

FACTORS AFFECTING EFFECTIVE PARTICIPATION OF SMALL AND MEDIUM ENTERPRISES IN PUBLIC PROCUREMENT

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ABSTRACT

Globally, public procurement has been used as a tool to support small and medium-sized enterprises (SMEs) due to the important role they play in the economy. SMEs' participation in every sphere of economic activity, including public procurement, is one of the ways the sector can promote the country's economic development. However, SMEs are sometimes usually reluctant to sell to the government. The purpose of the study is to investigate the factors affecting the effective participation of SMEs in the public procurement market in Zambia. This study employed a cross-sectional descriptive design with a quantitative approach. Data was collected from a total of 186 respondents drawn from SMEs registered with PACRA and operating in Lusaka, the capital city of Zambia. Random sampling was used to select SMEs, and respondents included company/business owners, managers, and supervisors. Data collected was analysed using exploratory factor analysis and regression analysis. The findings revealed that regulatory framework factors, SME capacities factors, public procurement tendering factors, and SME attitude factors were significant determinants with a combined effect size of (0.675) and a coefficient of determination of 43.9%. Further, based on the Hierarchical regression model, it was established that the largest predictors of SMEs' effective participation in the public procurement market are the public tendering process and SMEs' attitude towards public procurement. The findings of this paper will be of interest to SMEs, regulatory authorities, and policymakers. Further, it will help inform policy on how SME participation can be enhanced in public procurement, especially in developing countries.

KEYWORDS: Effective, Participation, Procurement, Small and Medium Enterprises

JEL CLASSIFICATION: M13, L11, O17.

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INTRODUCTION

Globally, public procurement has been used to support SMEs due to their important role in the economy (Wanderi, 2014; Patil, 2017). Literature gives evidence of SMEs' critical role in an economy, such as job creation, poverty alleviation and economic growth (Dvorský et al., 2020; Digidowiseiso & Sugiyanto, 2021). SMEs are innovative than established firms; they are quick to respond to the needs of changing

environment due to their financial and structural flexibility, which is less bureaucratic in nature. As a result, SMEs provide an innovative lever of the economy by exploring niche markets that are unattractive to large organisations. SMEs have been the driver of growth for the business sector and a driving force behind the rapid expansion of the commercial and social sectors (Meekaewkunchorn et al., 2021; Digidowiseiso & Sugiyanto, 2021).

The benefits of contracting with SME suppliers accrue not only to public sector organisations but also to the wider economy. It is not surprising that researchers from across public administration and management disciplines and government have increased interest in SMEs' participation in public procurement (Liu et al., 2024). Alkadry et al. (2019) argue that public procurement is a critical tool that enhances socio-economic development by supporting local procurement. Harland et al. (2019) further argued that the size of government procurement and its spending power can be used to support SMEs' participation in public procurement.

It is imperative that SMEs receive support when vying for opportunities made available through public procurement. According to Nemeč et al. (2023), public procurement costs governments a lot of money and varies among countries. For instance, according to Flynn (2018), public procurement costs in the United Kingdom (UK) and the European Union (EU) total roughly £240 billion and €1 900 billion, respectively. The United States of America (USA) spends over \$2.7 trillion annually on public sector procurement, and in the fiscal year 2015, about \$90.7 billion of this sum was used to support SMEs (Hawkins et al., 2018), in terms of percentage of GDP between the years 2017 – 2018, UK spent at least 13% while the USA spent at least 19% (Hafsa et al., 2021). Literature further points out that for most low-income countries public procurement alone accounts for between 14.4% and 20% of GDP (Hoekman & Sanfilippo, 2020; Panya & Awuor, 2023).

The SME sector is very critical to the development of any economy. Zambia, like many developing nations, has recognised the pivotal role of SMEs in driving economic growth. The Government has acknowledged that one way to accomplish this goal is through public procurement. One of the main objectives of public procurement is intended to leverage the advantages of promoting unrestricted competition among private enterprises by encouraging the participation of SMEs in public procurement through institutional, legal, and administrative reforms in the public procurement sector. Despite the institutional, legal, and administrative reforms undertaken so far in the public procurement sector in Zambia, like many other developing countries, SMEs still struggle to compete successfully in this market. According to Liebenthal and Cheelo (2020), SMEs have a market share of less than 7% in public procurement. This suggests that large enterprises own more than 93% of the market share. Since SMEs make up the majority of all businesses in the nation roughly 97% employ 88 percent of the labor force in Zambia, and contribute roughly 70% of the country's GDP, their market share in the public procurement market is less than 7% is too small when compared to the 93 percent market share enjoyed by large-scale enterprises (International Trade Centre, 2020). However, few studies have focused on modeling the factors affecting the effective participation of SMEs in public procurement using the variables espoused in this paper. Therefore, the main objective of the study was to analyze the factors that affect the participation of SMEs in the public procurement market. The findings from this study provide a reference point for other countries in Sub-saharan Africa due to the similarities in the socio-economic environments.

