Procurement of good governance as a strategic tool for achieving value for money in public construction projects

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Abstract

Purpose – The study aims to explore the role of procurement of good governance (PGG) on value for money (VfM) achievement in public construction projects. By investigating various dimensions of PGG, including transparency, accountability, competition and integrity, this study provides insights into how these factors contribute to the successful achievement of VfM outcomes in public construction projects.

Design/methodology/approach – The data were sourced from 203 construction project practitioners from 24 selected procuring entities in Tanzania using a census approach and a cross-sectional questionnaire survey. Confirmatory factor analysis (CFA) and structural equation modelling (SEM) were used for data analysis.

Findings – The findings of the study revealed a positive and significant impact of various dimensions of PGG on VfM. Specifically, transparency, accountability, competition and integrity were positively and significantly related to VfM, with p-values <0.001. Based on the study findings, we conclude that PGG is an important predictor of VfM achievement in public construction projects.

Practical implications – The study offers policy implications for streamlined PGG and VfM achievement in public construction projects. It is suggested that procuring entities can enhance VfM by enforcing compliance with the principles of PGG throughout the entirety of construction projects. In this case, streamlined legislative frameworks and control mechanisms are crucial components that could enhance PGG and the achievement of VfM.

Originality/value – This study contributes to the academic literature on the strategic role of PGG in enhancing VfM achievement. This is one of the research domains, which has not been adequately researched, particularly in Tanzania's context. In addition, the study provides valuable insights to policymakers, practitioners and stakeholders involved in public construction projects to improve project outcomes and resource allocation.

Keywords Construction projects, Good governance, Public procurement, Value for money

Paper type Research paper

1. Introduction

Public construction projects play a crucial role in the development and growth of societies and governments by supporting socio-economic activities and public welfare. It encompasses a

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wide range of activities, including planning, designing, renovating and erecting tangible infrastructures such as roads, airports, bridges, schools, hospitals, waterway systems and public buildings (Bajjou & Chafi, 2020; Israel, 2023). Approximately 90% of socio-economic activities, public welfare and livelihoods, such as trade, communication, shelter and access to health and education facilities, heavily rely on the effectiveness of construction projects (World Bank, 2020; Heravi & Mohammadian, 2021). Consequently, construction projects have received significant attention in today's business, socio-economic and legal environments due to their importance to societies and the complexities they face. From a socio-economic perspective, it is estimated that construction projects consume around 20% to 30% of government budgets, employ two million people worldwide and account for 8% of the global gross domestic product (GDP) World Bank (2020), (United Republic of Tanzania (URT), 2021).

The primary objective of public construction projects is to plan and execute them in a manner that maximises economic benefits for the government and meets the requirements of users. It stems from the desire to achieve greater economy, efficiency and effectiveness, which serve as the proxies of value for money (VfM) (Obieje, 2019; Olatunji *et al.*, 2017; Staples & Dalrymple, 2012). Essentially, procuring entities (PEs) evaluate VfM in construction projects based on these three indicators. The economy gauges the cost-effectiveness of project acquisition. Projects that are planned and executed within the estimated budget and at the lowest possible costs fulfil the economic aspect of VfM (McArdle & Gunning, 2018; Sayi & Monko, 2022). Efficiency measures the overall benefits obtained from projects in relation to resources invested, compliance with quality standards, sustainability and timely delivery. Effectiveness assesses the extent to which PEs have achieved the predetermined objectives of the projects. Given the significant amount of funds invested in public construction projects and the goal of achieving VfM, many governments and international organisations have established stringent principles and regulations that advocate for procurement of good governance (PGG) and VfM achievement. PGG encompasses the principles, regulations and mechanisms that govern the conduct of public procurement, including the planning, tendering, contract awarding and monitoring (Shakya, 2015; Kwofie, Ellis, & Opoku, 2021; Siwandeti, Mahuwi, & Israel, 2023).

In some instances and countries, procurement of construction projects is governed by the United Nations Commission on International Trade Law (UNCITRAL) model law, as well as the guidelines provided by the World Bank and the African Development Bank for the procurement of goods, works, consultancy and non-consulting services (World Bank, 2014; African Development Bank (AfDB), 2012). Most importantly, African countries have enacted and revised Public Procurement Acts (PPA) that outline the principles and regulations that govern public-funded projects. These frameworks establish the guidelines and best practices for PGG, aiming to prevent malpractices and achieve VfM. Amongst others, the frameworks advocate for transparency, competitive bidding, fairness, accountability, integrity, anti-corruption measures and professionalism as the key principles of PGG that enhance VfM in the public bidding process (World Bank, 2014; AfDB, 2012). Studies regard PGG as the principal pillar through which PEs can improve project performance and nurture VfM (Staples & Dalrymple, 2012; Oke, Aigbavboa, & Tong, 2018; Gransberg, Molenaar, Scott, & Smith, 2007). To attain these goals, countries like Kenya, Uganda, South Africa and Ghana, amongst others, have established public procurement oversight authorities with responsibilities to oversee and monitor compliance with the principles of PGG and VfM in PEs.

