

MOSHI CO-OPERATIVE UNIVERSITY

**PROCUREMENT CONTRACT RISKS MANAGEMENT AND
PERFORMANCE OF FORCE ACCOUNT CONSTRUCTION PROJECTS IN
LOCAL GOVERNMENT AUTHORITIES IN TANZANIA**

MOSHI CO-OPERATIVE UNIVERSITY

**PROCUREMENT CONTRACT RISKS MANAGEMENT AND
PERFORMANCE OF FORCE ACCOUNT CONSTRUCTION PROJECTS IN
LOCAL GOVERNMENT AUTHORITIES IN TANZANIA**

BY

SHADRACK SAMWEL MWAISEJE

**A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY OF
MOSHI CO-OPERATIVE UNIVERSITY, MOSHI TANZANIA**

DECEMBER, 2025

DECLARATION AND COPYRIGHT

I, **Shadrack Samwel Mwiseje**, declare that this thesis is my own original work and that it has not been presented and will not be presented to any other higher learning Institution for a similar or any other academic award.

Signature _____ Date _____

This thesis is copyright material protected under the Berne Convention, the Copyright and Neighbouring Rights Act of 1999, and other international and national enactments, in that behalf, on intellectual property. It may not be reproduced by any means, in full or in part, except for short extracts in fair dealing, for research or private study, critical scholarly review, or discourse with an acknowledgement, without the written permission of the Moshi Co-operative University.

CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by the Moshi Co-operative University a thesis titled **“Procurement Contract Risks Management and Performance of Force Account Construction Projects in Local Government Authorities in Tanzania”** in fulfilment of the requirements for the award of the degree of Doctor of Philosophy of Moshi Co-operative University.

1. Prof. Alban Dismas Mchopa
(Supervisor's Name)

Supervisor's Signature

Date: _____

2. Dr. Faustine Peter Panga
(Supervisor's Name)

(Supervisor's Signature)

Date: _____

3. Dr. Mathias Sylvester Nkuhi
(Supervisor's Name)

(Supervisor's Signature)

Date: _____

ACKNOWLEDGEMENT

First and foremost, I give all glory and thanks to the Almighty God for granting me the strength, health, wisdom, and perseverance throughout this academic journey. Without His guidance and grace, this milestone would not have been possible. I extend my deepest appreciation to my academic supervisors, Prof. Alban Dismas Mchopa, Dr. Faustine Peter Panga, and Dr. Mathias Sylvester Nkuhi, for their exceptional guidance, constructive feedback, and unwavering support throughout the development of this thesis. Your mentorship has been a pillar of strength and a foundation for my academic growth.

I am profoundly grateful to my sponsor, the College of Business Education (CBE), for providing the necessary support and resources that enabled me to pursue and complete this doctoral program. To my beloved wife, Dr. Gift Onesmo Mushi, thank you for your patience, love, and unyielding support. Your encouragement during difficult times kept me moving forward. To my wonderful children, Gabriel and Abigael, your innocent smiles and love have always been a great source of inspiration and motivation.

A special thank you goes to my dear friend, Dr. Ismail Chagalima, whose valuable contributions, academic support, and encouragement throughout this journey have been instrumental in my success. I would also like to extend my sincere appreciation to my current boss, Eng. Awadhi Suluo and Eng. Idrissa Yahaya Katela, for their understanding, encouragement, and support throughout this academic pursuit. I am equally grateful to my office colleagues at the Department of Procurement and Supplies Compliance in the Public Procurement Regulatory Authority (PPRA) for their support, encouragement, and professional understanding that enabled me to balance work and study.

My heartfelt thanks go to all the research assistants who supported the data collection process, and to the President's Office – Regional Administration and Local Government (PO-RALG) for permitting me to collect data in primary schools within Dodoma, Tanzania. I also appreciate the support and friendship of my fellow collegemates: Debora Kisinga, Ibrahimu Yusuph, and Emanuel Wabanhu, whose academic camaraderie and collaborative spirit made the journey more enriching and enjoyable.

To all others who have contributed to this journey, whether directly or indirectly, and whose names may not be mentioned here, please accept my heartfelt gratitude. Your kindness, support, and encouragement will never be forgotten.

DEDICATION

This thesis is dedicated to my beloved parents, Rev. Samwel Yesaya Mwaiseje and Tulibumi Mwaiseje, whose unconditional love, prayers, and lifelong commitment to my education laid the foundation for this academic achievement. Their values and sacrifices have shaped the person I am today. I also dedicate this work to my dear wife, Dr. Gift Onesmo Mushi, whose unwavering support, patience, and encouragement have been a source of strength throughout this journey. Finally, to my children, Gabriel and Abigail, may this accomplishment serve as an inspiration for you to pursue your dreams with determination, integrity, and faith.