1 SMES AND PUBLIC PROCUREMENT

Public procurement is acknowledged as being crucial to helping the SME sector in particular and, on a larger scale, fostering a dynamic business climate (Preuss, 2011; MacGoven, 2011). The US Small Business Act and the EU Small Business Act both prominently highlight procurement as a policy instrument, supporting this with current enterprise policy. Concretely speaking, public sector contracts

provide SMEs with predictable and steady sources of demand, payment certainty, and reputational enhancement (Loader, 2017); all of which allow them to invest in their organizational resources and human capital in order to grow for the future. Interacting with the public sector can encourage SMEs to innovate their processes and products as well as to professionalize their operations (Georghiou et al., 2014). The advantages are not only one-way. SME participation increases supplier market competitiveness in both quantity and quality, resulting in reduced bid prices and more options for public sector organizations (OECD, 2013). It also advances the objective of having a strong domestic business sector that supports employment, integrates into the local economy, and advances the welfare of the country.

In general, the goals of public procurement are both primary and secondary. For instance, the primary goals are to acquire products and services while operating in a transparent, competitive manner in compliance with the regulations governing public procurement (Basheka, 2018). As essential components of fiscal policies for attaining successful and efficient public financial management, the goals are codified in public procurement regulatory frameworks (Asamoah et al., 2019). In addition, the main goals of public procurement are to use best practices to offer goods, services, construction, or asset disposal in a transparent, equitable, and competitive manner (Komakech, 2016). The United Nations Commission for International Trade Law model on the procurement of goods works, and services (UNICITRAL) serves as the foundation for the internationally recognized fundamental purposes of public procurement. Among them are economy and efficiency, fostering participation by all eligible suppliers, promoting competition, and integrity (Ankersmit, 2020).

According to contracts, public procurement's secondary goals center on overarching strategic policy goals such as assisting SMEs, sustainable public procurement, and promoting youth and women-owned businesses (Loader, 2017; Basheka, 2018). Basheka (2018) contends that governments may help SMEs and women-owned businesses by removing obstacles and expanding possibilities through public procurement as a vehicle for economic growth.

2 THEORETICAL APPROACH

The two theories underpinning this paper are institutional theory and resource-based theory. According to institutional theory, a great deal of individual and organizational behavior and practices can be explained by institutional logic rather than economic or technical logic (Engle et al., 2011; Scott, 2008). In other words, pressure from regulatory bodies and professional associations influences how people and organizations act. According to institutional theory, people and organizations will acquiesce to institutional forces even when doing so is not always advantageous economically (Engle et al., 2011). The incentive for compliance lies in a need for social legitimacy (Engle et al., 2011). To comply with institutional constraints is important in order to sustain social legitimacy. Legitimacy is at risk if institutional pressure is not followed. Institutional forces cause organizations to embrace the same behaviors and perspectives, a phenomenon known as institutional isomorphism (Cardona Mejía et al. 2020). Understanding how formal and informal institutional forces affect SMEs' participation in public procurement through public procurement policies and regulations is crucial to the current research. Public buyers and their organizations are under pressure in developed economies to include SME-friendly policy initiatives in their procurement operations. However, their compliance cannot be assumed. Literature has shown that there is often a disconnect between what the institutional environment believes public purchasers should do and what they really do (Ntayi et al., 2013). Organizational players in the procurement industry may not have the same interests and values as the institutional rule-makers (Gelderman et al., 2015). This suggests that some people inside an organization might be unable or unwilling to support SMEs' involvement in public procurement.

Whereas, the resource based theory posits that institutions should look internally for sources of competitive edge rather than externally at the competitive environment. Standing on this theory, Irina (2010) argues that SMEs are very often characterized as having limited resources which leads to lack of attention for public procurement. Adding that small company owners do not develop their skills in procurement and procedures of that kind as a result of just performing operational acquisition of components. A consequence of having limited resources is that the vulnerability of the company increases. The firm resources can be divided into different categories to get a better grip of what firm resources mean and can be: physical capital resources, human capital resources and organizational capital resources (Nam and Luu, 2022).

3 VARIABLES SELECTION

The variables/ constructs adopted in this study were informed by similar studies by Nkonge (2013), Loader (2013), Nicholas & Fruhmann (2014), Njuguna (2015), Loader (2015), by Muhia & Afande (2015), Olusegun & Akinbode (2016), Suliantoro et al. (2019), Akenroye et al. (2020), Mauro et al. (2020), Idem et al. (2022), Hoekman & Taş (2022), Mahuwi & Israel (2023), as well as Chisumbe et al. (2024). Loader (2015) observed that SMEs have consistently expressed their dissatisfaction with public sector tendering processes and procedures. This view was re-echoed by Muhia and Afande (2015), who averred that SMEs may be discouraged from tendering for public sector contracts because of a number of perceived or real barriers which include information hoarding about opportunities, a belief that the processes involved in bidding are unnecessarily complex and costly; not understanding the requirements fully. Similarly, Macpherson and Holt (2007) surmised that a lack of skills for preparing good bids, the cost of tendering, and excessive documentation requirements are factors that prevent SMEs from participating in public procurement. Morrissey and Pittaway (2006) argued that delayed payment and disproportionate qualification criteria are some of the factors that prevent SMEs from participating in public contracts. Nkonge (2013) revealed that SMEs struggle with public procurement due to transparency, bureaucratic tendering procedures, and SMEs' inherent resource limitations, while Georghious (2014) identified low professionalism and high-risk aversion as factors affecting SMEs' participation in public procurement. Loader (2013), in the study to provide a framework to aid our understanding of the nature of the difficulties facing SMEs in public procurement, analyzed and categorized the difficulties that militate against SMEs' involvement in public procurement into three categories that is the public sector environment the tendering process, SME Capacities. From the review of literature, common factors, which predict SMEs' effective participation in public procurement, were identified and categorized into five (5) main constructs/variables, namely Regulatory Framework, SME Capacity, Public Sectors Environment, Public Tendering Process, and Attitude. For each of the variables measurement items were equally identified from literature as shown in table 1.