Notwithstanding the measures and frameworks in place, the planning, procurement, execution and delivery of public construction projects across the globe are not without flaws. Achieving VfM remains a significant challenge for many governments (World Bank, 2020; Matto, Ame, & Nsimbila, 2021; Sayi & Monko, 2022). Governments are striving to reduce costs and increase efficiency and effectiveness. Statistics reveal that about 50% of global construction projects experience cost and time overruns (World Bank, 2020; Israel, 2023;

Heravi & Mohammadian, 2021). This issue is particularly pronounced in Sub-Saharan Africa, where 80% of construction projects fail to achieve VfM, encountering delays and cost overruns (World Bank, 2020). Studies conducted by Idrees and Shafiq (2021), Israel (2022) and Kwofie *et al.* (2021) revealed corrupt practices as the main obstacle hindering PEs from realising VfM in public construction projects. This results in PEs losing approximately 20% to 30% of the project value (World Bank, 2020). Additionally, Obieje (2019) and Sayi and Monko (2022) highlighted a lack of professionalism amongst project practitioners, inappropriate procurement methods and the utilisation of unskilled contractors, sub-contractors and consultants as the prime deficiencies that affect VfM achievement in construction projects. These contribute to delays and cost overruns, thus hindering the attainment of VfM.

In the context of Tanzania, like other Sub-Saharan African countries, the construction sector faces numerous complexities and deficiencies that hinder the realisation of VfM. Issues of efficiency, quality, time and cost overruns remain critical problems (Israel, 2023; Matto, 2023). Evidence reveals that more than 47.3% of construction projects experience time and cost overruns (World Bank, 2020; URT, 2021). In particular, studies by Matto *et al.* (2021) and Mchopa (2015) reported inefficient contract management, corruption, nepotism, conflicting goals amongst practitioners and non-compliance with contractual terms as the root causes of inefficiency, delays, quality and cost issues in public construction projects. However, there is insufficient literature providing a comprehensive overview of the role of PGG on VfM achievement. Previous studies have addressed the challenges and deficiencies in project management (Pastory, 2019; Matto, 2023; Israel, 2022), the causes of cost and time overruns (Kavishe, Jefferson, & Chileshe, 2018; Manege & Kennedy, 2020) and the integration of contract management and VfM (Mchopa, 2015; Matto, 2023). To bridge this gap, the current study employs governance theory to investigate whether PGG helps PEs achieve VfM in the context of Tanzania's public construction projects. The main question of the study is:

RQ. Does PGG significantly affect the achievement of VfM?

By addressing the above research question, the study operationalises the role of PGG in the context of construction projects. Delving into the intricate fabric of PGG, the study goes beyond the confines of traditional methods, focussing on its inherent potential as a strategic tool and paves the way for conceptual frameworks that harmonise ethical governance with fiscal policies. The first section of this paper is structured as its introduction, providing an overview of the study. Section 2 provides a summary of literature, encompassing both theoretical and empirical viewpoints that form the basis for hypotheses development. The methodology is outlined in Section 3. The analysis results, encompassing the model's fit and hypotheses testing are presented in Section 4, which is followed by a discussion of findings in Section 5. Section 6 delves into the conclusion, study implications, limitations and suggestions for future studies.

2. Literature review and hypothesis development

2.1 The governance theory

In line with previous literature (Panga, 2021; Shakya, 2015; Anderson, Kovacic, & Müller, 2011; Stoker, 2006), we adopt the governance theory to assess the role of PGG on VfM achievement in public construction projects. The governance theory, established by the World Bank, sets basic principle for governments to achieve efficiency, improve performance and enhance prosperity in public service delivery (Williams & Young, 1994). These principles include transparency, responsiveness, inclusiveness, accountability, efficiency and economy. Additionally, the International Monetary Fund (IMF, 2022) and the United Nations Development Programme (UNDP, 2007) extend the principles of good governance to

include integrity, the rule of law and ethical conduct. These principles provide a framework for the effective utilisation of public resources and promote good practices. The governance theory considers these principles as essential elements through which governments and PEs can enhance prosperity and improve performance (Bevir, 2011; Shakya, 2015; Glas, Gaus, & Ebig, 2018; Panga, 2021).

The performance of construction projects is assessed based on cost-effectiveness over their entire lifecycle, quality standards and timely delivery, all of which contribute to the measurement of VfM (Sayi & Monko, 2022; McArdle & Gunning, 2018). To achieve these objectives, PEs require robust principles, regulatory frameworks and enforcement mechanisms to govern and monitor the procurement of public projects. The current study assesses the theoretical implications of the governance theory in enhancing VfM achievement in public construction projects. The assessment is based on the fundamental principles of PGG, namely accountability, transparency, competition and integrity. Based on this, the study asserts that streamlined PGG can help PEs achieve VfM. This is attributed to the fact that PGG promotes anti-corruption, transparency, responsibility and accountability amongst procurement practitioners, which, according to Botlhale (2017) and Marinelli and Antoniou (2020), are important drivers of VfM.

2.2 Procurement of public construction project and VfM issues in Tanzania

The procurement of public-funded projects in Tanzania is governed by the PPA (CAP. 410 R.E. 2016) (URT, 2011) and its associated procurement regulations (URT, 2013) (as amended in 2016). These legislative instruments establish the principles of PGG, aiming to achieve VfM by promoting transparency, competitive bidding, fairness, accountability, integrity and ethical practices. Essentially, these frameworks emphasise the timely planning, execution and delivery of high-quality projects in a cost-effective manner. Aligned with these objectives, Part III of the public procurement regulations outlines the procedures and requirements for hiring contractors and consultants, as well as the management and execution of construction projects. Amongst other stipulations, the regulations emphasise the importance of selecting and employing capable and qualified contractors and consultants, along with using appropriate procurement methods as prerequisites for achieving VfM (URT, 2013). Entities such as the Tanzania Rural and Urban Roads Agency (TARURA), Tanzania Building Agency (TBA), the Tanzania National Roads Agency (TANROADS) and the Contractors Registration Board (CRB) play crucial roles in planning, executing and overseeing the implementation, rehabilitation and maintenance of construction projects, with the primary focus on achieving VfM (URT, 2021; URT, 2013).

