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Technological and market sensing capabilities as drivers of SME participation in public procurement: an empirical test of the moderating role of financial capability

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Abstract

Purpose – Public procurement presents substantial market opportunities for small- and medium-sized enterprises (SMEs), which can contribute to their economic growth. However, limited dynamic capabilities often pose challenges for SMEs to participate effectively in public procurement markets. Drawing on dynamic capability (DC) theory, this study explores whether financial capability (FNCP) influences SMEs' ability to leverage their technological capability (TECC) and marketing sensing capability (MKSC) and actively engage in public procurement.

Design/methodology/approach – Data for this study were collected from 248 SME managers in the Ilala District, Tanzania, using a cross-sectional questionnaire survey and stratified random sampling technique. The proposed hypotheses were tested empirically through confirmatory factor analysis (CFA) and the Hayes PROCESS macro.

Findings – TECC and MKSC demonstrated significant positive associations with SME participation in public procurement (SMPP). Moreover, the interaction between TECC and FNCP as well as the interaction between MKSC and FNCP demonstrate a significant positive effect, suggesting that FNCP strengthens the impact of TECC and MKSC on SMPP.

Research limitations/implications – The scope of this study was limited to SMEs in the Ilala District of Tanzania, hence affecting the generalizability of the findings to other contexts. More importantly, the study findings enrich the understanding of DC theory, signifying that the integration and reconfiguration of MKSC, TECC and FNCP add significant value to SMPP.

Practical implications – The findings suggest that policymakers, support institutions and SME managers should focus on enhancing SMEs' MKSC and TECC to improve their participation in public procurement. In addition, improving SMEs' access to financial resources can further strengthen these effects, enabling more inclusive participation in public procurement.

Originality/value – The study contributes to the literature on SMPP by highlighting the critical roles of MKSC and TECC. It also underscores the importance of FNCP as a moderator in these relationships, which has not been addressed in the existing literature. By integrating these factors, the study offers a comprehensive

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framework for understanding the dynamics that influence SMPP from financial, technological and marketing perspectives, particularly in developing economies like Tanzania.

Keywords SMEs, Public procurement, Technological capability, Market sensing capability, Financial capability, SMEs' competitiveness

Paper type Research paper

1. Introduction

Across global economies, small and medium-sized enterprises (SMEs) play a vital role in driving economic growth, fostering innovation, and creating employment opportunities (Kim, Park, & Paik, 2018; Oduro, 2020; Tammi, Saastamoinen, & Reijonen, 2014). In emerging economies, SMEs make up 90% of formal companies (World Trade Organization (WTO), 2020), account for 65% of employment and contribute up to 40% of gross domestic product (GDP) (World Bank, 2020). In this study, SMEs are defined according to the Tanzania SMEs development policy (United Republic of Tanzania (URT), 2003). The policy categorizes SMEs into three distinct groups: micro-enterprises, which typically have fewer than 5 employees; small enterprises, with 5 to 49 employees; and medium-sized enterprises, with 50 to 99 employees. Similar to other developing countries, SMEs are a major component of the Tanzanian economy. According to the Tanzania National Bureau of Statistics (United Republic of Tanzania, 2022), SMEs account for about 95% of all companies, employ approximately 40% of the total workforce, and contribute around 35% to the country's GDP. Operating across various sectors of the economy, such as agribusiness, goods supply, real estate, services, construction, and manufacturing, SMEs rely on diverse markets for their growth and sustainability (URT, 2022). Among other markets, public procurement presents lucrative opportunities and essential avenues for the growth and sustainability of SMEs due to its substantial spending. Up to 30% of the fiscal budget is allocated for the procurement of goods, works, and services in developed countries (Organisation for Economic Co-operation and Development (OECD), 2019). In emerging economies, such allocation can reach up to 70% (World Bank, 2020). In particular, public procurement refers to the acquisition of goods, services, or works by public entities in various sectors such as infrastructure, healthcare, education, and defence (Ishak & Thiruchelvam, 2023; Loader, 2015).

Despite their significance, SMEs' participation in public procurement (SMPP) involves a complex web of challenges (Glas & Ebig, 2018; Mphela & Shunda, 2018). SMPP refers to the extent to which SMEs can access, compete for, and secure public procurement opportunities and contracts (Flynn & Davis, 2017; Tammi *et al.*, 2014). Among other challenges, Loader (2015), Mahuwi and Israel (2023), and Akenroye, Owens, Elbaz, and Durowoju (2020) identified limited access to procurement information, complex procurement procedures, and fierce competition from larger firms as common obstacles that deter the effective participation of SMEs in public procurement. Other challenges include limited financial resources and innovation capabilities, unskilled personnel, and the inability to keep pace with rapidly evolving technologies and ever-changing market conditions (Oduro, 2020; Israel & Kazungu, 2019; Bil & Özdemir, 2021). These barriers not only hinder the active participation of SMEs but also constrain their ability to leverage their capabilities for sustainable and inclusive growth. In response to these challenges, governments across the globe have increasingly emphasized the inclusion of SMEs in public procurement processes through policy enforcement. One notable emphasis is the preferential purchasing policy, particularly in Kenya, South Africa, and Ghana. The policy prioritizes purchasing from local SMEs and reserves 30% of procurement opportunities for SMEs owned by special groups, such as women, youth, elders, and people with disabilities (Wadhwaa, Phelpsb, & Kothac, 2016; United Republic of Tanzania (URT), 2013).

In Tanzania, in particular, apart from the preferential purchasing policy, the initiatives also include regular training and capacity-building programs aimed at equipping SMEs with the necessary skills and knowledge to enhance their competitiveness, meet the requirements of

public contracts, and navigate the complexities of procurement processes (Nkunda & Mchopa, 2022; Israel, 2021). Notwithstanding the initiatives in place and substantial market opportunities of public procurement, however, SMEs remain underrepresented in public procurement markets (Mahuwi & Israel, 2023; Siwandeti, Sanga, & Panga, 2021). As such, addressing the barriers to SME participation in public procurement still requires rigorous policy interventions and dynamic business capabilities. This is crucial for enhancing inclusive and sustainable economic growth. Based on this, this present study explores whether technological capability (TECC), marketing sensing capability (MKSC), and financial capability (FNCP) foster the effective participation of SMEs in public procurement. The study is motivated by the fact that the interaction between these dynamic capabilities can help SMEs address technological, marketing, and financial challenges for participation in public procurement. These capabilities are widely recognized as key drivers of competitiveness and performance for SMEs in the contemporary business landscape (Ishak & Thiruchelvam, 2023; Israel, 2022; Svidronova & Mikus, 2015; Mwesiumo, Olsen, Svenning, & Glavee-Geo, 2019).