Table 1 Variables in Effective Participation of SMEs in Public Procurement

Variable	Measurements	Authors
Regulatory Framework	Protects SMEs interest	Njuguna, 2015; Suliantoro et al., 2019; Idem et al. 2022
	Ensures that SMEs are paid on time after deliverly	Idem et al. 2022
	Protects SMEs from unfair competition	Procurement, 2016; Idem et al. 2022
	Ensures transparency in the public tendering process	Nkonge, 2013; Akenroye et al. 2020; Mauro et al. 2020; Mahuwi & Israel, 2023

Variable	Measurements	Authors
SME Capacity	Inadequate resources (legal, admin, marketing, human capital)	Georghious, 2014; Flynn et al., 2018; Flynn & Davis, 2017; Flynn, 2017; Ancarani et al., 2019; Akenroye et al., 2020; Chisumbe et al. 2024
	Lack of knowledge about public bidding process	Akenroye et al., 2020; Mauro et al., 2020; Mahuwi & Israel, 2023
	Lack of bid preparation skills	Macpherson & Holt, 2007; Akenroye et al. 2020, Mauro et al., 2020; Mahuwi & Israel, 2023
	Lack of performance history or tract record	Akenroye et al. 2020; Mauro et al. 2020); Mahuwi & Israel, 2023
	Lack of systems or IT skills	Mahuwi & Israel, 2023; Chisumbe et al. 2024
	In ability to offer lower costs due to lack of economies of scale	Mahuwi & Israel, 2023
	Minimum relation between SMEs and government	Procurement, 2016; Akenroye et al., 2020
	Public Sectors Environment	Conflicting priorities (cost savings versus supplier diversity)
Public buyers lack adequate skills to engage SMEs		Pilo et al. 2018; Chisumbe et al. 2022; Mahuwi & Israel, 2023
Risk averse attitudes of public buyers		Akenroye et al., 2020
Pro-large business attitudes of public buyers		Procurement, 2016; Akenroye et al., 2020
Complexity, confusion, and inconsistency produced by public sector organizations		Procurement, 2016; Hoekman & Taş, 2022
Public Tendering Process	Lack of awareness/difficulties in detecting contract opportunities	Loader, 2013; Olusegun & Akinbode, 2016; Suliantoro et al., 2019
	Prescriptive and vague tender specification	Nicholas & Fruhmann, 2014
	Disproportionate eligibility criteria	Morrisey and Pittaway, 2006; Nicholas & Fruhmann, 2014; Hoekman & Taş, 2022
	Large size of contract opportunities	Nicholas & Fruhmann, 2014
	Poor feedback on tender outcomes	Nicholas & Fruhmann, 2014; Akenroye et al., 2020; Hoekman & Taş, 2022
	Cost and time associated with preparing bids	Akenroye et al., 2020; Mahuwi & Israel, 2023
	Late /Unfavourable payment terms	Akenroye et al., 2020
Attitude	Lack of struggle	Suliantoro et al., 2019
	Reluctant to engage with process perceived to be unfair	Hoekman & Taş, 2022
	Lack of confidence in the procurement process	Mahuwi & Israel, 2023

Variable	Measurements	Authors
Effective Participation	Improved performance	Olusegun & Akinbode, 2016; Suliantoro et al., 2019
	Increased communication	Nicholas & Fruhmann, 2014; Hoekman & Taş, 2022
	Increased benefits and contract value	Hoekman & Taş, 2022
	Increased capacity of my SME	Nicholas & Fruhmann, 2014

(Source: Authors' literature review)

3.1 Regulatory framework

The procurement of goods, works, and services in public sector procurement is done with reference to a number of regulations and policies. The importance of the economic growth of SMEs can be seen in government regulations that support small and medium businesses (Govori, 2013). Government policy and regulation sometimes do not support the SME sector in winning public sector contracts. Some of the barriers for SMEs related to Government regulation are slow payments and large contract sizes. (Cabras, 2011). Based on these perspectives, the study posits as follows:

H1. Regulatory framework affects the effective participation of SMEs in public procurement.

3.2 SME capacities

Public buyers have cited organizational shortcomings and concerns about financial health as the reasons they do not view SMEs as eligible suppliers (Pickernell et al, 2013). Public purchasers have also criticized SMEs for failing to comprehend the unique requirements of public sector organizations and what they look for in suppliers. The empirical data demonstrates that SMEs' capacity to compete effectively is constrained by resource constraints.