The legislative instruments and oversight entities in place aim to ensure that public-funded projects are planned, implemented and delivered on time, achieving better quality and cost-effectiveness, whilst also considering sustainability, innovation and stakeholder satisfaction (Israel, 2023; Glas *et al.*, 2018; Brito & Miguel, 2017). These goals are integral to VfM achievement and must be considered when evaluating the success of construction projects (Ibrahim, Bawole, Obuobisa-Darko, Abubakar, & Kumasey, 2017; Nyanyofio, Domfeh, Buabeng, Maloreh-Nyamekye, & Appiah-Agyekum, 2022). In particular, the Public Procurement Regulatory Authority (PPRA) is mandated with important roles to monitor compliance with the principles of PGG and report whether the best results and highly qualified outcomes are obtained on time and at effective costs (URT, 2013). In the context of public construction projects, VfM is assessed throughout the project's planning, design, construction and closeout phases. Literature establishes that PEs can successfully achieve VfM by, amongst other strategies, complying with the fundamental principles of PGG (Changalima, Ismail, & Mwaiseje, 2022; Mrope, Namusonge, & Iravo, 2017). PGG minimises the risks of corrupt practices, increases efficiency and enhances effectiveness in procurement proceedings (Botlhale, 2017; Nyanyofio *et al.*, 2022).

2.3 Hypotheses development

2.3.1 Transparency and VfM achievement. In the context of public procurement, transparency refers to the means and processes through which procurement contracts are defined, advertised, awarded and managed. It involves effective communication and openness between the PEs and bidders (URT, 2013; World Bank, 2014; Brito & Miguel, 2017). Procurement regulations stipulate that all aspects related to procurement procedures, tender advertisements, timelines, evaluation criteria and award decisions should be conducted and publicly maintained by the PEs to enhance transparency (URT, 2013). Moreover, empirical studies consider e-procurement as a crucial foundation of transparency through which PEs can bolster effective and efficient resource utilisation (Bauhr, Czibik, Licht, & Fazekas, 2020; Harnovinsah, Al-Hakim, Erlina, & Muda, 2020). Studies by Sayi and Monko (2022), Israel, Mchopa, Mwaiseje and Mashene (2019) and Sama (2022) have reported positive and significant effects of transparency on the performance of PEs in terms of cost-effectiveness, quality and timely delivery. This is attributed to the fact that transparency promotes competition and accountability in public procurement processes. Well-implemented transparency-related practices enable PEs to select and engage qualified and competent bidders who can deliver projects within the agreed time, specifications and budget (Heald, 2018; Asuquo, Lashinde, & Adu, 2021). Based on these perspectives, the following hypothesis is proposed:

H1. Transparency is positively related to VfM achievement.

2.3.2 Accountability and VfM achievement. Accountability pertains to how procurement practitioners exercise their power and act in accordance with specified legislation and codes of conduct (Harnovinsah *et al.*, 2020; Ibrahim *et al.*, 2017). Mrope *et al.* (2017) further expand the concept of accountability to include how public officials accept responsibility and liability for their actions. It has been argued that a commitment to accepting liability and adhering to the existing legislation is crucial for improved procurement performance (Nyanyofio *et al.*, 2022; Obieje, 2019). In this regard, the achievement of VfM in public-funded projects requires procurement practitioners to act in the public interest and comply with procurement regulations. Yet, literature reveals that public-funded projects experience delays, cost overruns and poor quality due to a lack of accountability amongst public buyers during procurement processes (Marinelli & Antoniou, 2020; Johnson & Babu, 2020; Gomes, Small, & Yasin, 2019). Conversely, PEs that prioritise accountability are more likely to attain cost-effectiveness and improve quality and time performance (Mrope *et al.*, 2017; Obieje, 2019). Accountability governs ethical behaviour of procurement practitioners, thereby serving as a critical driver of organisational performance and VfM achievement. It is therefore hypothesised that:

H2. Accountability is positively related to VfM achievement.

2.3.3 Competition and VfM achievement. Accordingly, literature asserts that PEs can enhance VfM achievement in public construction projects by enhancing the competitive bidding process (Panga, 2021; Anderson *et al.*, 2011). Public procurement regulations and guidelines require PEs to use competitive tendering as the default method in public procurement, with equal participation and treatment of bidders in pre-qualification and post-qualification processes (URT, 2013; Mahuwi & Israel, 2023). Moreover, the regulations and guidelines prohibit dividing contracts to circumvent thresholds for competitive tenders. The current study suggests that competitive bidding can significantly contribute to the achievement of VfM. In line with this perspective, studies by Panga (2021) and Sama (2022) revealed a positive and significant relationship between competitive bidding and organisational performance. This interplay can occur because competitive bidding maximises competition in the bidding process, enabling PEs to select the best-priced and highly qualified bidders. Based on these arguments, the study hypothesises that:

H3. Competition is positively related to VfM achievement.

2.3.4 Integrity and VfM achievement. Integrity refers to strong moral principles and honesty exhibited by procurement practitioners in their dealings with bidders (Bosio, Djankov, Glaeser, & Shleifer, 2022; Kafimbou, 2019). It encompasses practices such as the prompt selection of bidders, preservation of unchanged bid evaluation and selection criteria, specifications and processes after bids are opened and compliance with pre-set contractual terms and conditions (Bosio *et al.*, 2022). Several studies have reported a positive and significant relationship between integrity in public procurement and organisational performance (Hsueh, Bretschneider, Stritch, & Darnall, 2020; Obieje, 2019; Olatunji *et al.*, 2017; Marinelli & Antoniou, 2020). Conversely, the lack of integrity and non-compliance with procurement principles and contractual terms have been reported to have a negative effect on organisations' performance (Kafimbou, 2019; Gomes *et al.*, 2019; Ibrahim *et al.*, 2017). Maintaining integrity fosters good relationships and harmony between PEs and service providers during contract implementation, thereby increasing efficiency. Increased efficiency subsequently helps PEs achieve VfM by minimising operational costs and improving the quality and timely delivery of projects (Brito & Miguel, 2017). It is thus hypothesising that:

H4. Integrity is positively related to VfM achievement.