Studies affirm a positive relationship between TECC, business competitiveness and performance (Kazemi, Ghasempour Ganji, & Na'ami, 2023; Fitz-Oliveira & Tello-Gamarra, 2024). In the context of public procurement, TECC enables SMEs to offer unique products, solutions, and services that meet the specific needs and requirements of buying agencies. This capability allows SMEs to create higher value propositions and differentiate themselves from competitors, making their bids more attractive to public buying agencies. More importantly, TECC helps SMEs streamline their operations, reducing costs and improving efficiency in fulfilling the technological requirements of public sector markets (Parida & Örtqvist, 2015; Siwandeti *et al.*, 2021). MKSC, on the other hand, positions SMEs to better understand the needs and preferences of public procurement entities (Aydin, 2021; Brown, Foroudi, & Hafeez, 2019; Liang, Frösén, & Gao, 2023). It helps SMEs identify and anticipate changes in demand and requirements, allowing them to tailor their offerings accordingly. Together, TECC and MKSC can empower SMEs to navigate the dynamics and complexities of public procurement processes more effectively, enhancing their competitiveness and seizing opportunities. However, studies suggest that enhancing TECC and MKSC for SMPP depends on factors such as the size, FNCP, and human resources of the SME (Abdellatif & Zaky, 2015; Flynn & Davis, 2017).

Essentially, sound FNCP enables SMEs to invest in innovative marketing strategies, effective marketing campaigns, and R&D activities (Xiao & Meng, 2023; Kim, Xiao, & Porto, 2024). These investments help SMEs understand market trends and identify opportunities for producing quality products, services, and novel processes, which are paramount in today's competitive public procurement process. Additionally, FNCP provides the foundation for SMEs to invest in, train, and hire talented and skilled personnel who can leverage the potential of TECC and internet marketing streamlined in public procurement processes (Çera, Khan, Mlouk, & Brabenec, 2021; Parida & Örtqvist, 2015; Xiao, Huang, Goyal, & Kumar, 2022). Besides, sound FNCP helps firms meet tax obligations, licensing fees, bank guarantees, and performance bonds, which are legal tender requirements and evaluation criteria in the public procurement bidding process (Glas & Ebig, 2018; Loader, 2015). This helps SMEs address barriers related to the bureaucratic hurdles of public procurement. Conversely, limited FNCP inhibits SMEs from investing in innovative marketing strategies and technological infrastructure necessary for the e-public procurement system, thereby limiting their ability to seize public procurement opportunities (Flynn & Davis, 2017; Karttunen *et al.*, 2024; Siwandeti *et al.*, 2021).

From this backdrop, it is theorized that FNCP provides SMEs with the necessary resources to invest in TECC and MKSC, thereby developing unique products, improving processes, and responding effectively to market demands (Ringo, Kazungu, & Tegambwage, 2024; Lelo & Israel, 2024). However, the extent to which TECC and MKSC influence SME participation in public procurement remains underexplored. Furthermore, the role of FNCP as a potential

moderator in the relationship between TECC, MKSC and SMPP has received little attention, making it a crucial area for exploration. Many of the existing studies focus on the direct impact of TECC and MKSC on the corporate and export performance of SMEs (Kazemi *et al.*, 2023; Liao, Fu, & Liu, 2020; Valdez-Juárez & Castillo-Vergara, 2021) as well as the effect of financial slack on technology and innovation performance (Parida & Örtqvist, 2015). Other studies assess the dynamics of innovation capabilities among SMEs (Oduro, 2020; Kim *et al.*, 2018; Tammi *et al.*, 2014; Ishak & Thiruchelvam, 2023) along with the challenges facing SMEs in public procurement (Loader, 2015; Akenroye *et al.*, 2020; Mahuwi & Israel, 2023). This research brings a fresh perspective by highlighting how TECC and MKSC can serve as critical enablers for SMPP. The study introduces a novel aspect by empirically testing the moderating role of FNCP in the relationship between MKSC, TECC, and SMPP. This approach acknowledges that TECC and MKSC alone may not be sufficient for SMEs to thrive in public procurement, thus, FNCP is essential. Precisely, the study addresses the following research questions.

RQ1. Does TECC have a significant positive direct effect on SMPP?

RQ2. Does MKSC have a significant positive direct effect on SMPP?

RQ3. Does FNCP moderate the effect of TECC and MKSC on SMPP?

The study contributes to the theoretical literature on SMPP by integrating concepts from information and communication technology (ICT), financial management, and marketing management. It extends previous empirical studies that provide evidence of the direct impact of TECC and MKSC on SMPP, enhancing the understanding of DC theory by highlighting the moderating effect of FNCP in this relationship. This approach offers a comprehensive framework that can be tested and refined in future research, thereby advancing the academic understanding of SMPP from financial and innovation perspectives. Moreover, this approach broadens the existing discussion on the effects of TECC, MKSC, and FNCP on SMPP in the context of Tanzania, a developing country where SMEs face distinct challenges and opportunities. This makes it possible for policymakers and SME managers to generate actionable and effective procurement policies, financial mechanisms, and support programs that foster TECC, MKSC, competitiveness, and SMPP.

Following this introduction, the subsequent sections are as follows: section 2 presents the literature review, offering a comprehensive overview of the theoretical perspective and hypotheses development. Section 3 outlines the research methodology, including the research design, study areas, sampling approach, data collection methods, variables used and data analysis approach. Section 4 presents the structural model assessment and hypotheses testing. Section 5 delves into the discussion of findings, while the final section provides the conclusion, implications, limitations and directions for further studies.

2. Literature review and hypotheses development

2.1 The dynamic capability (DC) theory

DC theory, proposed by Teece, Pisano, and Shuen (1997), emphasizes the importance of a firm's ability to integrate, build, and reconfigure internal and external competencies to remain competitive in uncertain markets. The theory posits that a firm's operational performance and competitive advantage are derived from its capacity to sense, seize, and reconfigure its capabilities and resources in response to internal and external threats and opportunities (Lütjen, Schultz, Tietze, & Urmetzer, 2019). It underscores the significance of being dynamic and adaptable, rather than relying solely on existing resources and capabilities (Teece *et al.*, 1997; Lütjen *et al.*, 2019). Aligned with DC theory, studies in diverse contexts reveal that firms with robust DCs, including financial resources, assets, learning, technological, entrepreneurial, and market orientations, are more likely to perform better and

sustain in a competitive and dynamic business environment (Brown *et al.*, 2019; Dias & Lages, 2021; Han, Liu, Zhang, & Nielsen, 2023). These capabilities enable firms to better adapt to volatile market conditions and trends, navigate complex business environments, gain competitive advantage, and sustain their position. Similar to previous studies, DC theory offers a valuable theoretical perspective for this study to examine how the interaction between TECC, MKSC, and FNCP influences SMPP. MKSC reflects SMEs' ability to identify and assess procurement opportunities and threats (sensing). TECC is presented as the ability through which SMEs can identify and capture value from public procurement opportunities (seizing), and develop innovative products, services, and processes that meet procurement requirements, enhancing their competitive edge. On the other hand, FNCP serves as a means through which SMEs can reconfigure, develop, and transform TECC and MKSC, thus enhancing their competitive ability in sensing and seizing public procurement opportunities. Drawing on DC theory, it is theorized that the integration of TECC, MKSC, and FNCP enables SMEs to gain competitive advantages and succeed in public procurement.