Flynn and Davis (2017) discovered that micro-enterprises had poorer tendering expertise, availability of human resources for drafting a tender, and involvement in procurement training than companies with ten or more employees. These types of resource discrepancies, together with organizational capability and revenue, might influence which SMEs secure contracts with the public sector and which ones do not. All of the foregoing are exacerbated by the unfavorable notions that many SMEs have regarding public procurement. Based on these perspectives, the study posits as follows:

H2. SMEs capacities influences their effective participation in public procurement.

3.3 Public Sector Environment

The public sector comprises organizations that are owned, operated, or funded by the government rather than private companies or individuals. Many of the factors that contribute to SMEs' struggles with public procurement come from the environment of the public sector. This argument has numerous components. First, the inconsistent and even incompatible nature of public procurement's goals and policies is criticized. Public purchasers are affected by this "regularity ambiguity" (Morgan, 2008), which causes them to get perplexed about their priorities. When weighed against duties to maximize value for money and abide by national and international procurement laws, this is alleged to have consequences for assisting SMEs. Another criticism of public procurement is its lack of professionalism.

SMEs have also identified inadequate technical and market expertise among the general public as a difficulty, particularly when it comes to marketing novel products and services (Georghiou et al., 2014).

According to one analysis, the "main instrument for enabling a greater utilization of smaller enterprises in public procurement" is professionalism among public purchasers.

The long-held conviction that public sector procurement is characterized by a culture of risk aversion goes hand in hand with worries about professionalism. According to Loader (2013), the result of risk aversion is a preference for larger, more established suppliers over smaller, less established ones. Pickernell et al (2013) findings indicating new businesses have a harder time accessing public procurement opportunities seem to support this. Based on these perspectives, the study posits as follows:

H3. Public sector environment engenders participation of SMEs in public procurement.

3.4 Public Tendering Process

The public tendering process usually refers to the process whereby public sector organizations invite bids that must be submitted within a finite deadline. There are a number of problems with the tendering process. SMEs frequently complain about qualification standards that are out of proportion to the type and value of the contract (Loader and Norton, 2015). These restrictions include those relating to the number of years in business or prior experience that are not materially relevant to the contract, insurance cover requirements that are too costly for small businesses to satisfy, and financial capacity benchmarks that are impossible for them to meet. Another significant obstacle is an overemphasis on pricing as opposed to a more comprehensive understanding of value for money.

Other obstacles include confusing specifications, too prescriptive requirements, and narrow bid specifications (Loader and Norton, 2015). The magnitude of public sector contracts is also recognized to be a significant challenge for small businesses; this is made even more difficult when public sector organisations group contracts together (Kidalov, 2015). Lack of communication between public purchasers and suppliers during the pre- and post-tendering phases exacerbates the difficulty of recognizing business prospects (Cabras, 2011). As a result, many SMEs lack sufficient knowledge of what the tendering process entails. This is supported by the fact that SMEs list improved communication with public buyers as one of the improvements they would most want to see. Based on these perspectives, the study posits as follows:

H4. Public tendering process influences effective participation of SMEs in public procurement.

3.5 SMEs attitude towards public procurement

The perceptions of SMEs that are discussed here relates to issues such as bribery and irregularities that can hamper SMEs in government procurement of goods, workT's and services. Previous research reports that many of the barriers faced by SMEs in public procurement are related to lack of transparency in the procurement process. Even with the launch of initiatives designed to assist SMEs in tendering, negative sentiments persist. For example in Ireland 43 per cent of suppliers surveyed in December, 2011 complained that public procurement had become less business-friendly and a further 37 per cent believed that there had been no improvement (Flynn et al., 2018). Evidence has also been adduced in British and Australian contexts to show that SMEs' perceive the value proposition of supplying the public sector to be lower than the private sector on such criteria as profitability, sales volume, market access and even contract stability.

Relatedly, SMEs see private sector buyers to be more open to innovation (Georghiou et al., 2014). Commercially attractive as public sector contracts may be, SMEs are highly critical of how public procurement operates in practice and believe it to be something of a double-edged sword. Based on these perspectives, the study posits as follows:

H5. SMEs attitude towards public procurement affects their effective participation in public procurement.

4 THE AIM, METHODOLOGY AND DATA

The main aim of this research was to analyse and establish the factors that affect the effective participation of SMEs in the public procurement market. In realizing that aim, this study adopted a cross-sectional descriptive design with a quantitative approach. Data was collected in the year 2023 using a structured questionnaire containing closed-ended questions from a total of 186 respondents drawn from Patents and Companies Registration Agency (PACRA) register of SMEs operating in Lusaka. PACRA is an organization that provides for and registers SMEs among other businesses operating in Zambia, thereby providing a desirable representation and definitions of SMEs for the study. Lusaka was chosen because a number of SMEs operating in many parts of Zambia either have their head offices or businesses operating in Lusaka. Random sampling was used to select SME respondents, including company or business owners, directors/senior managers, and others in supervisory roles, as shown in Table 2.

Statements were rated on a five-point Likert scale to measure the respondents' agreement levels. Likert-type or frequency scales use fixed-choice response formats and are designed to measure opinions (Wegner, 2012). The scale of 1 to 5 was used, where 1 = Strongly disagree (≥ 1.00 and ≤ 1.80); 2 = Disagree (≥ 1.81 and ≤ 2.60); 3 = Neutral (≥ 2.61 and ≤ 3.40); 4 = Agree (≥ 3.41 and ≤ 4.20), and 5 = Strongly agree (≥ 4.21 and ≤ 5.00).

