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FACTORS IMPACTING PARTICIPATION OF SMALL AND MEDIUM ENTERPRISES IN CONSTRUCTION ON PUBLIC PROCUREMENT IN SOUTH AFRICA

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Abstract

The objective of this study was to identify determinants of construction Small and Medium Enterprises (SMEs) to participate in public procurement in South Africa. This paper investigated the factors that hinders the participation of construction SMEs in the public sector, examined the impact of the two duplicated public procurement processes, namely Standard Bidding Documents (SBD Forms) and Central Supplier Database (CSD) Report on construction SMEs performance and provide recommendations and conclusion on how the CSD innovation, can be used to improve procurement participation of SMEs. The significance of the study is to add value to the book of knowledge on public procurement and practice.

The study findings are valuable to construction tenderprenuers (SMEs) conducting business with government, municipalities and public entities and to inform policy makers of the Republic. The study examined 7 predictable factors, namely: gender, Age, Level of education of respondent, Actual ownership, and long duration of operation of construction company, the perception of cost on submission of bidding documents via email, the perception of reliability on manual and online biding submissions that influence the participation of SMEs in public procurement. The survey questionnaire was designed from the theoretical framework and regulations. The response rate was 81.03%. The questionnaire of study was sent out to 659 eligible participants of study. Out of these 659 eligible participants, data was collected from 534 eligible participants. Based on a sample of 534 construction SMEs in South Africa, Using the SPSS tool, which offers useful analysis including reliability analysis, frequency analysis, regression analysis, and test of associations, the acquired data were examined. To investigate the factors that influence SMEs' participation in public procurement in South Africa, 7 hypotheses were formulated. The findings of the study shown that the most significant factors affecting the participation of SMES in public procurement were: 1. Level of education of respondent (Q5), 2. Gender of respondent (Q1), 3. Actual ownership of construction company (Q3),4. Long duration of operation of construction company (Q8).

Keywords: Participation cost, supply chain management, Small Medium Enterprises (SMEs), public procurement, South African government.

Introduction

Small and medium-sized businesses in South Africa are active forces behind economic expansion. The National Development Plan for 2030 notes that SMEs are the main employers and economic drivers, helping to reduce unemployment while the formal sector continues to slash jobs (Hinde &

Belle, 2012). Even though South Africa lacks a regular census or periodic survey that tracks the performance of (SMEs) in their full diversity, SMEs are likely to be the nation's future companies. Wide-ranging estimates of the number of SMEs in South Africa and their contribution to GDP and employment have been made as a result of the lack of trustworthy, thorough, and consistent statistics (Rand & Tarp, 2020). Without trustworthy information, it will be difficult to develop sensible and focused plans to support the expansion and stimulation of this crucial sector of the economy (Ang, 2008). Gaining access to a "new dawn" for South African small enterprises requires solid and reliable data (Ang, 2008). According to 2016 update research by the Department of Trade and Industry, done by the Bureau of Economic Research, there are 2.2 million small enterprises in South Africa. The predicted range varies greatly (Department of Trade and Industry, 2008). The country's apparent lack of knowledge regarding the precise number of SMEs in the nation, which sectors predominate more than the others, the number of people employed by SMEs, their contribution to the GDP of the country, whether they are contracting or growing, and the current challenges they face raises gravely unsettling and worrisome (Liedtke, 2019). This demonstrates the effectiveness of the policies and support programs.

SMEs are classified as an independent entity in South Africa and encompasses a very broad range of firms, from established traditional family businesses employing over a hundred people (medium-sized enterprises), down to the survivalist self-employed from the poorest layers of the population (informal microenterprises), (Masarira & Msweli, 2013). While the upper end of the range is comparable to the small- and medium-sized enterprises (SME) population of developed countries, statistics reveal that an immense majority of SMEs are concentrated on the very lowest end (Godke Veiga, & McCahery, 2019). The department of small business development defines SMEs as any independently owned and controlled enterprise that has less than 200 employees (Fatoki & Chindoga, 2011). Despite the noted contribution of SMEs pointed out above, SMEs in South Africa suffer long, boredom and costly processes when conducting business with government SMEs' acknowledged contribution, as mentioned above, SMEs in South Africa endure a protracted period of boredom.

Small and Medium enterprise defined the current South African as very complex, making it difficult to transact with government (Sityata, 2019). This affects survival of SMEs businesses (Sukati, Hamid, Baharun, Mdyusoff, 2012). The major problem is the long and costly procurement processes and process that SMEs are expected to follow when bidding with the government (Sukati, Hamid, Baharun, Mdyusoff, 2012). These results into SMEs lack of interest due to high cost incurred during these tedious procurement process. Easy access to public procurement markets can help SMEs in unlocking their potentials, while having a positive impact on the economy (Sukati, Hamid, Baharun, Mdyusoff, 2012). This becomes worse in the field of construction.

The construction industry is an essential sector that contributes significantly to a country's economic progress. The construction industry is an investment-driven sector in which the

government has a strong interest. The South African construction market was estimated at $25.1 billion in 2022, with an AAGR of more than 3% predicted from 2024 to 2027. High inflation, rising interest rates, rising energy and building material prices, and supply chain disruptions all have an impact on industrial production (GlobalData, 2023). Commercial construction, industrial construction, infrastructure construction, energy and utilities construction, institutional construction, and residential construction are the primary sectors in the South African construction industry (GlobalData, 2023). In 2022, infrastructure construction was the largest sector in the South African construction market, followed by residential building construction, energy and utilities construction, and others (GlobalData, 2023).