2.4 Research gap

Despite the growing recognition of the importance of procurement in promoting good governance, a notable gap exists in the literature regarding the specific influence of PGG in achieving VfM within the unique context of Tanzania's public construction sector. Previous research often focusses on addressing the challenges and deficiencies that hinder PEs from achieving VfM (Pastory, 2019; Matto, 2023; Israel, 2022), the drivers of cost and time overruns in construction projects (Kavishe *et al.*, 2018; Manege & Kennedy, 2020; Israel, 2023) and the perceived benefits of regulatory compliance in public bidding process (Changalima *et al.*, 2022; Sama, 2022; Panga, 2021). Understanding the role of PGG in achieving VfM is essential for devising practical strategies for effective implementation and delivery of public construction projects. Therefore, bridging this gap is vital for providing actionable insights that can guide policymakers, practitioners and stakeholders in developing and refining strategies that align with the unique dynamics of the Tanzanian public construction sector.

2.5 The conceptual framework

Figure 1 is the conceptual framework of this study which demonstrates the relationships between PGG and VfM achievement in public construction projects. The framework was developed based on a literature review and the formulated four hypotheses. The conceptual framework hypothesises that the underlying principles of PGG (H1, H2, H3 and H4) are positively related to VfM.

3. Methodology

3.1 Research design and sampling

A quantitative research approach and cross-sectional research design were adopted for this study. The approach fits well with the study because we sought to establish a statistical link between the explanatory and outcome variables (Dominowski, 1980). On the other hand, data was collected at a single point in time from the targeted population to describe the status of PGG and VfM achievement, hence forming the basis for a cross-sectional research design (Saunders, Lewis, & Thornhill, 2019). The target population for this study consisted of 256 construction project practitioners from 24 PEs across four regions in Tanzania, namely

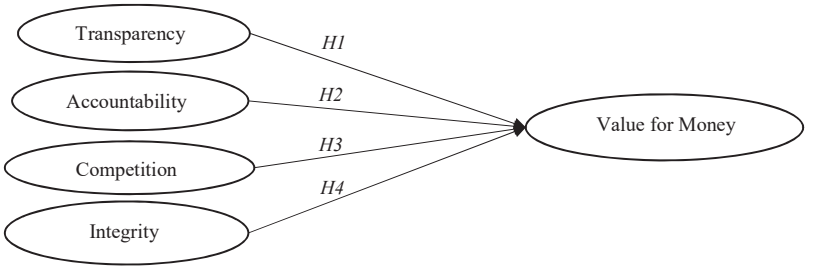
Mbeya, Iringa, Dodoma and Songwe. These included heads of procurement units, project managers, heads of user departments, accounting officers, heads of finance units, project consultants, chairmen of the tender boards and auditors. Participants were chosen based on their rational roles in planning, execution and overseeing compliance with PGG in public construction projects (Kwofie *et al.*, 2021; Matto *et al.*, 2021). The basis for selecting the 24 PEs is that they were identified by the Controller Auditor General (CAG) as having implemented construction projects with indicators suggesting the likelihood of achieving VfM, such as cost-effectiveness, timely delivery and quality standards (URT, 2021). Due to the relatively small size of the target population, a census approach was utilised, including the entire population as the unit of analysis (Israel, 1992).

3.2 Data collection and sample size

The study collected primary quantitative data for analysis. A self-administered questionnaire containing structured questions was used to collect the data and test the relevance of governance theory in assessing the role of PGG on VfM. Initially, an extensive literature review was conducted to identify the constructs of PGG and VfM, which were then used to construct a questionnaire survey. To ensure content validity before data collection, the questionnaire was shared with five public procurement practitioners who were not part of the study population. Changes were appropriately incorporated into the questionnaire to enhance its quality and clarity. Subsequently, questionnaires were distributed to the targeted 256 construction project practitioners who had first-hand knowledge of PGG and VfM achievement in the identified 24 PEs. However, out of the 256 questionnaires distributed, only 203 valid responses were obtained, accounting for approximately a 79.3% response rate. The final sample size of 203 was deemed sufficient for conducting confirmatory factor analysis (CFA) and structural equation modelling (SEM), as both techniques, according to Wolf, Harrington, Clark and Miller (2013) and MacKinnon, Lockwood, Hoffman, West and Sheets (2002), require a minimum sample size of 200 or more. A structured questionnaire survey was preferred in this study to capitalise on the advantages of minimising biases in data collection whilst covering a large number of respondents within a short time (Saunders *et al.*, 2019).

3.3 Measurement of the study variables

The questionnaire survey developed for this study had four constructs that reflected the aspects of PGG and VfM. The four constructs were transparency, accountability, competition and integrity, as hypothesised in Figure 1. Transparency and integrity were measured using five items each, whilst competition and accountability were measured using four items each. The constructs and items related to PGG were adopted and modified from Bosio *et al.* (2022), Israel *et al.* (2019) and Bevir (2011). The outcome variable (VfM) was measured using three items of Panga (2021), McArdle and Gunning (2018) and Olatunji *et al.* (2017). For each



Source(s): Figure by authors

Figure 1.
The conceptual framework

statement within a construct, respondents were asked to indicate the potential influence of PGG on VfM achievement, based on their experience in construction projects. Each item was measured using a 5-point Likert scale, ranging from "1 = not at all" to "5 = very great extent."