Data collected was analysed using descriptive statistics, exploratory factor analysis, and regression analysis. Factor analysis was carried out to explain the extent to which each item in the dataset was associated with the respective factor (variable). The correlation analysis was used to measure/show an association between variables, whereas regression analysis was adopted to explain the causality between the independent variables (regulatory framework, SMEs' capacities, public sector environment, public tendering process, and SME attitude) and the dependent variable (effective participation), descriptive statistics and regression analysis were carried out with standard F and tests, at 95% level of significance.

5 RESULTS

A total of 186 respondents participated in the survey, of which 79.6% had tertiary education. 64% of the companies or businesses surveyed had been in operational for more than six (6) years with representation from the Manufacturing, traders, service and others. Respondents from the sampled SMEs included Owners, managers as well as supervisors as shown in table 2.

Table 2 Respondents demographic characteristics

		Frequency (n)	Percent
Position of respondents	Owners	91	48.9
	Managers	65	34.9
	Supervisors	30	16.1
Level of education	Primary certificate	4	2.2
	Secondary certificate	34	18.3
	college/Diploma certificate	85	45.7
	Bachelor's degree	63	33.9

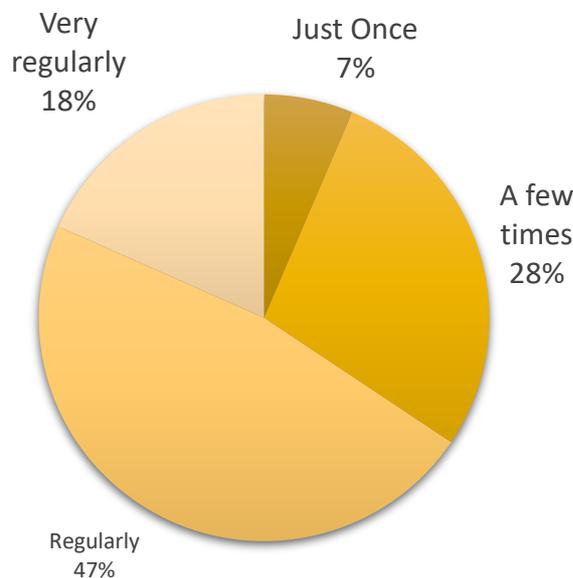
		Frequency (n)	Percent
Company age (years in operation)	Not more than 1 year	5	2.7
	1 to2 years	13	7
	3 to 5 years	49	26.3
	6 to 10 years	58	31.2
	Over 10 years	61	32.8
Nature of business	Manufacturer	29	15.6
	Trade	88	47.3
	Service	67	36
	Other	2	1.1
Number of employees	1-10 employees	91	48.9
	11-50 employees	73	39.2
	51-100 employees	22	11.8

(Source: Authors' research)

5.1 Frequency of Participation in Public Tendering

The respondents were also asked to indicate how often they participated in the government tendering and procurement processes. The study established that a majority (47.3%) regularly participated, 28% had participated a few times, 18.3% very regularly participated and 6.4% had only participated once as shown in Figure 1.

Figure 1 Frequency of procurement process participation



(Source: Authors' research)

5.2 Descriptive Statistics

5.2.1 Normality test

Descriptive analysis was employed in the study to test for normalcy. According to Field (2009), acceptable bounds for skewness and kurtosis indices are between ± 2 . All of the variables fell inside the range for skewness, according to Table 3, which summarizes the results. However, public tendering process was slightly above the prescribed ranges.

Table 3 Descriptive statistics-normality test

	N	Minimum	Maximum	mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Regulatory framework	186	1.00	5.00	3.6613	0.96946	-0.34	0.178	-1.011	0.355
SME Capacity	186	1.00	5.00	3.053	0.70624	0.262	0.178	-0.732	0.355
Public Sector Environment	186	1.00	5.00	3.3333	0.74302	0.058	0.178	-0.479	0.355
Procurement Process	186	1.00	5.00	3.874	0.85582	-1.524	0.178	2.911	0.355
Attitude	186	1.00	5.00	3.2724	0.92603	-0.3	0.178	-0.409	0.355
Effective Participation	186	1.00	5.00	3.1976	0.75221	-0.0178	0.178	-0.161	0.355

(Source: Authors' research)

5.2.2 Exploratory factor analysis (EFA)

An EFA was conducted to assess the uni-dimensionality and reliability of each factor. Principal components with Varimax rotation were specified as the extraction and rotation methods, respectively. The results revealed that the attributes of all the factors had Kaiser-Meyer-Olkin (KMO) values in the range of 0.577 to 0.903. More so, Bartlett's test of sphericity was found significant ($p = 0.000$), as shown in Table 4. Overall, this suggested that the factor analysis was appropriate (Rehbinder, 2011; Chisumbe et al., 2022) despite the dependent variable being slightly below 0.6.