SMSs in the construction business, like those in any other industry, face significant obstacles. To discuss the challenges facing small businesses and cooperatives in the construction sector, the Parliamentary Monitoring Group met with the Black Business Council in the Built Environment (BBCBE), the Built Environment Cooperatives for Graduates in South Africa (BECGSA), the Council for the Built Environment (CBE), the Construction Industry Development Board (CIDB), and the Department of Public Works (DPW) (Annual report and performance plan, 2017). Black business women are mostly affected by these challenges. The difficulties faced by black business companies included a lack of traction in contractor development programs within the Department of Public Works and other public sector bodies; projects that were not unbundled for emerging black businesses; a lack of projects for lower grade contractors; and programs that were focused on outsourcing rather than empowering smaller contractors (Annual report and performance plan, 2017), as well as duplication system that SMEs are required to complete when conducting business with government.

The study is conducted to address the following questions

- What are the factors that hinder the participation of South African construction SMEs in public procurement process?
- What are the barriers (duplication) limiting the turnaround time on procurement processes of South African government?
- What are the implications of Central Supplier Database (CSD) introduction on construction SMEs in South African)

2. Literature review

Small and Medium enterprise defined the current South African procurement system as very complex, making it difficult to transact with government (Sityata, 2019). This affects survival of SMEs businesses (Sukati, Hamid, Baharun, Yusoff, 2012). The major problem is the long and costly procurement processes and process that SMEs are expected to follow when bidding with the government (Sukati, Hamid, Baharun, Yusoff, 2012). These results into SMEs lack of interest due to high cost incurred during these tedious procurement process. Easy access to public procurement markets can help SMEs in unlocking their potentials, while having a positive impact on the economy (Kubiak & Benbow, 2016). Moreover, the strong involvement of SMEs in public procurement allows contracting authorities to considerably broaden their potential supplier base

and to thereby secure the positive effects of higher competition for public contracts as a counterbalance to dominant market players (Kubiak & Benbow, 2016). Given the importance of SMMEs, it is almost impossible to ignore the mounting challenges that affect them, as identified by Prof. Nieman, which include, amongst others lack finance, economic conditions, onerous regulations, and cost of labor (COEGA Development Corporation, 2019).

Effective and efficient procurement system is important for the advancement of small and medium enterprise in Africa (Loury-Okoumba, 2018). Kakwezi and Nyeko (2010) mentioned that the procurement departments in Africa are faced with the problem of not having enough information about the procurement procedure and resource consumption and are therefore unable to determine their efficiency and effectiveness. Though The National Treasury has introduced the Central Supplier Database (CSD) as a single database to administer all supplier information for national government procurement with the purpose of eliminating duplication of administrative efforts and costs for both businesses and government and maximising turnaround time on procurement processes. Yet the problem of duplications, manual and reprinting of submission continues (Sityata, 2019). This problem requires establishment of clear procurement procedures and performance standards, which will make procurement process journey for small and medium enterprise easier and simpler without accumulating any cost (Rotich, 2011).

Public procurement makes up a significant percentage of the economy and can play a major role in incentivising SME growth (Kaspar & Puddephatt, 2012). One way for governments to assist SMEs in achieving their full potential is through their effective and efficient public procurement system. SMEs in public procurement are expected to improve productivity and quality, speed up response times, reduce costs and improve overall efficiency of government projects (Kaspar & Puddephatt, 2012). This, in turn, maximises the economic, financial, and social benefits of public procurement. In country like South Africa, SMEs are denied that chance, instead SMEs are faced with various challenges which disadvantage the SMEs to procure with government.

2.1 Definition of SMEs

Small and medium-sized businesses are defined differently in each nation. SMEs and SMMEs are synonymous terms. Scholars describe SMEs based on capital assets, personnel count and turnover rate, and/or a combination of quantitative and qualitative characteristics (Katua, 2014). The National Small Business Act of South Africa, which was passed in 1996 and revised in 2003, defines a small business as "a separate and distinct entity, including cooperative enterprises and non-governmental organizations, controlled by one or more owners, In order to qualify as a SME, an organisation must perform the majority of its operations, including any branches or subsidiaries, in one of the economic sectors or subsectors listed in the schedule of size standards (Government Gazette of the Republic of South Africa, 2003). In order to account for inflation, Minister Lindiwe Zulu also modified the new turnover criteria figure. The terms "total full-time equivalent of paid

employees and total yearly turnover" are used to define small business in the new revised definition.

The role of SMEs in the building sector remains difficult, as recently addressed by the Home Builders Federation study on the fall of small housebuilders (National House building Council. 2017). The visibility of supply networks is frequently identified as a major issue for SMEs. According to the Sustainability in the Supply Chain survey, 51% of SMEs are not adequately informed about prospective public sector contracts. Brexit is also creating several impediments to expansion, threatening to exacerbate an already strained skills deficit, considering that around 7% of the country's construction workforce is outsourced (National House building Council. 2017).

2.2 Challenges facing SMEs in South Africa

The goal of SMEs is to promote changing racially socio-economic situation and provide growth to the South African economy (Mahambehlala, 2019). The Minister of Small Business Development, Lindiwe Zulu, holds the opinion that a successful SMEs sector holds the answer to employment creation and poverty reduction. Though these SMEs are faced with various challenges that hinders their success. Some of the challenges include unfavorable business environment arising from hostile legal requirements, high taxes, inflation, fluctuating and unreliable exchange rates affects the growth of SMEs (Muriithi, 2017). The second factor include inaccessibility to reliable information from both government and service providers (Kamunge, Njeru & Tirimba, 2014). This problem starts from poor information environment resulting from underdeveloped technological and communication infrastructures and inadequate business support systems (Kamunge, Njeru & Tirimba, 2014). The third most critical element that contribute to SMEs failure is lack of government support (Muriithi, 2017). The role of government in facilitating and supporting SMEs remain critical in Africa and throughout the worldwide. When the government pays little attention to SMEs sector, then, the sectors is prone to suffer leading to many businesses being unable to survive (Muriithi, 2017). A government that does not support SMEs does not only hurt the sector but experiences negative growth in its economic development.