3.4 Data analysis

SEM (AMOS 23.0) was employed for data analysis. SEM enables the examination of relationships between one or more discrete or continuous constructs and outcome variables (Fan *et al.*, 2016; Hair, Ringle, & Sarstedt, 2013). CFA was conducted beforehand to investigate the underlying data structure and unidimensionality of the constructs based on SEM's measurement model. The patterns of latent constructs and observed variables for transparency, accountability, competition, integrity and VfM in public construction projects were depicted. Through CFA, factor loadings were utilised to assess the model fitting indices, reliability and validity of the data. Finally, SEM employed regression analysis to examine the hypothesised relationships between PGG and VfM achievement.

4. Research findings

4.1 Characteristics of respondents

Table 1 provides demographic information about the respondents included in this study. The majority of respondents were auditors (23.15%, n = 47), followed by project consultants and chairmen of tender boards (11.82%, n = 24). Males accounted for the appropriate large number of respondents in this study (65.52%, n = 133), compared to 34.48% (n = 70) who were female. Again, 31.53% (n = 64) of the sampled respondents had an average age of 31–40 years, followed by those aged 41–50 years (28.57%, n = 58). Statistics further show that the working experience of respondents included in the study mostly ranged between 5 and more

Variable	Category	Count (n = 203)	Percent
Gender	Male	133	65.52
	Female	70	34.48
Age groups	21–30 years	34	16.75
	31–40 years	64	31.53
	41–50 years	58	28.57
	51–60 years	47	23.15
Job position	Heads of procurement unit	23	11.33
	Project managers	22	10.84
	Heads of user departments	21	10.34
	Project consultants	24	11.82
	Accounting officers	23	11.33
	Chairmen of the tender boards	24	11.82
	Auditors	47	23.15
	Heads of finance unit	19	9.36
Level of education	Diploma	34	16.75
	First Degree	91	44.83
	Postgraduate	78	38.42
Working experience	≥6 months ≤1 year	14	6.90
	>1 ≤ 5 years	31	15.27
	>5 ≤ 10 years	71	34.98
	>10 ≤ 15 years	45	22.17
	>15 ≤ 20 years	24	11.82
	>20 years	18	8.87

Table 1. Demographic profile of respondents

Source(s): Table by authors

than 10 years (34.98%), followed by 22.17% with work experience of 10 to 15 years. Lastly, 44.83% (n = 91) of the participants held a first degree, whilst 38.42% (n = 78) had postgraduate education. These statistics indicate that respondents were sampled from diverse working positions, possessing adequate education and working experience to respond to questions related to PGG and VfM in the context of construction projects.

4.2 Reliability and validity

The reliability and validity of the research tools and data were assessed using composite reliability (CR) and Cronbach's alpha (α). According to Hair *et al.* (2013) and Henseler, Ringle and Sarstedt (2015), Cronbach's alpha and CR values ≥ 0.70 are considered acceptable. The results of CFA in Table 2 reveal that the values of Cronbach's alpha and CR for all constructs are above the recommended threshold of 0.7, hence confirming the attainment of reliability and validity of the research tools. Also, the average variance extracted (AVE) was utilised to evaluate the model's discriminant and convergent validity, following the Fornell–Lacker criterion. An AVE value of ≥0.50 is considered to be good (Hair *et al.*, 2013). Table 2 further

Constructs/Items	λ	α	CR	AVE
Transparency (TRSP)		0.781	0.893	0.627
Trans1: PEs exclusively use e-procurement in procurement activities	0.718			
Trans2: Annual procurement plans are openly available to all bidders on time	0.884			
Trans3: Contractors are given equal chances to participate in bidding processes	0.790			
Trans4. PEs made tender notices publicly available to all bidders	0.806			
Trans5: PE carries public bid opening immediately after submission deadlines	0.751			
Accountability (ACC)		0.706	0.778	0.540
Acc1: Public officials comply with procurement laws and regulations	0.462*			
Acc2: PEs have streamlined mechanisms for logging rewards and punishments	0.713			
Acc3: Public officials accept liability to sanctions dues to unethical practices	0.797			
Acc4: PEs have streamlined procedures for reporting procurement malpractices	0.691			
Competition (COMP)		0.884	0.869	0.625
Comp1: PEs use competitive tendering as the default method of procurement	0.706			
Comp2: Bidders exclusively participate in a pre-qualification process	0.838			
Comp3: PEs exclusively carry out post-qualification processes	0.876			
Comp4: PEs avoid dividing contracts to circumvent thresholds for open tenders	0.729			
Integrity of contract (INTEG)		0.741	0.916	0.733
Integ1: PEs effect payment to bidders within a specified and agreed timeframe	0.839			
Inget2: Bidders receive interest on late payment	0.919			
Inget3: Evaluation criteria are kept unchanged after bids opening	0.868			
Integ4: PEs prohibit employing contractors who are improperly selected	0.793			
Integ5: PE properly aside funds before starting procurement processes	0.409*			
Value for money (VfM)		0.835	0.916	0.785
VfM1: PEs have achieved cost-effectiveness	0.844			
VfM2: PEs have achieved efficiency in construction projects	0.903			
VfM3: PEs have achieved acceptable quality in construction projects	0.910			

Source(s): Table by authors

Table 2. Measurements, factor loadings, reliability and validity

demonstrates that convergent validity was achieved with an AVE value of ≥0.50. After convergent validity, the discriminant validity which establishes how each construct is distinct from the others in terms of measurement scales was also tested. Discriminant validity is confirmed when the square root of the AVE is greater than the correlation value of other constructs in the model (Henseler *et al.*, 2015). The results depicted in Table 3 affirm the attainment of discriminant validity.

