded to SMMEs and provides a whole project team to manage and oversee the contractors' key personnel. This is also a form of Supplier Development in the form of mentorship, skills transfer, monitoring and controlling techniques, ensuring the contractor is assisted in each discipline and aspect of the project.

The results of the study indicated that the top three ranked key challenges experienced by SMMEs that hinder project success and their sustainability, were as a result of lack of cash flow; poor project management and planning and limited or no access to capital, markets, finance and credit (including government support and funding). Aid for these key challenges are addressed by the SOE under the ESD, the services provided in the Hubs, shorter payment terms employed for qualifying SMMEs, skills programmes and on-site skills transfer and mentorship.

The following table seeks to demonstrate whether the Supplier Development programme currently being employed within the SOE addresses and provides for the crucial factors to ensure effective development of the SMMEs. It indicates the critical elements identified by literature and ranked in order of level of importance, by employees employed in the SOE for capacity and capability building to produce reliable, successful, and sustainable SMMEs. Each existing, or lack thereof, measures or programme is shown next to each factor it addresses.

**Table 5.1: Comparison between Crucial Factors for Effective Supplier Development and existing SOE Supplier Development Intervention**

Crucial factors for effective Supplier Development	Existing SOE Supplier Development intervention
1. Communication	<ul style="list-style-type: none"> <li>• Communication plan outlines frequency of compulsory bi-weekly progress meetings, weekly site meetings, monthly risk workshops and technical meetings held throughout project duration between SOE and SMMEs.</li> <li>• Provision of a central document control division handling all daily, formal communication on all project related</li> </ul>

	<p>matters and queries to ensure constant communication between SMME and SOE project team.</p>
<p>2. Supplier selection and evaluation</p>	<ul style="list-style-type: none"> <li>• ESD</li> <li>• Tendering phase evaluation process where the supplier is evaluated on technical capacity, financial capability, experience, price and preference and Supplier Development.</li> </ul>
<p>3. Quality audits</p>	<ul style="list-style-type: none"> <li>• ESD</li> <li>• Contractual monthly quality environmental, health and safety audits and start and closing quality audits at beginning and end of project</li> </ul>
<p>4. Technical and capital support</p>	<ul style="list-style-type: none"> <li>• ESD</li> <li>• HUB</li> <li>• Dedicated project team working hand-in-hand with SMMEs and transferring skills across all disciplines.</li> </ul>
<p>5. Long term commitment, collaboration, and trust</p>	<ul style="list-style-type: none"> <li>• SMMEs included in database as preferred suppliers for the provision of further procurement opportunities, upon successful completion of first project.</li> </ul>
<p>6. Early supplier involvement</p>	<ul style="list-style-type: none"> <li>• Project lifecycle followed demands separate tendering processes for FEL3 design and FEL4 execution. Therefore, designs for construction are usually done by consultants and handed over, if they are not done in-house by the SOE. The issued for construction drawings are issued to the successful contractor at project kick-off which makes it impossible for SMMEs to have been involved during</li> </ul>

	FEL1 feasibility, FEL2 conceptual and FEL3 design phases. Intervention required.
7. Supplier's certification	<ul style="list-style-type: none"> <li>• ESD</li> <li>• Completion certification upon project completion</li> </ul>
8. Supplier's site visit	<ul style="list-style-type: none"> <li>• ESD</li> <li>• SOEs project team management of contractors team</li> <li>• Holding points on crucial work activities for inspection and sign off by SOE engineers</li> <li>• Quality control: On-site SOE construction manager witnessing and ensuring works undertaken is as per specification and drawings</li> <li>• Quality assurance: on-site SOE quality officer</li> </ul>
9. Top management involvement	<ul style="list-style-type: none"> <li>• The SOE has an existing Supplier Development programme, which requires the approval of top management. The BBBEE company scorecard also rates the organisation based on the Supplier Development, therefore top management automatically is rated in their scorecard as well.</li> </ul>
10. Product development	<ul style="list-style-type: none"> <li>• FEL1 feasibility, FEL2 conceptual and FEL3 design phases are undertaken by different teams formulated in the SOE and are separated from FEL4 execution phase, which is only when the SMMEs are appointed and are expected to produce the product as per pre-determined design and specification. They are not accessible to the process</li> </ul>

	when the product is being developed. Intervention required.
11. Rewards and incentives	<ul style="list-style-type: none"> <li>• SOE does not provide incentives or rewards to contractors. Intervention required</li> </ul>