The study of De Lange (2011) blamed corruption, incompetence, and negligence by public servants as the main factors that has led to SMEs failures in Africa. The author went on further to mention that complex government policies and laws and unrealistic demands on SMEs plays a huge role in most SMEs failures. Government is the largest procurement institution in South Africa with a spending of R2 trillion per annum (Statical South Africa, 2022). Despite the reform processes in public procurement and the employment of CSD as a strategic tool, the challenge of duplication processes and additional manual process continues which also add extra cost to the already costly procurement bidding journey. The study of Sityata (2019) argues that various legislations in place make it difficult to start up, run and grow SMEs within the country (Loury-Okoumba, 2018).

2.2.1 South African Construction industry SMEs

Small and medium-sized enterprises (SMEs), particularly those in the construction sector, are an important contributor to the economy and are regarded as a driver for reducing unemployment in South Africa, as defined by the National Credit Regulation Act, given that the formal sector continues to shed jobs when business transactions are not favorable. Despite their major relevance and contribution to economic growth, SMEs across the world, and particularly in South Africa, confront a number of hurdles that stifle entrepreneurial growth (Mahembe, 2011). This has resulted in a high percentage of company failure, making South Africa one of the least successful construction SMEs in the world (Mahembe, 2011; Ahiawodzi & Adade, 2012). Other major issues identified by earlier researchers in this sector include (Mahembe, 2011; Ahiawodzi & Adade, 2012). lack of management expertise, access to finance and credit, market penetration and customer relationship building, appropriate technology, low production capacity, recognition by large companies, government bureaucracy, and support for their role in economic development.

The study of Aigbavboa and Thwala (2014) highlighted that high competition tendering for construction jobs within the CIDB category is a major challenge the SME's faces in the procurement of work. The authors went on further to mention that as poor administrative management from government, lack of skilled professionals and lack of capacity to deliver on certain project were the greatest challenges faced by the construction companies. The South African construction industry will continue to provide jobs but intervention is needed to develop the SME's contractors who contribute a greatly to the economy

2.3. Public Procurement Policy in South Africa

According to Ambe and Badenhorst-Weiss (2012), public procurement is the process by which government entities hire service providers for development and infrastructure projects as well as other goods and services on a local and global scale. Public procurement must be conducted in line with a system that is "fair, equitable, transparent, competitive, and cost-effective," according to Section 217(1) of the South African Constitution (Constitution of the Republic of South Africa, 1996). Repeated in the Public Financial Management Act is this obligation (Public Finance Management Amendment Act, No. 29 of 1999). The purpose of the Public Finance Act is to control how the government manages its finances. The system and laws governing government procurement in South Africa are intended to advance a reasonable cause (Constitution of the Republic of South Africa, 1996). The goals of these constitutional principles are to provide the greatest amount of competition and participation, which will lead to the best value possible when providing products and services to the government, as well as the equitable treatment of all people through open and transparent methods (Makgoe, 2012).

A variety of linked policies and regulations serve as the foundation for procurement policy (National Treasury, 2005). Despite the noted good intention, the implementation of the strategies seems lacking behind (Business Environment Working Group, 2017). This requires a critical analysis of the policies. Compliance with these policies and regulations is a problem. As indicated by Matthee (2006), some of the practices relating to non-compliance with the rules and procedures

relate to the tendency not to utilise a competitive process for both quotations and bids, and incorrect utilisation of the preference points system. Neneh, van Zyl (2012) also asserts that there is a lack of appropriate bid committees; use of unqualified suppliers, passing over of bids for incorrect reasons; utilisation of the incorrect procurement process in respect of the thresholds; extensions of validity periods; and incorrect utilisation of the limited bidding process. Furthermore, Ambe and Badenhorst-Weiss (2011b) noted that there are inadequate controls and procedures for the handling of bids; appointment of bid committee members not aligned to policy requirements; and insufficient motivation for deviations from procurement policy procedures.

2.5 Central Supplier Database (CSD)

The Central Supplier Database (CSD) is an online platform established by the South African government to centralize supplier information and streamline the procurement process (Government Gazette, 2002). The CSD serves as a single repository of supplier data that can be accessed by various government entities when conducting procurement activities. Suppliers interested in participating in public procurement in South Africa are required to register on the CSD. The registration process involves providing detailed company information, such as contact details, tax compliance status, B-BBEE status, and relevant certifications. The CSD verifies and validates the supplied information to ensure accuracy and authenticity (Government Gazette, 2002). The CSD aims to simplify the procurement process by eliminating the need for suppliers to submit the same information repeatedly for different government entities. Procuring entities can access the CSD to verify supplier information, select eligible suppliers, and invite them to participate in procurement opportunities.

The purpose of central supplier database is to lessen the duplication of compliance requirements connected to the procurement process, processing of supplier payments, and audit procedures (Mpehle & Mudogwa, 2020). Secondly to level the playing field among service providers so that small and emerging businesses can have equal access to competitive bidding opportunities like any other business (Mpehle & Mudogwa, 2020). The primary goal of the creation of the Central Supplier Database was consolidates all activities into a single database and serves as the repository for all supplier data for the federal, provincial, and local governments (National Treasury, 2016). The CSD also makes sure that purchasing of products and services is done in a way that is both efficient and affordable, and that all registered suppliers have an equal and fair chance of offering goods and services to the government (National Treasury, 2016).