2.2 Hypothesis formulation

2.2.1 Technological capability and SME participation in public procurement. TECC has a complex nature with multifaceted definitions. However, this study adopts Aydin's (2021) and Bil & Ozdemir's (2021) definition of TECC as the firm's ability to develop and apply advanced technologies to create innovative products, services, or processes. The definition aligns with the study's focus, encompassing a wide range of technological skills, knowledge, experiences, and the intensity of R&D essential for fostering innovations in processes, products, and services to effectively navigate the complex landscape of public e-procurement systems. Literature reveals a significant positive impact of TECC on SMEs' success in public procurement (Glas & Ebig, 2018; Taghizadeh, Nikbin, Alam, Rahman, & Nadarajah, 2021). Aligned with the assumptions of the DC theory, TECC, such as technical know-how, skills, and experience, enables SMEs to introduce novel processes, products, and services that meet the rigorous evaluation criteria, legal and technological requirements of the public e-procurement system, thereby enhancing their competitive advantages (Tukamuhabwa & Namagembe, 2023). These improvements lead to cost savings and operational efficiency, all of which are highly valued by public sector buyers. It is argued from the theoretical perspective of DC theory that TECC can help SMEs strengthen their internet marketing efforts, enabling them to identify new procurement opportunities and generate new revenue streams (Changalima *et al.*, 2023). This, in turn, supports SMEs in meeting the financial requirements of public procurement. Drawing on this literature, the study presents TECC as an essential capability for bolstering SMEs' competitive advantages and participation in public procurement. Accordingly, Siwandeti *et al.* (2021) argued that SMEs with robust TECC are more likely to meet the technological, process, and financial requirements of public procurement, which in turn improves their participation. From these empirical views, we present the hypothesis that:

H1. TECC has a significant positive direct effect on SMPP.

2.2.2 Market sensing capability and SME participation in public procurement. The literature provides a unique definition of MKSC as firm's ability to gather and interpret market information, identify opportunities and trends, and understand and respond effectively to customer needs and preferences (Dias & Lages, 2021; Liang *et al.*, 2023). This definition is relevant for this study, explaining how well SMEs can pro-actively detect and adapt to the dynamic requirements and preferences of public procurement markets. The literature offers ample supporting evidence for the positive impact of MKSC on SMPP (Kazemi *et al.*, 2023; Akenroye *et al.*, 2020; Tammi *et al.*, 2014). Based on the DC perspective, SMEs with innovative MKSC can proactively identify procurement opportunities and develop

innovative solutions that align with the requirements of public procurement. These orientations enhance SMEs' competitiveness, customization and responsiveness, hence increasing the likelihood of participating and succeeding in public procurement. MKSC help SMEs anticipate market trends, expectations of public buyers, and regulatory changes, which, according to DC theory (Teece *et al.*, 1997) and empirical findings by Abdellatif and Zaky (2015) and Ishak and Thiruchelvam (2023), enable SMEs to proactively engage and participate in public procurement. This literature offers sufficient evidence to argue and hypothesize a significant positive role of MKSC on SMPP. In particular, MKSC such as effective market research and promotional campaigns bolster awareness of new technology, reach new customers and identify procurement opportunities (Han *et al.*, 2023; Ishak & Thiruchelvam, 2023). This can lead to increased process and product innovations, as well as higher sales and revenue, which can then be reinvested in the e-procurement system and marketing activities to enhance SMPP. Based on these arguments, we propose that:

H2. MKSC has a significant positive direct effect on SMPP.

2.2.3 Moderating role of financial capability. The concept of FNCP has been defined in various ways by different scholars (Lubis, 2021; Xiao *et al.*, 2022; Çera *et al.*, 2021), reflecting its multifaceted nature. This study, however, adopts Xiao and Meng's (2023) and Kim *et al.*'s (2024), definition of FNCP as the firm's sound financial management practices, adequacy of financial resources, investment capacity, and financial knowledge to make informed financial decisions. This definition aligns with the research interest, regarding FNCP as the SME's ability to meet contractual obligations for public contracts, such as providing bank guarantees or performance bonds, as well as investing in technologies that support e-procurement systems and internet marketing. Literature provides a basis for understanding how FNCP can interact with TECC and MKSC to foster the effective participation of SMEs in public procurement. From DC theory, FNCP enhances SMEs' technological adaptation and marketing activities that support their participation in public procurement. In their studies, Çera *et al.* (2021) and Di Mauro, Ancarani, and Hartley (2020) opined that FNCP provides resources needed to take risks, invest in R&D, and marketing initiatives and acquire talents that drive innovations. It enables SMEs to acquire modern technology, equipment, and tools that support the operational and strategic goals of the public e-procurement system. Nevertheless, sound FNCP helps SMEs meet the financial requirements of public procurement processes, such as the performance bond and bank guarantee, thereby overcoming financial barriers to participation (Flynn & Davis, 2017; Mahuwi & Israel, 2023). Conversely, SMEs with limited FNCP may face challenges in leveraging technological innovations and innovative marketing activities necessary for supporting the public procurement processes (Akenroye *et al.*, 2020; Xiao *et al.*, 2022). Building on previous studies and DC theory, we suggest that the interaction between TECC, MKSC, and FNCP strengthens SMPP. As such, we hypothesize that:

H3a. FNCP positively moderates the relationship between TECC and SMPP.

H3b. FNCP positively moderates the relationship between MKSC and SMPP.

2.3 Conceptual model

Figure 1 presents a conceptual model that guides the research, illustrating the moderating role of FNCP in the link between TECC, MKSC) and SMPP. The hypothesized model is developed based on DC theory, a literature review, and the formulated research hypotheses discussed earlier in this chapter. The model posits that TECC and MKSC have significant positive direct effects on SMPP. In addition, the model theorizes that FNCP moderates the relationship between TECC, MKSC, and SMPP. From a theoretical perspective of DC theory, MKSC and TECC are considered important internal capabilities of SMEs that can enhance

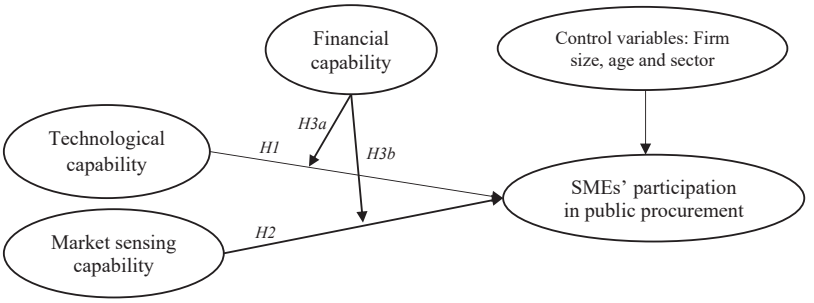


Figure 1.
Conceptual model

Source(s): Figure by authors

their participation in volatile and competitive public procurement markets. In this case, MKSC and TECC enable SMEs to sense and seize public procurement opportunities, whilst enhancing their participation. Moreover, DC theory regards FNCP as an internal capability through which SMEs can develop and build TECC and MKSC, positively moderating their effect on SMPP. This model guides the empirical investigation into how TECC, MKSC, and FNCP jointly interact to influence SMPP, providing valuable insights for both theory and practice.