4.3 Assessment of measurement model

The next step involved testing whether the structural model provided a good fit for examining the relationship between PGG and VfM. Initially, the model did not meet the criteria for a good fit. The obtained indices from the initial model were as follows: $\chi^2 = 760.626$ with a degree of freedom (df) = 179 at $p < 0.01$, $\chi^2/df = 4.249$, goodness-of-fit index (GFI) = 0.818, incremental fit index (IFI) = 0.838, comparative fit index (CFI) = 0.837, Tucker–Lewis index (TLI) = 0.809, root mean square error of approximation (RMSEA) = 0.109 and PClose = 0.000. This lack of fit was attributed to two items, Acc1 and integ5, which had factor loadings below 0.7, as indicated by asterisks in Table 2. The two items were removed from the model to improve its strength. Additionally, covariance of error terms based on modification indices (MI > 20) was introduced. The revised measurement model demonstrated a good fit with the following indices: $\chi^2 = 226.824$, df = 141 at $p < 0.01$, $\chi^2/df = 1.609$, GFI = 0.917, IFI = 0.972, CFI = 0.971, TLI = 0.965, RMSEA = 0.047 and PClose = 0.646. The results of the measurement model extracted in this study are presented in Figure 2 and Table 2.

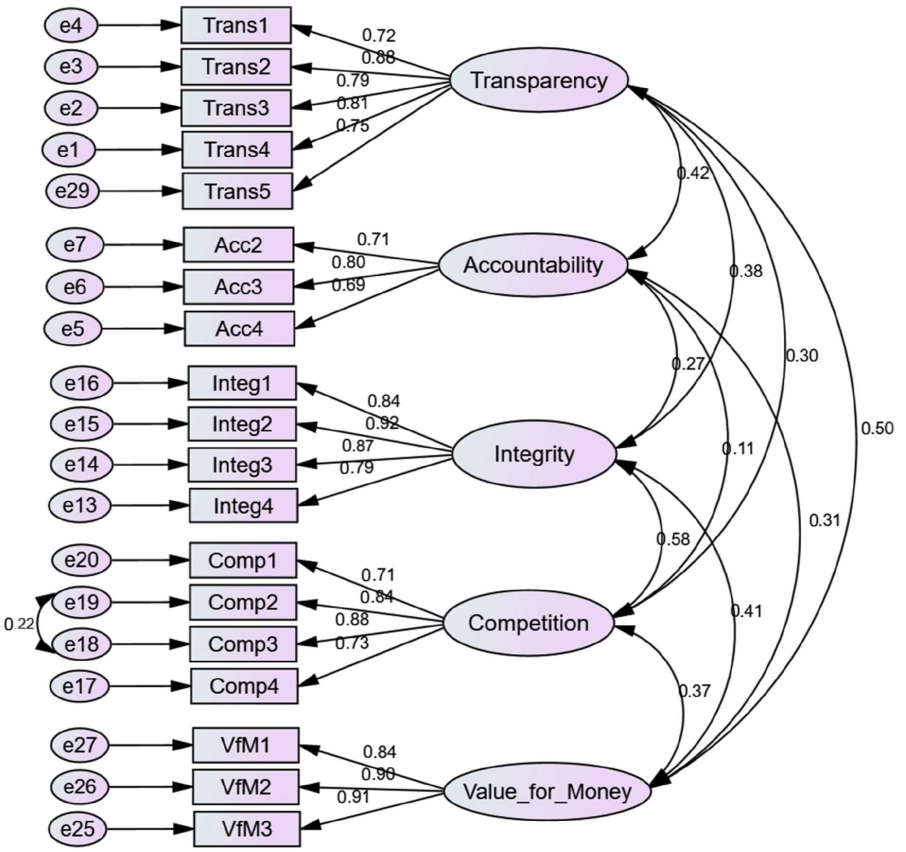
4.4 Structural model and hypothesis testing

After confirming that the measurement model (Figure 2) fit well with the data, the next step was to run the structural model and examine the relationships between the endogenous and exogenous variables (Figure 3). The model fit indices for the structural model were found to be within the recommended threshold: $\chi^2 = 354.413$, df = 147, $p < 0.01$, $\chi^2/df = 2.411$, GFI = 0.913, CFI = 0.931, IFI = 0.932, TLI = 0.920 and RMSEA = 0.072. Specifically, the analysis of the structural model provided support for Hypothesis 1, which states that *"H1: transparency is positively related to VfM achievement"* with $\beta = 0.399$ and $p < 0.001$. This finding suggests that transparency-related practices play a critical and significant role in supporting VfM achievement in public construction projects. This means that if PEs uphold transparency by one unit, VfM increases by 39.9%. Also, accountability emerged as a crucial and significant principle of PGG that positively contributes to VfM achievement in public construction projects, as evidenced by $\beta = 0.125$ and $p < 0.001$. Thus, Hypothesis 2, which states that *"H2: accountability is positively related to VfM achievement"*, was supported. Therefore, a one-unit increase in accountability leads to a 12.5% increase in VfM. Again, H3, which hypothesised a positive relationship between competition and VfM was also

Table 3. Fornell–Larcker criterion measures of discriminant validity

	CR	AVE	MSV	ASV	COMP	TRANS	ACC	INTEG	VfM
COMP	0.869	0.625	0.341	0.143	*0.790*				
TRANS	0.893	0.627	0.253	0.166	0.296	*0.792*			
ACC	0.778	0.540	0.177	0.090	0.106	0.421	*0.735*		
INTEG	0.916	0.733	0.341	0.182	0.584	0.380	0.274	*0.856*	
VfM	0.916	0.785	0.253	0.162	0.366	0.503	0.309	0.407	*0.886*

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



Source(s): Figure by authors

Figure 2.
Measurement model

supported ($\beta = 0.230, p < 0.001$). This imply that for every unit increase in competition, VfM goes up by 23.0%. Finally, H4, which states that "*H4: integrity is positively related to VfM achievement*" was also supported as the results in Table 4 show a positive and significant relationship between integrity and VfM ($\beta = 0.245$, $p < 0.001$). This implies that holding other variables constant at zero, a one-unit increase in integrity is associated with a 24.5% increase in VfM.