The problem with the Central Supplier Database is that manual intervention which is used instead of a rotational method to choose suppliers who are eligible to do business with the department (Goffin, Szwejczewski & New, 1997). Service providers are allowed by the CSD to register in a number of different industry classifications as well as the goods and services they offer at each location without having to validate their capacity. Service providers from far away are considered for local procurement possibilities since the CSD permits them to register using different physical addresses, but they are unable to deliver due to a short lead time or high delivery costs (Mpehle &

Mudogwa, 2020). The functional performance of the CSD is restricted to a database, not to the whole procurement procedure. A better method of choosing suppliers is to consider their quality history and room for improvement in addition to their current quality (Goffin, Szwejczewski & New, 1997).

2.6 Supplier and Municipal bidding documents

Supplier bidding documents and municipal bidding documents refer to the specific documentation and information required for suppliers and municipalities to participate in a bidding process for procurement contracts. These documents are used to ensure a fair and transparent process and to provide all interested parties with the necessary information to submit their bids. It's important to note that the specific content and format of bidding documents may vary depending on the country, region, and type of procurement involved. Bidders should carefully review the provided documents and seek clarification from the issuing authority if needed. Bidding documents should clearly outline the evaluation criteria that will be used to assess proposals. However, sometimes these criteria are not adequately defined or can be open to interpretation. This ambiguity can lead to confusion and disputes during the evaluation process.

These Standard Bidding Documents for Procurement apply whether a prequalification procedure has been finished before bidding or whether it has not (Salga, 2016). This form needs to be filled out twice: once by the winning bidder (part 1) and once by the buyer (part 2). To ensure that the winning bidder and the buyer have original signed contracts for their records, both forms must be signed in the original.

Standard BD Forms are complex, especially when dealing with a large amount of data or complex data structures (National Treasury, 2017). Creating forms that capture the required information in a structured and organised manner can be challenging. The main goal of SBD forms is to improve the user experience and make the form-filling process easier for users (National Treasury, 2017), however SMEs complains this is a duplication process and costly, especially as they are still beginners.

However, implementing effective data validation in SBD forms can be challenging. It involves checking for errors, enforcing data format constraints, handling conditional logic, and providing meaningful error messages to guide users in correcting their inputs (Drummond & Snowball, 2019). SBD forms should be accessible to users with disabilities to ensure inclusivity (Drummond & Snowball, 2019). Designing forms that meet accessibility guidelines, such as providing proper labelling for form fields, using appropriate color contrast, and ensuring compatibility with assistive technologies, can be challenging and requires expertise in accessibility standards.

2.7 Research Methods

A sample of 680 business owners' mangers from SMEs situated in all the provinces of South Africa were selected for the purpose of this study. A large number of these samples were based in Gauteng province as they represent a large number of SMEs in South Africa. The population frame was requested from the Central Supplier Database (CSD) of the National Treasury and

Construction Industry Development Board (CIDB) in South Africa. Data collection was accomplished by online survey questionnaire, which considered as effective technique. The sampled businesses were communicated to in advance by email. Subsequently, regular reminders were sent to non-respondents.

A self-designed questionnaire consisting of 25 questions was used to collect the research data. The questionnaire comprised of four sections. The first section (A) comprised demographic of the respondent and consist of four questions: gender, position, age group and educational level. In the second section (B) consists of 6 questions. The respondents were asked to describe the demographics of the business: Industry sector classification, number of employees, number of operating years and annual turnover. The Section (C) consist of four questions, which identifies the SCM methods used by the business while conducting transaction with government and it entities: SBD and MBD knowledge, SCM methods used, transaction frequency and preferred submission method. This part of section (D) consisted of 11 questions which were anticipated to measure factors that hinders the participation of SMEs in public procurement, using 5-point likert scale anchored by strongly agree to strongly disagree. A pilot study on the questionnaires was conducted with 6 academics to validate and improve its reliability.

A total 534 completed questionnaires were received out of the 680 that were distributed while 146 questionnaires were not returned. The response rates of 78.5% were achieved, which offers sufficient data for analysis. Saunders et al. (2003) assert that a sample size of at least 300 provides a useful general guideline for statistical analysis.

The purpose of data analysis was to perform univariate analysis by producing frequency tables, bivariate analysis by producing two-by-two crosstab analyses, and multivariate analysis by performing the regression of variable Y on the 39 independent variables of study.

The regression of variable Y on the 39 independent variables of study is non-linear procedure as variable Y is dichotomous (Montgomery, Peck & Vining, 2021). Standard goodness-of-fit tests are used for ensuring the theoretical reliability of all estimated results of data analyses.