3. Methodology

3.1 Research paradigm, design and study area

According to Feilzer (2010), the choice of research paradigm assists researchers in selecting an appropriate methodology, which, in turn, determines the methods used for data collection and analysis. The present employs the epistemological-positivist paradigm, which centres on testing hypotheses and determining causal relationships among study variables through empirical quantitative observations and statistical analysis (Eichelberger, 1989). We employ an epistemological-positivist paradigm because authors typically aim to test hypotheses based on empirical quantitative data to explore possibilities for generalizing the moderating role of FNCP on the interplay between TECC, MKSC and SMPP. Moreover, we opted for a cross-sectional research design because we aimed to establish a direct and indirect impact between the study variables at a single period in time (Saunders, Lewis, & Thornhill, 2019). The study was conducted in the Ilala District in the Dar es Salaam region of Tanzania. The district was purposively selected for the study because it is one of Tanzania's major economic hubs, with a diverse number of SMEs engaging in different sectors of the economy. About 11.4% of the countrywide formal SMEs that are eligible to participate in public procurement are based in the Ilala District (Siwandeti *et al.*, 2021; URT, 2021). With these regards, conducting this research in the district offered better access to data sources from different types of SMEs with varying levels of innovation capabilities and financial resources.

3.2 Sampling and data collection

A comprehensive list of 1,238 SMEs operating within the chosen study area was targeted for the analysis. To ensure diversity and representation across different sectors in which SMEs operate, we employed a stratified random sampling technique. A stratified random sampling technique was employed to accommodate the heterogeneity and avoid biases in selecting SMEs based on the sector in which they operate. Firms were categorized into three strata: (1) SME suppliers, (2) contractors, and (3) consulting firms. Within each stratum, a random sample of SME managers was selected for participation in the study. The minimum sample

size of 303 SME managers from the target total population, estimated at a 95% confidence interval using Yamane's (1973) formula for a finite population (see equation 1) was used for this study. This sample size was allocated proportionally to each stratum, considering the sector in which SMEs operate (suppliers, contractors, and consulting). We utilized a self-administered structured questionnaire survey as the data gathering technique with a set of closed questions. Data collection was conducted over three months from January to March 2023. Initially, questionnaires were distributed to 303 SME owners or managers using WhatsApp and Email platforms to capitalize on the advantages of cost-effectiveness in data collection. However, after data cleaning and accounting for the non-response rate, we left with 248 valid responses (144 from SME suppliers, 73 from contractors, and 31 consulting firms), which equates to about 81.85% of the response rate. As suggested by Wolf, Harrington, Clark, and Miller (2013), the final sample size met the recommended minimum sample size of 200 for performing confirmatory factor analysis (CFA) and moderation effects.

$$n = \frac{N}{1 + N(e)^2} = \frac{1238}{1 + 1238(0.05)^2} = 303 \quad (1)$$

where: n is the estimated sample size, N population under study, and e signifies the margin error estimated at a 95% confidence interval.

3.3 Measures

Measures of constructs for this study were adapted from prior studies and modified to suit the context of the present study. These adaptations were pre-tested in a pilot study to confirm their clarity and reliability. A questionnaire survey was reviewed and revised by 15 SME managers and academics in the field to ensure that it adequately captured the unidimensional aspects of TECC, MKSC, FNCP, and SMPP. The study conceptualizes TECC, MKSC, FNCP, and SMPP as first-order reflective constructs. Essentially, the constructs are presented with multiple inter-correlated observed indicators that manifest the underlying specific construct, which, according to Fan *et al.* (2016), makes the constructs reflective. The constructs are moreover conceptualized as unidimensional, aimed at understanding their general affective reaction, similar to previous studies (Fitz-Oliveira & Tello-Gamarra, 2024; Dias & Lages, 2021; Xiao & Meng, 2023; Flynn & Davis, 2017). Unidimensional constructs enable capturing the overall insights of the variables without the complexity of multiple sub-dimensions (Hair, Howard, & Nitzl, 2020). The full scale, along with the modifications, is detailed in Table 1.

In particular, TECC was assessed with a four-item scale derived from Fitz-Oliveira and Tello-Gamarra (2024). The items reflect a firm's abilities to adopt, develop, innovate, and implement new real-time technologies. The scale revealed a Cronbach's alpha of 0.874. Five items adapted from Dias and Lages (2021) were used to evaluate the construct of MKSC. The scale assesses SMEs' intelligence in identifying, collecting, interpreting, and responding to public market opportunities, trends, and preferences. The scale has a Cronbach's alpha of 0.827. The moderator variable, FNCP, was captured using a four-item scale from Xiao and Meng (2023). This scale assesses SMEs' financial management practices and their soundness in meeting procurement contractual obligations, as well as their investment in marketing and technological innovations. A Cronbach's alpha of 0.798 was obtained for this scale. Lastly, the outcome variable, SMPP, was measured using a three-item scale adapted from Flynn and Davis (2017), reflecting the extent to which SMEs can access, compete for, and secure public procurement opportunities and contracts. Cronbach's alpha for the scale was 0.816. Each of the proposed construct's items was measured on a five-point Likert-type scale labelled with "5 = to a very great extent" and "1 = not at all." Moreover, firm size, age and sector were

Constructs/Items	λ	α	CR	AVE
Technological capabilities (TECC)		0.874	0.894	0.679
TECC1: Ability to develop and implement new technologies	0.726			
TECC2: Ability to investing in R&D to create innovative products/services	0.790			
TECC3: Track record of successful technology-driven innovations	0.871			
TECC4: Ability to adopt advanced real-time process technology	0.898			
Market sensing capability (MKSC)		0.827	0.938	0.754
MKSC1: Market intelligence to identify procurement opportunities	0.880			
MKSC2: Ability to interpret customer feedback and develop innovative solutions	0.786			
MKSC3: Firm adapts products/services to meet changing market demands	0.798			
MKSC4: Ability in gathering and evaluating market information	0.945			
MKSC5: Ability to adopt changes and meet buyer's preference	0.920			
Firms' financial capability (FNCP)		0.798	0.906	0.707
FNCP1: Our firm has sufficient working capital to support operations	0.807			
FNCP2: Our firm demonstrates sound financial management practices	0.865			
FNCP3: Ability to meet financial requirements of procurement processes	0.847			
FNCP4: A firm has required minimum turnover to support innovations	0.844			
SMEs' participation in public procurement (SMPP)		0.816	0.874	0.700
SMPP1: Our firm actively participates in public procurement processes	0.875			
SMPP2: We have successfully secured public procurement contracts in the past	0.907			
SMPP3: We have successfully contracted and delivered requirements to PEs	0.715			

Source(s): Table by authors

Table 1. Confirmatory factor analysis

included in the study as the control variables. Studies have shown that firm characteristics, specifically the size in terms of number of employees, age in terms of working experience and the sector in which it operates, affect the likelihood of SMEs' participation in public procurement (Flynn, McKevitt, & Davis, 2015; Tukamuhabwa & Namagembe, 2023).