5. Discussions

The results of the study confirmed the proposed four hypotheses. Amongst others, the study findings supported the first hypothesis, which establishes a positive link between transparency and VfM achievement. Consistent with Manege and Kennedy's (2020) and Heald's (2018) findings, the study reveals that transparency-related practices such as the exclusive use of e-procurement systems in the bidding process, ensuring the timely availability of annual procurement plans and providing equal opportunities to bidders, have a higher likelihood in supporting VfM achievement in public construction projects. This is due to the fact that transparency discourages corrupt-related practices, thereby promoting

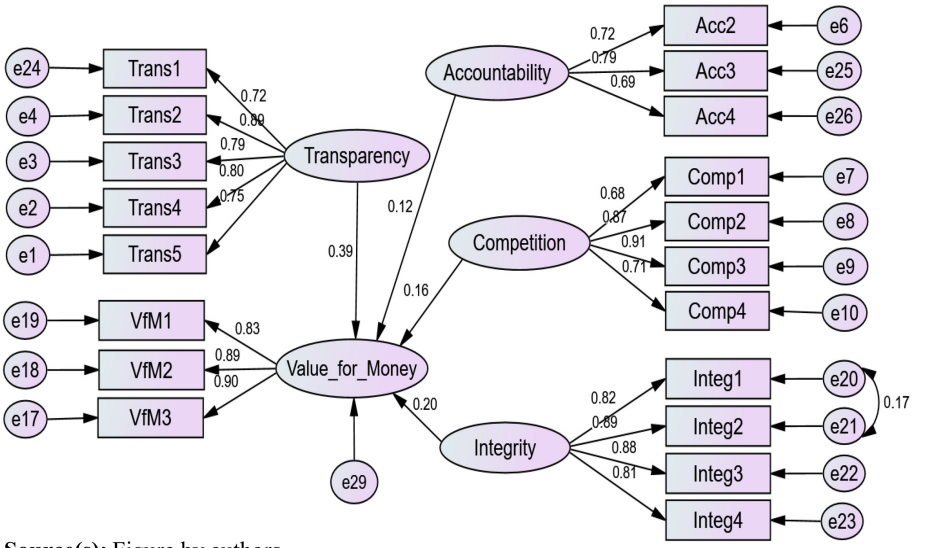


Figure 3.
Structural model

Source(s): Figure by authors

Regressed variables			Standardised Estimate	Unstandardised Estimate	S.E.	C.R.	P
VfM	<—	COMP	0.162	0.230	0.087	2.659	***
VfM	<—	ACC	0.120	0.125	0.068	1.841	***
VfM	<—	INTEG	0.199	0.245	0.075	3.283	***
VfM	<—	TRANS	0.390	0.399	0.066	6.053	***

Note(s): ***$p < 0.001$
Source(s): Table by authors

Table 4.
Hypothesised relationships between study variables

accountability and fairness, which are essential drivers of VfM. Nevertheless, these findings align with the assumptions of governance theory (Williams & Young, 1994; Glas *et al.*, 2018), as well as the arguments that transparent processes lead to better-informed procurement stakeholders and increased competition amongst contractors, all of which contribute to achieving better performance and VfM achievement (Bauhr *et al.*, 2020; Brito & Miguel, 2017; Sayi & Monko, 2022).

Second, the findings demonstrated a positive and statistically significant effect of accountability on VfM. This finding corroborates with the assumptions of governance theory and the arguments presented by Olatunji *et al.* (2017) and Harnovinsah *et al.* (2020), which stress that well-established accountability-related practices and mechanisms have a significant and positive impact on service delivery and overall VfM achievement. These findings ascertain that robust internal and external control mechanisms and systems, coupled with clear project oversight, reporting, performance evaluation, rewarding and punishing of procurement malpractices, foster accountability amongst procurement officials. This, in turn, enhances efficiency, effectiveness and compliance with procurement laws and procedures, which, according to the governance theory (Glas *et al.*, 2018; Williams & Young, 1994), as well as the

findings of Oke *et al.* (2018) and Gransberg *et al.* (2007), are important factors for achieving VfM in public construction projects. Accountability enables PEs and procurement officials to steer clear of corruption and procurement malpractices, which act as obstacles to VfM achievement in public construction projects (Israel, 2023; Sayi & Monko, 2022).

Third, the results suggest that there is a positive and significant relationship between competition and VfM achievement. This result shed light on the critical role of competition in enhancing VfM achievement, hence supporting existing literature (Panga, 2021; Sama, 2022; Israel, 2023) and the arguments behind the governance theory (Bevir, 2011; Glas *et al.*, 2018). The significance of competition in the procurement bidding process, particularly in public construction projects has become paramount. Section 64 (1) of the Tanzanian PPA (CAP. 410 R.E. 2016) and the World Bank's procurement guidelines emphasise that competitive tendering should be the default method of procurement for public-funded projects. In line with the findings of this study and the propositions of governance theory, previous studies suggest that competition fosters transparency, accountability and fairness—important drivers of achieving VfM (Harnovinsah *et al.*, 2020; Nyanyofio *et al.*, 2022). Besides that, competitive bidding enables the selection of qualified contractors and consultants who have the capability to execute construction projects within the estimated time, cost and quality standards, hence supporting VfM achievement (Mrope *et al.*, 2017; Asuquo *et al.*, 2021).