Literature stated *“Supplier Development characteristics in infrastructure mega-projects are analysed in terms of selection of the supplier, the motives for development, mode of production, management of quality, participation of owner and risks. Bilateral communication, collaboration, trust, incentives and future market are identified as the main critical factors influencing the construction Supplier Development”* (Zeng, et al., 2018).

#### **5.4.1 Communication**

Poor communication was ranked number six under the challenges experienced by SMMEs, however ranked as the number one crucial factor to pay attention to effectively develop a supplier. This indicates that though there are channels enabling communication between the SMMEs and SOE project team, there is no control over the communication between the SMMEs, their subcontractors, suppliers, joint venture larger companies and labourers. Further intervention is needed by the SOE to assist the SMMEs in ensuring that proper continuous communication occurs and there is a clear understanding amongst role players.

#### **5.4.2 Long-term collaboration and trust**

Literature review stated:

*“In comparison to the manufacturing industry, an infrastructure mega-project is usually a one-time, unique endeavour, resulting in a short-term owner-supplier relationship. It is due to this heightened production and delivery capacities, and product quality requirements, that the improvement of construction supplier’s capacity is such a huge challenge in infrastructure mega-projects.”*

It is for the reason that though the SMMEs are included in the SOE database as preferred suppliers upon project completion, it is very difficult to employ any other methods that ensure long-term collaboration and trust between the SOE and SMME.

The short term nature of infrastructure projects cannot warrant a long-term relationship, collaboration and trust can only be derived based on how well the SMME performs, their capability to deliver and quality of works produced for the SOE to recommend and consider them for future projects.

#### **5.4.3 Early supplier involvement and product development**

Table 5.1 above indicates that the Project Life Cycle followed in the SOE does not allow for early supplier involvement and product development. The SMMEs are only appointed during the FEL4 execution phase to execute the project as per approved designs and specification not having been part of the process of production selection. The review of the feasibility of numerous options, elimination process up to conceptual designs and final designs meeting user requirements that are fit for purpose, has already been completed when the SMMEs are involved. Numerous issues have been stated by the respondents as responses to question 34, where early supplier involvement was also mentioned as part of the improvements that need to be made within the organisation to increase the project success rate.

It would be in the SOEs best interest to interrogate possible methods in involving the supplier earlier and during product development as these may result in cost savings, time saving and quality improvement and therefore increase the frequency of successful completion of SMME projects, as per project management principles. This will benefit the SOE in having fewer projects that exceed duration and result in increased costs not only due to project extension but also due to the large interest charged on the public funds that the SOE pays when infrastructure project assets are not available on the agreed upon time to generate revenue.

#### **5.4.4 Rewards and incentives**

Mead and Gruneberg (2013) stated the importance of incentive mechanisms as a tool for Supplier Development and co-operation enhancement. For the SMMEs, a great deal of suppliers' investment in materials, manpower and a lot of funds in employee training, technology research and upgrade in production equipment are required, should the suppliers' production capacity or technical level not adhere to the project specifications. The SOE does not reward the SMMEs or provide incentives for good performance, however, research implies that the consideration of rewards and

incentives could be used as a method to motivate the SMMEs and result in better performance for successful project execution that benefits the SOE with their clients.