3.4 Reliability and validity

The reliability and validity of the constructs' measurement scales were assessed using Cronbach's alpha (α) and composite reliability (CR) through confirmatory factor analysis (CFA) for underlying dimensions and factor loadings (λ). A value greater than 0.7 for Cronbach's alpha (α) and CR indicates satisfactory reliability (Hair *et al.*, 2020). Based on the analysis in Table 1, TECC, MKSC, FNCP and SMPP demonstrated reasonable reliability, with Cronbach's alpha and CR values above the recommended threshold limit of 0.7. Moreover, convergent validity for all reflective constructs was checked through average variance extracted (AVE) and factor loadings. As suggested by Fornell and Larcker (1981), factor loadings for items and AVE values for constructs ≥0.50 are considered acceptable. However, in this case, the study demonstrated preferable factor loadings of greater than 0.70 and AVE values above the recommended thresholds of 0.5, implying that all the reflective constructs and dimensions of the study were reliable. Additionally, discriminant validity, another important measure of the measurement model, was examined based on the Fornell-Larcker criterion (see Table 2). Discriminant validity is established provided that the square root of AVE for each construct is higher than the inter-construct correlation (Fornell & Larcker, 1981). In this study, the square root of AVEs is higher than the inter-correlation among constructs, thus establishing discriminant validity. These analyses support a unidimensional structure of the study constructs.

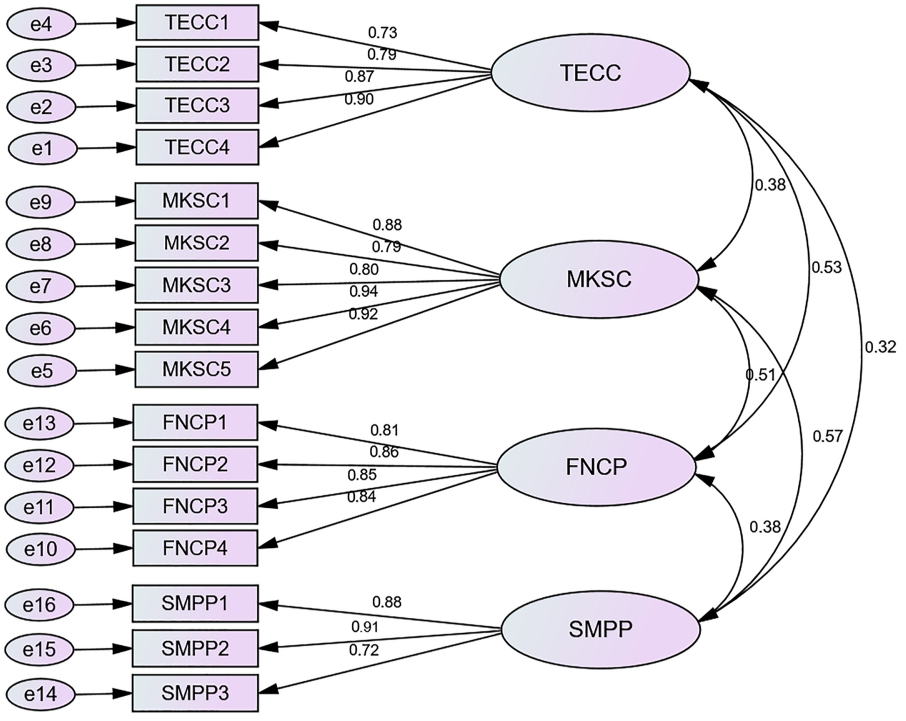
3.5 Measurement model assessment

The CMIN value of the model was 238.224 with 98 degrees of freedom (df), and a significance level of $p < 0.000$. Other fit measures were also examined, including CMIN/DF = 2.431 < 3.0, the goodness of fit index (GFI) = 0.901 ≥ 0.90, incremental fit index (IFI) = 0.955 ≥ 0.90, normed fit index (NFI) = 0.925 ≥ 0.90, relative fit index (RFI) = 0.908 ≥ 0.90, comparative fit index (CFI) = 0.954 ≥ 0.90, Tucker–Lewis index (TLI) = 0.944 ≥ 0.90, root mean square error of approximation (RMSEA) = 0.076 ≤ 0.08, standardized root mean square residual (SRMR) = 0.031 ≤ 0.08 and Pclose = 0.218 > 0.05. Overall, the measurement model, as illustrated in Figure 2, demonstrated a satisfactory fit, revealing greater predictive power of the focal predictor variables (TECC and MKSC) and the moderator variable (FNCP) on the outcome variable (SMPP).

	CR	AVE	MSV	ASV	MKSC	TECC	FNCP	SMPP
MKSC	0.938	0.754	0.320	0.242	*0.868*			
TECC	0.894	0.679	0.278	0.175	0.382	*0.824*		
FNCP	0.906	0.707	0.278	0.228	0.509	0.527	*0.841*	
SMPP	0.874	0.700	0.320	0.189	0.566	0.316	0.383	*0.837*

Note(s): Italicized values denote $\sqrt{\text{AVE}}$ > correlation between constructs
Source(s): Table by authors

Table 2. Discriminant validity based on Fornell–Larcker criterion



Source(s): Figure by authors

Figure 2. Measurement model

3.6 Data analysis

We conducted confirmatory factor analysis (CFA) with the help of structural equation modelling (AMOS 23.0) to evaluate the measurement model's adequacy and its alignment with the collected data. CFA allow researchers to identify the underlying dimensions of latent constructs and their interrelationships (Fan *et al.*, 2016). During this phase, we generated factor loadings for each item of both latent and observable constructs, which were then used to assess the model's fitting indices, data validity, and reliability. Subsequently, we employed PROCESS macro module 1 with 5,000 bootstrap samples at a 95% confidence interval to assess the moderating effect of FNCP on the relationship between TECC, MKSC and SMPP. The PROCESS macro is a robust and contemporary tool for conducting regression analysis that accommodates additional variables like moderators, mediators and covariates (Hayes, 2022).

3.7 Non-response bias assessment

Since the data collection for this study took place during working hours using a self-administered questionnaire survey, some respondents had limited availability due to work commitments. This potentially affected the response rate. In effect, only 157 questionnaires were received from respondents within the specified data collection timeframe. To address this, regular follow-up was conducted with non-respondents to understand why they hadn't participated and encourage them to complete and submit the questionnaire. These efforts resulted in an additional 91 late responses. Following Roxas and Chadee (2012) recommendations, we evaluated non-response bias by comparing the mean values of demographic characteristics and study variables between early and late responses using a *t*-test. The results of *t*-tests revealed insignificant differences between the two groups ($p > 0.05$), affirming that non-response bias was not an issue of concern in the study.