Table 4 KMO statistics

KMO and Bartlett's Test							
		Regulatory Framework	SME Capacity	Public Sector Environment	Procurement Process	Attitude	Effective Participation
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.709	.832	.801	.903	.645	.577
Bartlett's Test of Sphericity	Approx. Chi-Square	314.935	525.012	412.109	671.749	90.877	20.656
	Df	6	15	10	21	3	6
	Sig.	<.001	<.001	<.001	<.001	<.001	.002

(Source: Authors' research)

Factor loadings were calculated for each variable. The factor loadings denoted the relationship between the items (statements) under each variable and the extracted components that explained their variation. The items loadings were above 0.5 as shown in table 5.

Table 5 Factor analysis

Factors	Undeleted Items	Factor Loadings
Regulatory Framework	Protects SMEs interest	.886
	Ensures that SMEs are paid on time after deliver	.907
	Protects SMEs from unfair competition	.671
	Ensures transparency in the public tendering process	.689
SME Capacity	Inadequate resources (legal, admin, marketing, human capital)	.709
	Lack of knowledge about public bidding process	.810
	Lack of bid preparation skills	.791
	Lack of performance history or tract record	.808
	Lack of systems or IT skills	.827
	In ability to offer lower costs due to lack of economies of scale	.679
Public Sector Environment	Conflicting priorities (cost savings versus supplier diversity)	.743
	Public buyers lack adequate skills to engage SMEs	.838
	Risk averse attitudes of public buyers	.828
	Pro-large business attitudes of public buyers	.793
	Complexity, confusion, and inconsistency produced by public sector organizations	.776
Procurement Process	Lack of awareness/difficulties in detecting contract opportunities	.744
	Prescriptive and vague tender specification	.758
	Disproportionate eligibility criteria	.807
	Large size of contract opportunities	.673
	Poor feedback on tender outcomes	.813
	Cost and time associated with preparing bids	.855
	Late /Unfavourable payment terms	.838
Attitude	Lack of struggle	.859
	Reluctant to engage with process perceived to be unfair	.724
	Lack of confidence in the procurement process	.742
Effective Participation	Improved performance of my SME	.491
	Increased communication	.533
	Increased benefits and contract value	.639
	Increased capacity of my SME	.686

(Source: Authors' research)

5.3 Reliability Statistics

While different researchers use several methods in different circumstances to assess the reliability of the data, this research employed consistent reliability. The method involved the determination of Cronbach's Alpha coefficient. Table 6 below shows a summary of the reliability statistics and the respective number of 'undeleted' items that built up the coefficient. Only 2 variables had a Cronbach's Alpha coefficient slightly below 0.7; the remaining 4 Cronbach's Alpha values were above 0.7, overall an indication of strong reliability and the collected data was highly consistent and reproducible. The respondents answered the questions in a similar manner.

Table 6 Reliability statistics

Variable	Reliability Statistics Cronbach's Alpha	Number of 'Undeleted' Items
Regulatory Framework	0.800	4
SME Capacity	0.864	6
Public Sector Environment	0.855	5
Procurement Process	0.894	7
Attitude	0.675	3
Effective Participation	0.503	4

(Source: Authors' research)

5.3.1 Correlation Analysis

A common tool for examining the connection between variables is correlation (Pallant, 2010). The correlations, averages, and standard deviations of the independent variables (public tendering process, regulatory framework, SME capacities, public sector environment, and SME attitude) and dependent variable (effective performance) are shown in Table 7. Finally, control variables (employee count and firm age).

First, the two control variables were not significantly correlated and not statistically significant with effective performance ($r = .054$ to $.127$). Second, the regulatory framework, SME capacities, public sector environment, public tendering process, and SME attitude were significantly correlated and statistically significant with effective performance ($r = .147$, $p < .05$ to $.562$, $p < .01$).

Furthermore, the degree of intercorrelation between the independent variables was modest, with r values falling below 80. Multicollinearity is, therefore, not an issue (Hair et al., 2014). If the intercorrelations between the independent variables are more than .90, multicollinearity is typically an issue (Tabachnick & Fidell, 2007; Field, 2009; Hair et al., 2014). The findings of correlations often point to a close link between the independent and dependent variables. Therefore, hierarchical multiple regression may be used to further analyze the data.

Table 7 Correlation analysis

	Mean	SD	1	2	3	4	5	6	7
Company	3.844	1.046							
Number of Employees	1.629	0.687	0.438**						
Regulatory Framework	3.661	0.969	0.196**	0.106					
SME Capacity	3.053	0.706	0.03	0.063	0.374**				
Public Sectors Environment	3.333	0.743	0.064	0.008	.343**	.266**			

Public Tendering Process	3.874	0.855	0.018	0.117	.630**	.243**	.390**		
Attitude	3.272	0.926	.252**	0.132	.526**	.301**	0.065	0.604**	
Effective Participation	3.197	0.752	0.127	0.054	0.473**	.321**	0.147*	.562**	.524**

** . Correlation is significant at the 0.01 level (2tailed).
 * . Correlation is significant at the level 0.05 level (2-tailed).