The prominent finding for the last hypothesis is that integrity is a positive and significant predictor of VfM. This finding aligns with the study conducted by Obieje (2019), as well as the assumptions of governance theory (UNDP, 2007; Glas *et al.*, 2018; Bevir, 2011). In line with the assumptions of governance theory (IMF, 2022), the study findings suggest that PEs can attain VfM in construction projects by upholding integrity-related practices. Integrity encompasses various aspects such as maintaining consistent bid evaluation criteria, following proper procedures for contractor selection and employment and ensuring compliance with contractual terms and conditions. These aspects are integral to achieving VfM in public construction projects (Changalima *et al.*, 2022). By adhering to contractual terms and conditions, PEs can avoid fines and penalties. Moreover, when bidding procedures, evaluation criteria and specifications are streamlined and remain unaltered, PEs are better positioned to select competent and qualified contractors and consultants who are committed to executing construction projects within the agreed time, budget and quality standards (Israel, 2023; Weerasekara, Disaratna, Withanage, & Perera, 2021; Siwandeti *et al.*, 2023), hence nurturing VfM achievement.

6. Conclusion, implications and future research

6.1 Conclusion

This study focusses on examining the strategic role of PGG in bolstering VfM achievement in public construction projects within the context of Tanzania. Four constructs (principles) of PGG, namely transparency, accountability, competition and integrity were adopted and analysed to assess their impact on VfM. The findings of the study indicate that the underlying principles of PGG play a significant and crucial role in enhancing VfM in public construction projects. Specifically, transparency, accountability, competition and integrity were positively and significantly associated with VfM achievement ($p < 0.01$). Based on these findings, we conclude that PGG serves as an important predictor of VfM in public construction projects. Therefore, to enhance VfM, public procurement officials and other stakeholders involved in the planning and execution of construction projects should diligently adhere to the principles governing public procurement procedures.

6.2 Theoretical implications

The findings of this study contribute to the advancement of governance theory by underscoring the significance of adhering to the principles of PGG for improved project

outcomes and the achievement of VfM in public construction projects. It extends understanding from previous studies on how good governance can reinforce VfM in the public construction project landscape (Glas *et al.*, 2018; Bevir, 2011; Talebi & Rezania, 2020). The findings of this study demonstrate that PGG and their respective principles can help PEs eliminate flaws and procurement malpractices that undermine cost-effectiveness, efficiency and effectiveness in public construction projects. This aligns with the assumptions of governance theory, emphasising the importance of nurturing transparency, responsiveness, accountability and integrity as crucial pillars for enhancing prosperity in public service delivery (Williams & Young, 1994; IMF, 2022; UNDP, 2007). Drawing on governance theory, the study suggests that PEs can achieve VfM in public construction projects by diligently placing strong emphasis on ethical standards, observing and complying with procurement regulations and laws, which are the core principles of governance theory.

By exploring the relationships between the study variables, this study contributes to the existing literature on the role of PGG in VfM achievement within public construction projects, an area that has received limited attention, particularly in the context of Tanzania. As mentioned earlier, present scholarly investigations focus on challenges and deficiencies hindering the achievement of VfM (Pastory, 2019; Matto, 2023; Israel, 2022), the drivers of cost and time overruns (Kavishe *et al.*, 2018; Manege & Kennedy, 2020; Mchopa, 2015), as well as the perceived benefits of regulatory compliance in the public bidding process (Changalima *et al.*, 2022; Sama, 2022; Panga, 2021). The current study enhances scholars' understanding of the theoretical model of good governance and VfM achievement in public construction projects from the perspective of PGG.

6.3 Managerial implications

Measures should be taken to ensure strict compliance with PGG throughout the entirety of public construction projects. Amongst others, the study recommends the implementation of regular training and capacity-building programs to enhance the knowledge and capabilities of construction project stakeholders, specifically in relation to procurement best practices for VfM achievement. Moreover, it is crucial to establish streamlined internal and external control mechanisms such as internal audit and oversight committees, with a mandatory role in enforcing and monitoring compliance with PGG. These measures will foster a sense of competition, transparency, accountability and integrity amongst procurement officials during the planning and execution phases of construction projects. Additionally, both public PEs and oversight authorities should develop standardised indicators of VfM in public construction projects. By utilising such indicators, PEs will be able to assess and identify areas of weakness that impede VfM achievement, leading to policy reforms and improvements.

6.4 Limitations and suggestions for future studies

Although this study achieved its overall objectives, it highlights a few limitations. First, the study was constrained by its cross-sectional research design and quantitative approach. The use of a quantitative research approach restricted the exploration and explanation of procurement practitioners' opinions on the study variables. Similarly, the cross-sectional design limited our ability to determine whether the collected opinions remain consistent or change over time. Furthermore, the study focussed exclusively on the opinions of public procurement practitioners, neglecting other important stakeholders such as suppliers, contractors, sub-contractors and consultants. Consequently, the analysis lacked a comprehensive perspective from a wide range of procurement and construction project practitioners. Considering these limitations, future studies should prioritise the use of longitudinal case studies to examine the consistency of PGG in estimating VfM over time.

Additionally, it would be valuable to investigate the role of PGG in VfM achievement from the perspectives of service providers (suppliers, contractors, sub-contractors and consultants), thus complementing the perspectives of public procurement officials examined in this study. Finally, the study suggests that future research employs mixed methods to supplement the findings of the current study. By addressing the limitations of this study and pursuing these recommended avenues of research, scholars can deepen their understanding of the complex relationship between PGG and VfM achievement in public construction projects.

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