3.8 Common method bias

Self-completion questionnaires were used to gather data in this study, whereby all the information referring to the variables explored was collected from SME managers or representatives. This approach, according to Podsakoff, MacKenzie, Lee, and Podsakoff (2003), could lead to common method bias (CMB). To mitigate this potential issue, we conducted a CMB test based on Podsakoff *et al.*'s (2003) recommendations. Harman's single-factor analysis was used, with all items subjected to factor analysis with a single-factor rotation. The analysis revealed that only about 42.96% of the total variance was explained by a single factor, which is below the threshold of 50% needed for CMB to pose a problem (Podsakoff *et al.*, 2003). Therefore, the analysis provides sufficient evidence to argue that CMB was not a significant issue in this study.

4. Results

4.1 Demographic characteristics of SMEs

Table 3 provides a summary of information for the SMEs sampled in this study. About 58.06% of the sampled SMEs were owned by females, compared to 41.94% owned by males. Regarding educational background, 30.65% of the SME owners had at least a first-degree qualification, followed by 20.56% with a postgraduate qualification. The smallest percentage (20.56%) of the sampled SME owners had a diploma qualification. Additionally, 30.65% of the SMEs had been established for an average of 11 to 15 years, followed by 20.56% with an average of 16–20 years, and 18.95% with less than 5 years. The analysis further reveals that the SMEs included in the survey were sampled from various sectors, with the majority being in retail or wholesale (32.66%), followed by the services

Attributes	Category	Frequency	Percent
Gender of SME owner	Female	144	58.06
	Male	104	41.94
Operational experience	Less than 5 years	47	18.95
	6–10 years	42	16.94
	11–15 years	76	30.65
	16–20 years	51	20.56
	21 years and above	32	12.90
Education background of SME owner	Secondary education	54	21.77
	Diploma	51	20.56
	First Degree	76	30.65
	Postgraduate	67	27.02
Firm size (*Number of employees*)	1–4 employees	103	41.53
	5–49 employees	79	31.85
	50–99 employees	66	26.61
Sector in which SME operates	Manufacturing/processing	31	12.50
	Retail or wholesale trade	81	32.66
	Construction	46	18.55
	Services	64	25.81
	Agribusiness	26	10.48

Source(s): Table by authors

Table 3. Characteristics of sampled SMEs

sector (25.81%), and 18.55% from the construction industry. Lastly, the analysis established that the majority of the sampled SMEs were micro-enterprises accounting for 41.53%, followed by small enterprises (31.85%). Medium-sized enterprises constituted the smallest number of SMEs (26.61%). Essentially, the results indicate SMEs were sampled from diverse sectors of the economy, with sufficient experience and educational background to assess and evaluate the interaction effect of innovation capabilities and SME participation in public procurement.

4.2 Descriptive and correlation results

Table 4 presents the mean, std. deviation and correlation values of the study variables. The results indicated moderate levels of TECC (mean score = 3.117, std. deviation = 0.755), MKSC (mean score = 3.179, std. deviation = 0.650) and reasonably sound FNCP (mean score = 3.072, std. deviation = 0.778) among the surveyed SMEs. The mean score for SMPP was 3.972 with a std. deviation of 0.686, suggesting a slight improvement in the participation

Variables	Mean	Std. deviation	Firm size	Firm age	Sector	TECC	FNCP	SMPP	MKSC
Firm size	23.267	5.438	1						
Firm age	11.411	0.867	0.110	1					
Sector	2.774	0.898	0.005	0.067	1				
TECC	3.117	0.806	0.035	0.032	0.023	1			
FNCP	3.072	0.778	0.037	0.046	0.077	0.491**	1		
SMPP	2.972	0.686	0.017	0.158**	0.023	0.297**	0.369**	1	
MKSC	3.179	0.650	0.056	0.014	0.075	0.355**	0.465**	0.409**	1

Note(s): ** Correlation is significant at 0.01
Source(s): Table by authors

Table 4. Descriptive statistics and correlation coefficients

of SMEs in public procurement under the given conditions of TECC, MKSC and FNCP. Firm size, included as one of the control variables, had a mean score of 23.267 and a std. deviation of 5.438, confirming that the sampled firms were SMEs. In the case of correlations, TECC exhibited a positive and significant correlation with SMPP ($r = 0.297$, $p < 0.01$). FNCP revealed positive and significant correlations with both TECC ($r = 0.491$, $p < 0.01$) and SMPP ($r = 0.369$, $p < 0.01$). Lastly, firm age was controlled for in the model due to its demonstrated positive significant correlation with SMPP ($r = 0.158$, $p < 0.01$). The maximum correlation value between variables was 0.491, which, according to Pallant (2020), indicates a medium correlation. Overall, these results indicate the absence of multicollinearity in the study, thus permitting further analysis and testing of the proposed research hypotheses.

4.3 Structural model and testing of hypotheses

Table 5 presents the results of the PROCESS macro which examined the direct effects of TECC and MKSC on SMPP. The Table also shows the effect of the interaction term (TECC*FNCP) on SMPP (Model A), as well as the effect on the interaction term between MKSC*FNCP) on SMPP (Model B). Model A was statistically significant, with an R^2 value of 0.174 ($p = 0.000 < 0.05$) and an F value of 16.763. This indicates that 17.4% of the variation in SMPP was explained by TECC and the interaction term of TECC*FNCP. Moreover, Model B in Table 5 demonstrated that MKSS and the interaction term of MKSC*FNCP accounted for 34.2% of the variations in SMPP ($R^2 = 0.342$, $p = 0.000 < 0.05$, $F = 32.188$). Based on the regression results presented in Table 5, both TECC ($\beta = 0.375$, $p < 0.05$) and MKSC ($\beta = 0.497$, $p < 0.05$) exerted a positive and significant impact on SMPP, providing sufficient evidence to support H1 and H2. Furthermore, the interaction between TECC and FNCP denoted TECC*FNCP in Model B was found to be positive and statistically significant ($\beta = 0.138$, $p < 0.05$). Based on these results, we therefore confirmed H3a which hypothesized a positive moderating role of FNCP in the relationship between TECC and SME SMPP.

Variables	Coefficient	SE	*t*	*p*	LLCI	ULCI
Model A: main effects						
Firms size[c]	0.496	0.074	1.789	0.073	−0.047	1.040
Firm age[c]	0.115	0.027	0.505	0.003	0.061	0.330
Sector[c]	0.105	0.089	1.797	0.072	−0.037	0.658
TECC	0.375	0.028	0.802	0.022	0.252	0.602
FNCP	0.104	0.097	4.102	0.030	0.058	0.618
TECC*FNCP	0.138	0.085	0.649	0.036	0.028	0.244
R^2	0.174					
F(sig.)	16.763			0.036		
R^2 change	0.034					
Model B: main effects						
Firms size[c]	0.175	0.017	0.802	0.422	−0.252	0.518
Firm age[c]	0.261	0.069	0.279	0.036	0.107	0.383
Sector[c]	0.023	0.066	0.144	0.885	−0.302	0.340
MKSC	0.497	0.077	1.790	0.005	0.307	0.736
FNCP	0.353	0.054	2.818	0.005	0.046	0.259
MKSC*FNCP	0.488	0.094	2.513	0.012	0.107	0.868
R^2	0.342					
F(sig.)	33.236			0.012		
R^2 change	0.043					

Note(s): "c" donates control variables included in the model
Source(s): Table by authors

Table 5.
Regression results for direct and moderation effect

Furthermore, the study's results provided support for H3b, as the interaction term of MKSC with FNCP (MKSC*FNCP) revealed a positive significant impact on SMPP ($\beta = 0.488$, $p < 0.05$). Having supported H3a and H3b, the results of this study signify FNCP as a significant positive moderator of the relationship between TECC, MKSC and SMPP. Regarding the control variables, only firm age demonstrated a significant positive effect on SMPP in both Model A and Model B (Table 5), with $\beta = 0.115$, $p < 0.05$, and $\beta = 0.261$, $p < 0.05$, respectively. Firm size and sector had no significant effects on SMPP in either Model A or B.