(Source: Authors’ research)

5.3.2 Hierarchical Multiple Regression Analysis

To verify the validity of the data and to ascertain if the hierarchical multiple regression model could be used in the research, first-line tests were conducted. Additionally, as shown in Table 8, multicollinearity was retested using the variance inflation factor (VIF). When there is a significant correlation between the independent variables in the regression model—ideally more than .9— multicollinearity is present. According to Hair et al. (2014), the presence of collinearity among independent variables raises the sampling variance in estimates of their partial connections with a dependent variable. This effect then spreads to other estimates and raises the p-value. The fact that all of the VIF values in Table 8 are less than five further supports the idea that multicollinearity is not an issue (Hair et al., 2014). A VIF greater than 10 is deemed undesirable (Field, 2009, Hair et al., 2014).

Table 8. Summary of hierarchical multiple regression

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		VIF
	Beta	(SE1)	Beta	(SE2)	Beta	(SE3)	Beta	SE4	Beta	SE5	Beta	SE6	
Control Variables													
Company age	0.128	0.059	0.224*	0.051	0.213*	0.051	0.225*	0.051	0.221**	0.047	0.261***	0.046	1.344
No. of employees	-0.002	0.089	0.010	0.077	0.019	0.076	0.016	0.076	-0.066	0.071	-0.033	0.070	1.327
Independent Variable													
Regulatory framework			0.518***	0.050	0.459***	0.053	0.483***	0.056	0.208**	0.062	0.168*	0.061	2.021
SMEs capacities					0.157*	0.072	0.168**	0.073	0.177*	0.067	0.132*	0.066	1.249
Public sector environment							-0.078	0.069	-0.168	0.065	-0.098	0.066	1.379
Tendering process									0.464***	0.069	0.300***	0.078	2.555
SME attitude											0.283***	0.064	2.040
F			22.946**										
F change	1.499		*		18.972***		15.470***		21.256***		21.261***		
R	1.499		64.795***		35.873		24.400***		30.648**		28.712***		
R square	0.127		0.524		0.544		0.548		0.64		0.675		
R square adjusted	0.016		0.274		0.295		0.301		0.416		0.455		
R square change	0.005		0.262		0.280		0.281		0.396		0.434		
R square change	0.016		0.258		0.279		0.284		0.400		0.439		
		***sig at 0.0001,	**sig at 0.001,		*sig at 0.05								

(Source: Authors’ research)

Hierarchical regression coefficients were calculated to assess the influence of regulatory framework, SME capacities, public sector environment, public tendering process, and SME attitude factors in predicting the effective participation of SMEs in public procurement in Zambia. Model 1 shows the base model with control variables, company age, and the number of employees as predictors of effective participation. Model 1 was not statistically significant ($F(2, 183) = 1.499$; $p = .226$) and explained about 1.6 percent of the variance in effective participation. The results indicate that company age and number of employees are not significantly associated with effective participation.

In Model 2, in addition to company age and number of employees, regulatory framework factors were introduced, and a significant combined effect occurred. The model showed a significant improvement over model 1. The total variance explained in model 2 as a whole was 27.4 percent ($F(3, 182) = 22.946$; $p < .0001$). The introduction of the regulatory framework explained an additional 25.8 percent of the variance ($R^2 = .274$) ineffective performance. In model 2, the variables significantly predicted the dependent variable. The results indicated that regulatory framework was positively and significantly associated with effective participation ($B = .130$, $t = 2.130$, $p = .035$). Therefore, H1, which contends that the regulatory framework affects SMEs' participation in the public procurement market in Zambia, was supported.

In Model 3, in addition to company age, number of employees, and regulatory framework factors, SME capacities factors were introduced, and a significant combined effect occurred. The model further showed a significant improvement over model 2. The total variance explained in model 3 as a whole was 29.5 percent ($F(4, 181) = 18.972$; $p < .0001$). The introduction of the SME capacities factors explained an additional 2.1 percent of the variance ($R^2 = .295$) ineffective performance. In model 3, the variables significantly predicted the dependent variable. The results indicate that SMEs capacities is positively and significantly associated with effective participation ($B = .140$, $t = 2.129$, $p = .035$). Conclusively, H2, which contends that SME capacities influence their effective participation in public procurement, was supported.

In Model 4, in addition to company age, number of employees, regulatory framework factors, and SME capacities factors, public sector environment factors were introduced, and a significant combined effect occurred. The model showed a significant improvement over model 3. The total variance explained in model 4 as a whole was 30.1 percent ($F(5, 180) = 15.470$; $p < .0001$). The introduction of the public sector environment factors explained an additional 0.6 percent of the variance ($R^2 = .301$) in effective performance. In model 4, the variables significantly predicted the dependent variable. However, the results indicate that the public sector environment is not positively and significantly associated with effective participation ($B = -.100$, $t = -1.516$, $p = .131$). Therefore, H3, which contends that the public sector environment engenders SMEs' participation of SMEs in public procurement, was not supported.

In Model 5, in addition to company age, number of employees, regulatory framework factors, SME capacities factors, and public sector environment factors, public tendering process factors were introduced, and a significant combined effect occurred. The model showed a significant improvement over model 4. The total variance explained in model 5 as a whole was 41.6 percent ($F(6, 179) = 21.256$; $p < .0001$). The introduction of the public tendering process factors explained an additional 11.5 percent of the variance ($R^2 = .416$) in effective performance. In model 5, the variables significantly predicted the dependent variable. The results indicate that the public tendering process is positively and significantly associated with effective participation ($B = .264$, $t = 3.392$, $p = .001$). Conclusively, H4, which contends that the Public tendering process influences the effective participation of SMEs in public procurement, was supported.