Table 1: Personal characteristics of respondents (n=534)

Personal characteristics of respondents of study	Frequency counts and percentages
Level of past experience in procurement processes (Y)	Adequate: 462 (86.52%) Inadequate: 72 (13.48%)
Gender (Q1)	Male: 432 (80.90%) Female: 102 (19.10%)
Ethnicity (Q2)	African: 178 (100%)
Position of respondent in company (Q3)	Owner: 496 (92.88%) Employed manager: 38 (7.12%)
Age category of respondent (Q4)	26 to 30 years: 150 (28.09%) 31 to 40 years: 183 (34.27%) 41 to 50 years: 150 (28.09%)

	51 years or more: 51 (9.55%)
Highest level of formal education (Q5)	Master's degree: 77 (14.42%) Honour's degree: 61 (11.42%) Bachelor's degree: 266 (49.81%) Diploma: 89 (16.67%) Certificate: 41 (7.68%)
Economic sector (Q6)	Construction industry: 534 (100%)
Number of employees working in company (Q7)	2 or fewer: 36 (6.74%) 3 to 5: 405 (75.84%) 6 to 10: 36 (6.74%) 11 or more: 57 (10.67%)
Duration of operation of company (Q8)	12 months or less: 40 (7.49%) 13 to 36 months: 66 (12.36%) 37 to 60 months: 314 (58.80%) 61 to 120 months: 60 (11.24%) 121 months or longer: 54 (10.11%)
Annual turnover of company (Q9)	R500, 000 or less: 111 (20.79%) R500, 001 to R1 million: 66 (12.36%) R1, 000, 001 to R5 million: 147 (27.53%) R5, 000, 001 to R10 million: 75 (14.04%) R10, 000, 001 or more: 135 (25.28%)
BBBEE level of company (Q10)	Level 1: 534 (100%)

Source (Authors Own)

Table 1 shows the personal characteristics of the 534 participants of study including their level of past experience in procurement processes. The table shows that 462 of the 534 respondents in the study (86.52%) had adequate past experience in procurement processes. The remaining 72 respondents (13.48%) did not have adequate past experience in procurement processes. The table shows that 432 of the 534 respondents (80.90%) were male, whereas the remaining 102 respondents (19.10%) were female. All 534 respondents were African. The table shows that 496 of the 534 respondents (92.88%) were owners of their construction companies, whereas the remaining 38 respondents (7.12%) were employed managers.

The percentage of respondents with ages of 26 to 30 years was 28.09%. The percentage of respondents with ages of 31 to 40 years was 34.27%. The percentage of respondents with ages of 41 to 50 years was 28.09%. The percentage of respondents with ages of 51 years or more was 9.55%. The percentage of respondents with Master's degrees was 14.42%. The percentage of

respondents with Honour's degrees was 11.42%. The percentage of respondents with Bachelor's degrees was 49.81%. The percentage of respondents with Diplomas was 16.67%. The percentage of respondents with Certificates was 7.68%.
All 534 respondents worked in the construction sector on a full-time basis. About 6.74% of construction companies had 2 or fewer employees. About 75.84% of construction companies employed between 3 and 5 employees. About 6.74% of construction companies employed between 6 and 10 employees. About 10.67% of construction companies employed 11 or more employees.

About 7.49% of construction companies had operated for 12 months or less at the time of the study. About 12.36% of construction companies had operated for 13 to 36 months at the time of the study. About 58.80% of construction companies had operated for 37 to 60 months at the time of the study. About 11.24% of construction companies had operated for 61 to 120 months at the time of the study. About 10.11% of construction companies had operated for 121 months or longer at the time of the study.

About 20.79% of construction companies had an annual turnover of R500, 000 or less. About 12.36% of construction companies had an annual turnover of R500, 001 to R1 million. About 27.53% of construction companies had an annual turnover of R1, 000, 001 to R5 million. About 14.04% of construction companies had an annual turnover of R5, 000, 001 to R10 million. About 25.28% of construction companies had an annual turnover of R10, 000, 001 or more.
All 534 construction companies had Level 1 status of Broad-Based Black Economic Empowerment (B-BBEE) at the time of study. This classification was based on the B-BBEE Act (Act no. 53 of 2003).

Table 2: Methods used for conducting business (n=534)

Methods used for conducting business	**Frequency counts and percentages**
Conducting a business transaction with the Government or its entities (Example: National, provincial government, state owned enterprises, government institutions) (Q11)	Yes: 534 (100%) No: 0 (0%)
Formal rregistration of business with the Central Supplier Database (CSD) on the National Treasury Portal (Q12)	Yes: 534 (100%) No: 0 (0%)
Knowledge of Supplier Bidding Forms (SBDs) and Municipal Bidding Forms (MBDs) (Q13)	Yes: 534 (100%) No: 0 (0%)
Familiarity with supply chain management (SCM) methods that are routinely used to conduct transaction with Government Departments (Q14)	Yes: 534 (100%) No: 0 (0%)
Frequency of conducting business transactions with the Government and its entities on a regular basis (Q15)	Weekly: 417 (78.09%)

	Monthly: 75 (14.04%) Sometimes: 42 (7.87%)
Method used for submitting business related documents on a regular basis Q16	E-Mail: 483 (90.45%) Online: 27 (5.06%) Tender box: 24 (4.49%)

Source (Authors Own)

Table 2 shows figures for methods that are commonly used for conducting business with Government Departments and entities by the 534 construction companies selected for the study. The table shows that all 534 construction companies conduct business transactions with Government Departments, such as national and provincial Government Departments, state-owned enterprises and Government institutions. The table shows that all 534 construction companies were duly registered with the Central Supplier Database (CSD) on the National Treasury Portal at the time of the study. The table shows that all 534 construction companies had satisfactory knowledge about Supplier Bidding Forms (SBDs) and Municipal Bidding Forms (MBDs) at the time of the study. The table shows that all 534 construction companies were familiar with supply chain management (SCM) methods that are routinely used for conducting transactions with Government Departments at the time of the study. The table shows that 417 of the 534 construction companies (78.09%) conducted weekly business transactions with the Government or its entities on a regular basis. The table shows that 75 of the 534 construction companies (14.04%) conducted monthly business transactions with the Government or its entities on a regular basis. The table shows that 42 of the 534 construction companies (7.87%) conducted business transactions with the Government or its entities sometimes.