5. Discussions

5.1 TECC and SMPP

The provided results suggest that there is a positive and statistically significant impact of TECC on SMPP. This suggests that as SMEs' TECC increases, their likelihood of participating in public procurement also increases. The results are consistent with prior studies on SMEs' TECC and engagement in public procurement (Siwandeti *et al.*, 2021; Mwesiumo *et al.*, 2019; Taghizadeh *et al.*, 2021). The results also align with the theoretical assumptions of DC theory (Teece *et al.*, 1997), which stress the importance of dynamic technologies as essential for seizing market opportunities and improving competitive advantages and performance. Technology-driven SMEs bring innovative solutions to public procurement projects and streamline procurement-related activities such as bidding, documentation, communication and compliance with requirements. In addition, TECC provides SMEs with greater access to information about public procurement opportunities (Liao *et al.*, 2020; Liu, Long, Liu, Fan, & Wan, 2023). Based on DC theory, this efficiency offers tech-savvy SMEs a competitive advantage over their counterparts with limited technological resources. With access to cutting-edge tools and techniques, SMEs propose value-added services, cost-effective approaches, and sustainable solutions, making their bids more appealing to procurement agencies (Shi, Zheng, Zhang, & Liang, 2020; Zawislak, Fracasso, & Tello-Gamarra, 2018).

5.2 MKSC and SMPP

Again, the study's findings indicated a positive and statistically significant relationship between MKSC and SMPP H2. This means that SMEs with better MKSC are more likely to actively involve in public procurement activities. These results are contextualized and validated within the theoretical framework of DC theory and previous studies, which highlight a significant positive role of MKSC on SMEs' competitiveness and performance (Brown *et al.*, 2019; Liang *et al.*, 2023), thereby reinforcing the current findings. By actively monitoring market trends, customer needs, and changes in procurement policies, SMEs can identify relevant opportunities and tailor their bids to meet specific requirements of public sectors. This finding corroborates the assumptions of DC theory, arguing that being proactive in gathering market intelligence allows SMEs to stay ahead of competitors, anticipate customer demands, and adjust their offerings accordingly (Liao *et al.*, 2020; Aydin, 2021). This positions them well to present compelling proposals that address the precise needs of public sector buyers. With strong MKSC, SMEs can customize their bidding strategies based on market insights, such as the buying behaviours of public entities and the intensity of competition (Han *et al.*, 2023; Brown *et al.*, 2019).

5.3 Moderating role of FNCP on TECC and SMPP

Furthermore, the study findings demonstrated a significant positive moderation effect of FNCP on the link between TECC and SMPP. The interaction term (TECC*FNCP) increased

the predictive power of Module A by 3.4% (R^2 change = 0.034). Table 6 presents the results of the conditional effects of TECC and MKSC on SMPP at low (−1 SD below the mean), moderate (mean), and high (+1 SD above the mean) levels of FNCP. The results reveal that when FNCP is increased by one standard deviation unit, the effect of TECC on SMPP increases by 0.554. Conversely, if FNCP is reduced by one standard deviation unit, the effect of TECC on SMPP decreases by 0.205. Slope plotting (Figure 3) was conducted to illustrate the moderating effect of FNCP on TECC and SMPP. The graph reveals that when FNCP is high, TECC has a stronger positive impact on SMPP compared to when FNCP is low. The result signifies a significant positive moderating role of FNCP on TECC and SMPP. The findings support the arguments made by Shi *et al.* (2020) and Siwandeti *et al.* (2021), as well as the theoretical propositions of DC theory (Teece *et al.*, 1997), which argue that reconfiguring FNCP with TECC enables SMEs to enhance their competitive advantages and succeed in public procurement. Essentially, FNCP enable SMEs to invest in skill development, acquire advanced tools and technologies, or improve existing ones, to support the public e-procurement system. This, in turn, enables SMEs to meet regulatory requirements and adapt to the evolving landscape of e-procurement systems. Through these efforts, SMEs enhance their access to public procurement opportunities, which are increasingly digitized nowadays (Valdez-Juárez & Castillo-Vergara, 2021; Mahuwi & Israel, 2023).

Table 6.
Conditional effects of the focal predictors at values of the moderator

Condition	Effects	SE	*t*	*p*	LLCI	ULCI
Conditional effects of the focal predictor (TECC) at values of the moderator (FNCP)						
Low (−1 SD)	0.205	0.072	0.752	0.017	0.139	0.329
Mean (0.000)	0.375	0.028	0.802	0.022	0.252	0.602
High (+1 SD)	0.554	0.057	2.1539	0.031	0.499	0.809
Conditional effects of the focal predictor (MKSC) at values of the moderator (FNCP)						
Low (−1 SD)	0.176	0.073	0.646	0.018	0.059	0.252
Mean (0.000)	0.497	0.077	1.790	0.005	0.307	0.736
High (+1 SD)	0.516	0.073	2.163	0.030	0.367	0.755

Source(s): Table by authors

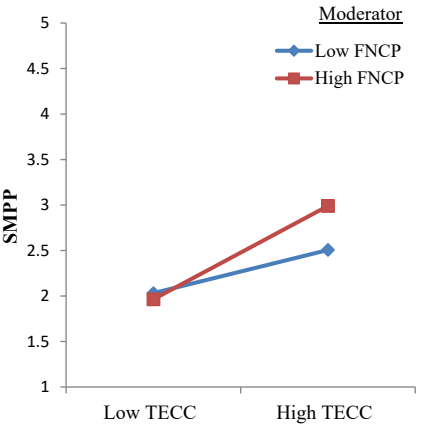


Figure 3.
Moderation effects of FNCP on TECC and SMPP

Source(s): Figure by authors

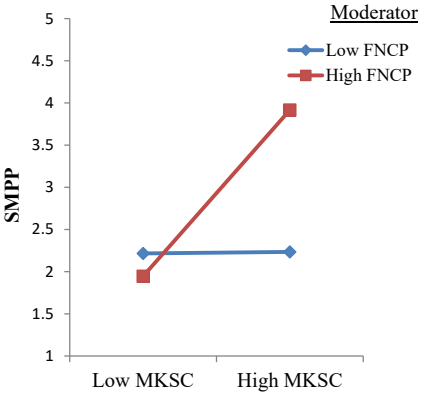
5.4 Moderating role of FNCP on MKSC and SMPP