#### **5.4.5 Supplier selection and evaluation**

Supplier evaluation is an essential part of Supplier Development, which serves as a founding podium to initiate a Supplier Development programme. Supplier evaluation is the initial step of Supplier Development and enables the buyer to identify areas of the supplier requiring improvement. The SOE does an evaluation of the company's previous projects record, construction experience and key personnel knowledge as a prerequisite for a contractor to formally participate in construction projects. The evaluation criteria are used by the SOE as a means to sieve through the prospective contractors, hence minimising the risk and ensuring quality final products, however, this disqualifies most SMMEs as they do not have the resources to meet the pre-qualifying criteria requirements. This usually results in many SMMEs fronting due to the desperation of wanting to conduct business and generate income.

Their technical and financial capacity is evaluated before a suitable contractor is selected. The technical criteria are based on the following pre-qualifying evaluation criteria for the tenders:

- a. Curriculum Vitae of key personnel
- b. Work method statements
- c. Company previous experience and completion certificate
- d. Health and safety requirements
- e. Quality requirements

Further to these, the companies' financial model and stance is evaluated, they are also evaluated using price and preference and ultimately, their Supplier Development commitments.

### **5.5 Recommendations**

Supplier Development has been identified as the most essential intervention in addressing the barriers and challenges that are affecting and hindering the growth of SMMEs. Although there are Contractor Development Programmes by government

outside of the SOE and Supplier Development Programmes within the SOE, the research however revealed that there is a lot of further intervention that is required from government and the SOE with the programmes that they provide to SMMEs for Supplier Development.

#### **5.5.1 The governments' involvement for Contractor Development Programmes**

- Making the government initiatives easily accessible to SMMEs by consolidating various enterprises for development under one roof to be jointly managed by the government
- Develop a database that records the type of aid SMMEs have received from government enterprises to monitor SMMEs after providing assistance and ensure sustainability

#### **5.5.2 The SOEs involvement for improving Supplier Development framework**

- Develop guidelines to track joint venture interventions to monitor responsibility-sharing, relationships, payments, between the larger companies and SMMEs in the Joint Ventures
- Obtain access to government database on aid received by SMMEs to assist SOE to determine possible weaknesses and strengths of SMMEs before project execution and development of areas that need improvement
- Develop occupational health and safety workshops to educate SMMEs on regulations, requirements and documentation for health and safety files before project start
- Raise awareness about the Hubs within the SOE especially amongst employees working in projects and increased involvement
- Increase access to knowledge and information on existing Hubs and Supplier Development opportunities available
- Expand Enterprise, Supplier Development Programmes provided to address communication, early supplier involvement, top management involvement, product development, rewards and incentives and incubation to build capacity of SMMEs

The study revealed that 15.52% and 20.69% of the respondents believed that the SMMEs were lazy and simply did not make time to enquire about the government aid



and visit the SOE Hubs, to make use of the services available to them. Above all the recommendations for further government intervention required, whether outside or within the SOE, it is recommended that the SMMEs take responsibility for their growth and that it is in their best interest to take part in the Supplier Development programmes that are already at their disposal so they can overcome the challenges experienced.

## **5.6 Conclusion**

The conclusions are derived from the secondary and primary data results as presented in Chapter 4 about challenges faced by SMMEs and Supplier Development practice. It may be concluded that SMMEs are still facing challenges that require attention from government and that a further expansion is required in the enterprise and Supplier Development programme provided by the SOE to address some of the outstanding factors for effective Supplier Development. The recommendations will contribute to building sustainable SMMEs and increase SMME project success in an SOE. The other crucial Supplier Development factors requiring further intervention were mentioned (communication, long-term collaboration and trust, rewards and incentives, supplier selection and evaluation), and they can be researched further in order to assist the SOE in improving the services that it provides.

This research has clearly highlighted the causes and effects of project delays executed by small businesses, the challenges faced by SMMEs that are contracted by SOEs, the criteria that best inform an effective Supplier Development framework and lastly, the possible improvements that can be made to the Supplier Development programme used within an SOE. Therefore, the research has contributed to an existing body of research relating to the study area, by providing a buyer's perspective on SMME project success.

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