The table shows that 483 of the 534 construction companies (90.45%) submitted business related documents by email. The table shows that 27 of the 534 construction companies (5.06%) submitted business related documents by using online methods. The table shows that 24 of the 534 construction companies (4.49%) submitted business related documents by using the tender box.

Tables 3, 4, 5 and 6 show percentages obtained from the measurement of perception and past experience. The level of agreement of respondents was measured by using a 5-point ordinal scale (Bell, Bryman & Harley, 2022). Level 1 of the scale represents the strongest level of agreement to the statement. Level 5 of the scale represents the weakest level of agreement to the statement.

1. Strongly disagree (SD)
2. Disagree (D)
3. Not sure (NS)
4. Agree (A)

5. Strongly agree (SA)

Table 3 shows figures for indicators of perceptions held by the 534 construction companies selected for the study about the ease of using digital methods of submitting bidding documents. The table shows that 29% of respondents were familiar enough supplier bidding documents (SBDs) and municipal bidding documents (MBDs). The table shows that about 81% of respondents believe that using manual submission of bidding documents is costly. The table shows that about 37% of respondents believe that manual submissions of bidding documents are relatively more reliable than online and email submissions of bidding documents. The table shows that about 48% of respondents believe that manual submissions of bidding documents are relatively more convenient than online and email submissions of bidding documents. The table shows that only 12% of respondents believe that using digital submission of bidding documents is costly. The table shows that only 18% of respondents believe that digital submission of bidding documents is relatively more reliable than manual submission of bidding documents.

Table 3: Perception about the ease of digital methods of submission (n=534)

Indicators of perception about the ease of digital methods of submitting bidding documents	**Strongly disagree**	**Disagree**	**Not sure**	**Agree**	**Strongly agree**
	Frequency Count and Percentage				
Familiarity with and understanding how to complete all supplier bidding documents (SBDs) and municipal bidding documents (MBDs) such as SBD and MBD forms 1, 2, 3, 4, 5, 6, 7, 8 and 9 (Q17)	36 (6.74%)	36 (6.74%)	309 (57.87%)	135 (25.28%)	18 (3.37%)
Using manual submission (SBD/MBD Forms) for procurement bidding is costly (e.g. “Tender Box” submission) (Q18)	6 (1.12%)	39 (7.30%)	57 (10.67%)	300 (56.18%)	132 (24.72%)
Manual submission of SBD/MBD forms) is more reliable than online and email submission (Q19)	69 (12.92%)	66 (12.36%)	201 (37.64%)	183 (34.27%)	15 (2.81%)
Manual submission of SBD/MBD forms is more convenient than online and email submission (Q20)	87 (16.29%)	54 (10.11%)	177 (33.15%)	195 (36.52%)	54 (10.11%)

Using online submission for procurement biddings is costly (Q21)	132 (24.72%)	129 (24.16%)	210 (39.33%)	60 (11.24%)	3 (0.56%)
Online bidding is more reliable than manual and email submission (Q22)	99 (18.54%)	141 (26.40%)	198 (37.08%)	54 (10.11%)	42 (7.87%)

Source (Authors Own)

Table 4 shows figures for indicators of perceptions held by the 534 construction companies selected for the study about the convenience of using digital methods of submitting bidding documents. About 17% of respondents agree that online submission is more convenient than manual and email submissions. About 19% of respondents agree that using email submission of procurement biddings is costly. About 23% of respondents agree that an email submission of procurement biddings is more reliable than manual submission. About 29% of respondents agree that an email submission of procurement biddings is more convenient than manual submission. About 81% of respondents agree that the introduction of a Central Supplier database (CSD) by the National Treasury is a good innovation. About 21% of respondents agree that the Registration Portal of the National Treasury (the Central Supplier Database (CSD) is user friendly.

Table 4: Perceived convenience of digital procurement processes (n=534)

Indicators of perception about the convenience of using digital methods of submitting bidding documents	**Strongly disagree**	**Disagree**	**Not sure**	**Agree**	**Strongly agree**
	Frequency Count and Percentage				
Online bidding is more convenient than manual and email submissions (Q23)	105 (19.66%)	96 (17.98%)	246 (46.07%)	75 (14.04%)	12 (2.25%)
Using email submission of procurement biddings is costly (Q24)	81 (15.17%)	132 (24.72%)	225 (42.13%)	57 (10.67%)	39 (7.30%)
An email submission of procurement biddings is more reliable than manual submission (Q25)	96 (17.98%)	96 (17.98%)	222 (41.57%)	96 (17.98%)	24 (4.49%)
An email submission of procurement biddings is more convenient than manual submission (Q26)	36 (6.74%)	36 (6.74%)	309 (57.87%)	135 (25.28%)	18 (3.37%)
The introduction of a Central Supplier database (CSD) by	12 (2.25%)	39 (7.30%)	54 (10.11%)	303 (56.74%)	126 (23.60%)

the National Treasury is a good innovation (Q27)					
The registration portal of the National Treasury or the Central Supplier Database (CSD) of the National Treasury is user friendly (Q28)	99 (18.54%)	129 (24.16%)	198 (37.08%)	84 (15.73%)	24 (4.49%)

Source (Authors Own)

Table 5 shows figures for the ease of using the portal at the South African National Treasury. About 60% of respondents agreed that the registration of business details on the National Treasury-Central Supplier Database (CSD) portal was easy to do. About 16% of respondents agreed that CSD registration report business details were a repetition of SBD/MBD forms business details. About 43% of respondents agreed that supporting documents for applications were also available on CSD registration reports such as tax compliance and BBBEE certificates as well as documents showing details of Directors of businesses. About 20% of respondents agreed that the CSD Portal was available all the time. About 19% of respondents agreed that the submission of a request for a quote (RFQ) by email was a transparent process. About 24% of respondents agreed that the submission of a request for a quote (RFQ) by email encourages corrupt activities by supply chain practitioners.