Lastly, the study findings supported H3b, which hypothesized a positive moderating role of FNCP on the relationship between MKSC and SMPP. The inclusion of the interaction term resulted in a 4.3% increase in the R^2 value in Model B, primarily due to the interaction between MKSC and FNCP. Regarding the results of conditional effects presented in Table 6, when FNCP is at a high level (+1 SD above the mean), the influence of MKSC on SMPP increases by 0.516. However, the effect of MKSC on SMPP is less pronounced by 0.176 at a low level (−1 SD below the mean) of FNCP. To further illustrate the moderating effect, Figure 4 was plotted using the results of the two-way interaction. Figure 4 demonstrates that the effect of MKSC on SMPP is stronger at a high level of FNCP and weaker at a low level of FNCP. Based on DC theory, the findings suggest that SMEs with sound FNCP are more likely to be successful in MKSC and SMPP. These findings are supported by Abdellatif and Zaky (2015), Kim *et al.* (2018), and Aydin (2021), who opined that sound FNCP enables SMEs to allocate funds towards R&D activities aimed at developing and implementing innovative and effective marketing strategies, as well as creating innovative products or services. With effective R&D and marketing strategies, SMEs can develop unique value propositions and differentiate themselves from competitors, thereby enhancing their competitiveness and attractiveness to public procurement entities. Similar to the findings of Namagembe, Ntayi Mpeera, and Kalid (2021) and Parida and Örtqvist (2015), sound FNCP enables SMEs to invest in advanced marketing technologies and infrastructure, such as digital marketing platforms. From the theoretical perspective of DC theory (Teece *et al.*, 1997), these investments are essential for gaining competitive advantages. By integrating FNCP and MKCS, SMEs effectively communicate their offerings to public buyers, thereby increasing the chance of participating in public procurement.

6. Conclusion, implications and future research

6.1 Theoretical implications

This study makes significant theoretical contributions to the literature by diving deeper into the moderating effects of FNCP on TECC, MKSC and SMPP in the context of Tanzania, using the theoretical framework of DC theory. A similar methodological approach has not been employed to investigate the moderating effects of FNCP in the relationships between TECC, MKSC, and SMPP in this context. Thus, the study provides empirical insights, extending the applications of DC theory within procurement and supply chain literature, demonstrating



Source(s): Figure by authors

Figure 4.
Moderation effects of FNCP on MKSC and SMPP

how the integration of FNCP, TECC, and MKSC can drive SME success in public procurement. The significant positive direct effect of TECC and MKSC on SMPP reported in this study supports the DC theory perspective that unique dynamic capabilities are essential for gaining and sustaining a firm's competitive advantage in volatile markets. In addition, the study introduces FNCP as a significant moderating factor, enhancing the positive effects of TECC and MKSC on SMPP. Again, this aligns with DC theory's emphasis on the synergistic integration and reconfiguration of firms' dynamic capabilities, which are essential for gaining and sustaining a competitive advantage. This study provides empirical evidence supporting the DC theory that SMEs must develop and integrate a holistic set of capabilities to effectively engage in public procurement. Drawing on DC theory, the study findings assert that SMPP not only depends on possessing unique TECC, MKSC, and FNCP but also on how effectively these resources and capabilities are interactively used to reinforce each other and enhance overall SME competitive advantages.

6.2 Practical implications

The study offers some practical implications that can help SMEs leverage FNCP, TECC, and MKSC to enhance their participation in public procurement. First, policymakers and SME managers should encourage and facilitate networking platforms where SMEs can share procurement opportunities, and learn from experienced large firms and industry experts how about market sensing and technological innovation. Such networking or strategic partnerships can be extended to financial institutions, government agencies, or private tech companies. This can provide SMEs with access to additional financial resources, technical know-how, infrastructure, and expertise in the form of subsidies, grants, low-interest loans, or reduced collateral to support SMEs' TECC and MKSC that drive participation in public procurement at reduced costs. Second, SMEs should diversify their services by entering new markets and offering new products to existing customers. These efforts can help them improve their FNCP by generating more sales and revenue, which can then be reinvested in internal programs that promote TECC and MKSC such as acquiring advanced technology, skill development, and innovative marketing strategies. Another effort may include developing and implementing hands-on training and mentorship programs focused on enhancing the marketing intelligence and technological skills of SME employees for more efficient access to public procurement opportunities. Lastly, SMEs should implement financial literacy programs to help them better manage their finances and understand the financial aspects of participating in public procurement. This can be strengthened through effective cash flow management, optimized accounts receivable and payables, and negotiations on payment terms with suppliers and buyers. This is essential for maintaining SMEs' FNCP, TECC, and MKSC, and delivering value-added solutions in public procurement bids.

6.3 Conclusion

Building on the DC theory, we examined the moderating role of FNCP on the relationship between TECC, MKSC, and SMPP. The study findings demonstrated a significant positive effect of TECC and MKSC on SMPP. This implies that nurturing TECC and MKSC helps SMEs become adaptive, competitive, and succeed in the evolving landscape of public procurement. The study also revealed a significant positive moderating role of FNCP on TECC and SMPP, as well as a significant positive moderating role of FNCP on MKSC and SMPP. Overall, the study findings provide sufficient evidence to conclude and suggest that FNCP strengthens the positive relationship between TECC, MKSC, and SMPP. Given the evolving landscape of public procurement, which is nowadays internet-based with dynamic requirements, TECC, MKSC and FNCP are deemed essential for SMEs' participation. From the theoretical perspective of DC theory, these findings highlight the synergistic importance

of TECC, MKSC and FNCP in enabling SMEs to effectively navigate the complex and competitive landscape of public procurement markets. By integrating insights from DC theory, the study findings demonstrate that SMEs can enhance their competitive advantage and participation in public procurement by integrating, developing and harnessing these critical capabilities. In effect, FNCP provides SMEs with the resources and flexibility needed to invest in innovative marketing and technologies. These, in turn, enable SMEs to navigate the complexities of e-public procurement systems, strengthen their competitiveness and seize public procurement opportunities.

6.4 Limitation and direction of further study

The study acknowledges some limitations and suggests areas for further studies. First, the study findings are limited to SMEs in the Ilala District of Tanzania and hence should not be generalized to other sectors and different geographical contexts. To extend the findings of this study, future research can cover other districts or regions, considering the heterogeneity in resources and innovation capabilities that SMEs may possess. Second, the study used FNCP as the moderator variable of the relationship between TECC, MKSC and SMPP. Future studies should extend to other factors that could affect SMPP. These should include employing other contextual variables, such as the level of competition, absorptive capacity, regulatory compliance, and industry characteristics, as moderators or mediators of the relationships between TECC, MKSC and SMPP. Lastly, the study was methodologically confined to a quantitative approach and cross-sectional research design. Again, we suggest that conducting longitudinal studies using multiple methodologies such as interviews, surveys and focus group discussions would offer in-depth insights into the causality and dynamics influencing SMPP over time. The suggested avenues for further studies can help inform and develop practical strategies that support dynamic capabilities in SMEs and their participation in public procurement.

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