In Model 6, in addition to company age, number of employees, regulatory framework factors, SME capacities factors, public sector environment factors, and public tendering process factors, SME attitude factors were introduced, and a significant combined effect occurred. The model showed a significant improvement over model 5. The total variance explained in model 6 as a whole was 45.5 percent ($F(7, 178) = 21.261; p < .0001$). The introduction of the SME attitude factors explained an additional 3.9 percent of the variance ($R^2 = .455$) in effective performance. In model 6, the variables significantly predicted the dependent variable. The results indicate that SMEs' attitude is positively and significantly associated with effective participation ($B = .230, t = 3.585, p = .000$). Therefore, H5, which contends that SMEs' attitude towards public procurement, affects their effective participation in public procurement, was supported. Overall, the results indicated that four hypotheses, except for H3, were statistically significant and, thus, accepted.

6 DISCUSSION

6.1 Regulatory Framework

The findings have supported the hypothesis relationship (H1. Regulatory framework affects effective participation of SMEs in public procurement). This means that government regulation influences the effective participation of SMEs in public procurement markets in Zambia. The results agree with Virglerova et al. (2020), who opined that one of the prerequisites for a favorable business environment needed for SMEs' growth and success is a stable regulatory framework. In another study by Hoekman and Taş (2022), it was established that a good procurement regulatory framework stimulates greater participation in SME procurement. The motivation of regulations and policies in supporting SME growth has been extensively recognized (Liu et al., 2024). Earlier, Moyi et al. (2006) had underscored the role of government in ensuring an enabling business environment that promotes access to markets and reduces policy-induced biases against SMEs. Other studies by Njuguna (2015) and Suliantoro et al., (2019) pointed out that there are a number of regulations that some SMEs are not conversant with, which in turn affect their effective participation in public procurement.

6.2 SMEs Capacities

The findings have supported the hypothesis relationship (H2. SMEs' capacities influence their effective participation in public procurement). This result means that SMEs' capacities influence their participation in public procurement in Zambia. The findings are consistent with existing literature, which argues that the barriers experienced by SMEs in tendering for public sector contracts can be attributed to a lack of experience in tendering, human resource availability for compiling a tender, and lack of training in public procurement. Further, these findings agree with those of Kinyua (2014), who states that resources affect the performance of SMEs since the resource aspect is key in any business. Similarly, other studies have confirmed that SME capacity significantly influences participation in public procurement (Di Mauro et al., 2020; Kuswanto et al., 2022).

6.3 Public Sector Environment

The findings have not supported the hypothesis relationship (H3. Public sector environment engenders participation of SMEs in public procurement). This result means that government organizations do not have much impact on the performance of SMEs when tendering for government contracts. These findings are consistent with existing literature in the public procurement market. For example, Suliantoro et al. (2019) examined the success factors of SMEs in public procurement. The study found that government organizations are not too influential in the effective performance of SMEs in the government procurement of goods and services.

6.4 Public Tendering Process

The findings have supported the hypothesis relationship (H4. Public tendering process influences effective participation of SMEs in public procurement). This result means that activities in the tendering process influence the effective participation of SMEs in government procurement. The study findings are thus in line with the findings of Olusegun and Akinbode (2016), Suliantoro et al. (2019), and Namagembe et al. (2021), who posit that SMEs experience barriers during tendering that include a lack of capacity, skills, resources, knowledge, understanding of procurement processes, poor networking within the industry as well as experience.

6.5 SMEs Attitude

The findings have supported the hypothesis relationship (H5. SMEs' attitude towards public procurement affects their effective participation in public procurement). This result means that the attitude of SMEs towards public procurement affects their effective participation. The findings agree with Kuswanto et al. (2022), who established that entrepreneurial attitude has a significant influence on SMEs' business success. Similarly, Belas et al. (2024) underscores the importance of SME owners or managers in achieving sustainable business growth. These findings, however, contradict the findings of Suliantoro et al. (2019), who found that SME attitude does not significantly affect SMEs' success in the public procurement market. The reason for the difference in the findings could be the context in which the studies were conducted.

CONCLUSIONS

This paper informs on the nature of the difficulties facing SMEs participation in public procurement from developing country's perspective. It advances that effective participation in procurement is explained by four factors namely; regulatory framework, SMEs Capacities, public tendering process, and SMEs attitude. It is important to note that though interesting results have emerged from this study, it is not without limitations, for instance SMEs sampled were from Lusaka, city which an urban setting a study considering SMEs in operating in rural areas and other cities in the region is encouraged. The findings of this paper will be of interest to the SMEs, regulatory authorities as well as policy markers. This is significant because a clear understanding of difficulties that militate against SMEs involvement in public procurement, as well as factors predicting effective participation will provide a more informed basis in formulation of policies aimed at stimulating SMEs participation in procurement. Future research should aim to explore the ways in which SMEs might enhance their chances of obtaining public procurement opportunities in the country through partnerships, consortia, and linkages, as recommended by this study.

RESEARCH ETHICS STATEMENTS

This study did not require research ethics approval. The participants provided informed consent as an answer to the question in the questionnaire.

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