Table 5: The ease of using the portal at the South African National Treasury (n=178)

The ease of using the portal at the South African National Treasury	**Strongly disagree**	**Disagree**	**Not sure**	**Agree**	**Strongly agree**
	Frequency Count and Percentage				
Registration of business details on the National Treasury-Central Supplier Database (CSD) Portal is easy (Q29)	99 (18.54 %)	57 (10.67 %)	165 (30.90 %)	192 (35.96 %)	21 (3.93%)
CSD Registration Report business details is a repetition of SBD/MBD forms business details (Q30)	126 (23.60 %)	132 (24.72 %)	189 (35.39 %)	60 (11.24 %)	27 (5.06%)
Business supporting documents are also available on the CSD Registration Report (e.g. Tax Compliance, BBBEE Cert, Directors details) (Q31)	86 (16.10 %)	57 (10.67 %)	164 (30.71 %)	206 (38.58 %)	21 (3.93%)
CSD Portal is available all the time (Q32)	87 (16.29 %)	96 (17.98 %)	243 (45.51 %)	75 (14.04 %)	33 (6.18%)

The submission of a request for a quote (RFQ) by email is transparent (Q33)	81 (15.17 %)	132 (24.72 %)	222 (41.57 %)	57 (10.67 %)	42 (7.87%)
The submission of a request for a quote (RFQ) by email encourages corrupt activities by supply chain practitioners (Q34)	87 (16.29 %)	99 (18.54 %)	222 (41.57 %)	96 (17.98 %)	30 (5.62%)

Source (Authors Own)

Table 6 shows figures for preferred methods of submitting business related documents by the 178 construction companies selected for the study. About 29% of respondents preferred to make an online submission of RFQ and tender documents. About 77% of respondents agreed that the doing business with the Government and its entities was effortless. About 75% of respondents indicated that they were capable of calculating the stipulated minimum threshold for local production and content in the course of completing Section 6.2 of SBD documents on their own. About 41% of respondents agreed that the submission of evidence of BBBEE status for every bid was not necessary.

Table 6: Preference for online methods of submitting business related documents (n=178)

Preference for methods of submitting business related documents	**Strongly disagree**	**Disagree**	**Not sure**	**Agree**	**Strongly agree**
	Frequency Count and Percentage				
Preference for online submission of RFQ and tender documents (Q35)	36 (6.74%)	36 (6.74%)	309 (57.87 %)	135 (25.28 %)	18 (3.37%)
The perception that doing business with the Government and its entities is effortless (Q36)	30 (5.62%)	39 (7.30%)	54 (10.11 %)	306 (57.30 %)	105 (19.66%)
The ability to calculate the stipulated minimum threshold for local production and content for a bid in Section 6.2 of SBD documents (Q37)	21 (3.93%)	39 (7.30%)	75 (14.04 %)	300 (56.18 %)	99 (18.54%)
The perception that the submission of evidence of BBBEE status for every bid is not necessary (Q38)	93 (17.42 %)	57 (10.67%)	165 (30.90 %)	198 (37.08 %)	21 (3.93%)

Source (Authors Own)

Table 7 shows 7 significant two-by-two associations that were obtained from the Pearson chi-square test of association (Beh & Lombardo, 2021). The table shows observed chi-square values and P-values for 7 significant two-by-two associations between procurement skills and the effective utilisation of online and digital methods of conducting business among people working in emerging construction enterprises with Level 1 BBBEE status. All 7 associations highly significant as their probability values are equal to 0.000. For each one of the 7 tests of associations, all expected cell frequencies were large in magnitude (5 or more), thereby confirming that the results shown in Table 7 are theoretically reliable (Montgomery, Peck & Vining, 2021). All possible two-by-two tests of associations are shown in Appendix B.

Table 7: Results obtained from crosstab analyses (n=534)

List of 7 variables significantly associated with the level of procurement skills	**Chi-square value**	**Probability value**
Level of education of respondent (Q5)	222.6606	0.000
Gender of respondent (Q1)	168.2816	0.000
Actual ownership of construction company (Q3)	150.3001	0.000
Age of respondent (Q4)	147.4022	0.000
Long duration of operation of construction company (Q8)	65.7588	0.000
The perception that an email submission of bidding documents is not costly (Q24)	16.1646	0.003
The perception that online biding is more reliable than manual and email submissions (Q22)	12.0599	0.017

The results shown in Table 7 above indicate that the level of procurement skills of the 534 respondents who were selected for the study is significantly influenced by the following 7 factors:

1. Level of education of respondent (Construction companies that are operated by people who possess a Bachelor's degree or better academic qualification have relatively better procurement skills and experience in comparison with construction companies that are operated by people who possess Diploma level education or less).
2. Gender of respondent (Men possess relatively better procurement skills and experience in comparison with women)
3. Actual ownership of construction company (Construction companies that are operated by actual owners possess relatively better procurement skills and experience in comparison with companies that are operated by employed managers)
4. Age of respondent (Respondents with ages of 41 years or older have relatively better skills in procurement processes in comparison with respondents who are 40 years old or younger)
5. Long duration of operation of construction company (Companies with over 61 months or more are relatively better experienced and skilled in comparison with companies with a duration of experience of 60 months or less)

6. The perception that an email submission of bidding documents is not too costly to use (Q24)
7. The perception that online biding is more reliable than manual and email submissions (Q22)

The results shown above were used for performing multivariate analysis. This was done by using binary logistic regression analysis (Hosmer Jr, Lemeshow & Sturdivant, 2013). Table 8 shows odds ratios estimated from binary logistic regression analysis. Table 8 shows 4 significant factors that affect the ability of emerging construction companies to use procurement processes effectively at the 5% level of significance. The probability values of each one of the 4 influential factors are less than 5% or 0.05.

Table 8: Influential factors that affect the effective use of procurement processes (n=534)

List of 4 influential predictors of the level of procurement skills	**Odds Ratio**	**P-value**	**95% C. I. for OR**
Level of education of respondent (Q5)	51.89	0.000	(17.39, 154.81)
Gender of respondent (Q1)	15.92	0.000	(5.33, 47.56)
Actual ownership of construction company (Q3)	40.06	0.000	(5.09, 315.35)
Long duration of operation of construction company (Q8)	8.31	0.043	(1.07, 64.77)

The results displayed in Table 8 show that the ability to use procurement processes effectively among emerging construction companies is significantly influenced by the following 4 factors:

1. Level of education of respondent (Q5)
2. Gender of respondent (Q1)
3. Actual ownership of construction company (Q3)
4. Long duration of operation of construction company (Q8)

Interpretation of odds ratios

In this study, odds ratios are used an econometric measure of effect. Significant odds ratios have magnitudes that are larger than the number 1. They also have probability values that fall below 0.05 at the 5% level of significance. They have 95% confidence intervals that do not contain the number 1 (Hosmer Jr, Lemeshow & Sturdivant, 2013).

Interpretations are provided for the 4 significant odds ratios of study as shown below:

The odds ratio of the variable “Level of education” is 51.89. This indicates that a respondent who possesses at least a Bachelor’s degree is 51.89 times more efficient in the effective utilisation of

procurement processes in comparison with a respondent whose highest level of formal education is less than a Bachelor's degree.

The odds ratio of the variable "Gender or respondent" is 15.92. This indicates that men are 15.92 times more efficient in the effective utilisation of procurement processes in comparison with women among emerging construction companies.

The odds ratio of the variable "Actual ownership of construction company" is 40.06. This indicates that a construction company that is operated by an actual owner of the company is 40.06 times more efficient in the effective utilisation of procurement processes in comparison with a construction company that is operated by an employed manager.

The odds ratio of the variable "Long duration of operation of construction company" is 8.31. This indicates that a construction company that has been in operation for more than 5 years is 8.31 times more efficient in the effective utilisation of procurement processes in comparison with a construction company that has been in operation for less than 5 years.

Goodness-of-fit tests for the estimated binary logistic regression model

Goodness-of-fit tests are used for ascertaining the theoretical reliability of statistical models. The theoretical reliability of the above five odds ratios was ascertained by estimating a probability value from the Hosmer-Lemeshow goodness-of-fit test (Hosmer Jr, Lemeshow & Sturdivant, 2013). The procedure gave a probability value of 0.2605, a figure which is greater than 0.05 in magnitude. As such, it was concluded that the fitted model was good fit for the data obtained from the study.

The second goodness-of-fit test was the classification table (Agresti, 2018) from binary logistic regression analysis. The fitted model could classify 91.59% of all cases accurately. This percentage is much higher than the threshold of 75%. This finding shows that the estimated logistic regression model fits the data quite well.

3. Discussion and recommendations

The purpose of this study was to identify the factors hinders the participation of SMES in the public procurement in South Africa. A major implication for the findings is that these findings will able to give better understanding for entrepreneurs and business owners (SMEs) in addressing the factors which significantly affect the business participation within government procurement. The study of determinants for SMEs success while transacting business with the government and its entities is fundamental in understanding the business participation and knowledge (understanding) of the procurement processes by the SMEs in South Africa. The results of this study can also be used as reference by the parliament (policy portfolio), Department of treasury together with the Department of Small Business to remedy the government procurement policy in order to encourage

significant participation of SMEs to maintain business sustainability while improving employment opportunities.

The introduction of CSD represents a massive step towards the digitisation of government procurement in order to reduce procurement wastage and corruption. The implementation of CSD, if properly administered, it can be beneficial for government to appoint accurate service provider information in a transparent manner. However, the literature has shown that this process has not really reduces the level of duplication in the workplace, this came from the fact that same services providers can register on the database using different locations or their physical address. This results incompletion of some other project due to the fact that services stays very far from the location where the project is supposed to take place. Effective monitoring system should be established for the better performance of CSD.

4. Conclusion

Various studies explore the drivers towards the failures of SMEs, this research paper aim to investigate the determinants impacting SMEs to participation in public procurement in South Africa. In the past 5 years, the South African government through the department of treasury implemented Central Supplier Database (CSD) to avoid duplication of effort and cost for both supplier and government, while enabling electronic procurement processes. To the other side (regardless of the new innovation), SMEs are still experiencing the same issues, of duplications and manual processing of tender submission, this has led the researchers to investigate to examine the effectiveness and the efficient of the currently implemented CSD, and further identity the factors that contributes to its ineffectiveness. As the literature, provided quite several challenges that appear to have the potential to lead to SMEs' failure. These include the fact that most researchers saw several government policies and regulations as preventing (Impacting) the success of their business operations. Furthermore, scarcity of enabling information as another concern that bothers them. This is worrying because there are quite several government initiatives directed at addressing this issue.

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