TABLE OF CONTENTS

DECLARATION AND COPYRIGHT	i
CERTIFICATION	ii
ACKNOWLEDGEMENT	iii
DEDICATION	iv
TABLE OF CONTENTS	v
LIST OF FIGURES	viii
LIST OF APPENDICES	ix
LIST OF ABBREVIATIONS AND ACRONYMS	x
EXTENDED ABSTRACT	xi
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of Study	1
1.2 Statement of the Problem	5
1.3 Research Objectives	7
1.3.1 Main objective	7
1.3.2 Specific objectives	7
1.4 Hypotheses	7
1.5 Justification of the Study	7
1.6 Literature Review	9
1.6.1 Definition of key concepts	9
1.6.2 Theoretical Review	10
1.7 Empirical Literature Review	14
1.8 Conceptual Framework	19
1.9 Methodology	21
1.9.1 Research Philosophy, Approach	21
1.9.2 Research design	21
1.9.3 Description of study area, population, and unit of analysis	22
1.9.4 Sampling procedures and sample size	23
1.9.5 Types and Sources of Data	24
1.9.6 Data Collection	24
1.9.7 Common Method Bias	25
1.9.8 Validity and reliability	26
1.9.9 Reliability	26

1.9.10	Validity	27
1.9.11	Variable measurements	28
1.9.12	Data Analysis	29
1.9.13	Ethical Considerations	32
1.9.14	Organisation of the study	32
REFERENCES.....		34
CHAPTER TWO		49
PUBLISHED PAPER ONE.....		49
2.1	An overview.....	49
CHAPTER THREE		69
PUBLISHED PAPER TWO		69
3.1	An overview.....	69
CHAPTER FOUR.....		86
PUBLISHED PAPER THREE		86
4.1	An overview.....	86
CHAPTER FIVE.....		104
PUBLISHED PAPER FOUR.....		104
5.1	An overview.....	104
CHAPTER SIX		127
SUMMARY, CONCLUSION, RECOMMENDATIONS, IMPLICATIONS, AND		
AREAS FOR FURTHER RESEARCH.....		127
6.1	Introduction.....	127
6.2	Summary of the findings.....	127
6.2.1	Supply Risk Management and Timely Completion of FA Construction Projects	127
6.2.2	Procurement Internal Control Systems and Cost-effectiveness in FA Construction Projects	128
6.2.3	Procurement Contract Administration and Quality Attainment of FA Construction Projects	128
6.2.4	Procurement Contract Risk Management and the Performance of the Force Account Construction Project in Tanzania, as moderated by Regulatory Framework	129
6.3	Conclusion	129
6.4	Recommendation	130

6.5	Contribution of the study	131
6.5.1	Empirical contribution	131
6.5.2	Theoretical contribution.....	132
6.5.3	Practical contribution	133
6.5.4	Study Limitations and Direction for Future Studies	134
APPENDICES		135

LIST OF FIGURES

Figure 1: Conceptual framework	20
--------------------------------------	----

LIST OF APPENDICES

Appendix 1: Questionnaire Survey	135
Appendix 2: Introduction Letter for Data Collection from Moshi Cooperative	144
Appendix 3: Data collection permit from the Regional Administrative	146

LIST OF ABBREVIATIONS AND ACRONYMS

AUT	Authorisation
CAG	Controller Auditor General
CFA	Confirmatory Factor Analysis
COE	Cost-Effectiveness
DSL	Dispute Management
EFC	Effective Communication with Supplier
ESS	Effective Supplier Selection
FA	Force Account
GDP	Gross Domestic Product
LGA	Local Government Authority
MOC	Monitoring and Control
MSO	Multi-sourcing
NAOT	National Audit Office of Tanzania
PCA	Procurement Contract Administration
PIC	Procurement Internal Control
PPDA	Public Procurement and Disposal of Public Assets
PPRA	Public Procurement Regulatory Authority
PSQ	Post-Qualification
QAL	Quality Attainment
REK	Record Keeping
RIM	Risk Management
RTM	Relationship Management
SRM	Supplier Risk Management
STC	Stock Control
TCO	Timely Completion
TCT	Transaction Cost Theory
URT	United Republic of Tanzania

EXTENDED ABSTRACT

This study assesses the influence of procurement contract risk management on the performance of Force Account (FA) construction projects within Local Government Authorities (LGAs) in Tanzania. Despite the increasing adoption of FA procurement as a cost-saving and efficiency-enhancing approach, performance concerns related to delays, cost overruns, and quality issues persist. The research aims to assess specifically how supply risk management, internal control systems for procurement, procurement contract administration, and regulatory frameworks enhance the performance of FA construction projects. A positivist research philosophy with a quantitative research approach was adopted. Data were collected from 318 members of FA committees across 120 primary schools in selected LGAs in Dodoma region using structured questionnaires. Structural Equation Modeling (SEM), both Covariance-Based SEM (CB-SEM) and Partial Least Squares SEM (PLS-SEM), was applied to test hypotheses and examine relationships among latent constructs. The findings reveal that supply risk management significantly influences the timely completion of FA construction projects. This is because multi-sourcing, effective communication with suppliers, effective supplier selection, and post-qualification are key attributes of supply risk management that play a crucial role in enhancing the performance of these projects. Similarly, the findings revealed that attributes of procurement internal control systems, such as stock control, record keeping, and authorisation processes, have significant and positive relationships with the cost-effectiveness of FA construction projects. The study failed to establish the link between the segregation of duties and the cost-effectiveness of FA construction projects. In addition, the study found that procurement contract administration, including risk management, relationship management, dispute management, and monitoring and control, is a positive and significant factor in explaining the quality attainment of FA construction projects. Notably, risk management is the strongest predictor of quality attainment of FA construction projects. Additionally, the study confirms that the regulatory framework strengthens the relationship between the procurement internal control system and procurement contract administration with the performance of FA construction projects. Therefore, procurement contract risk management, as moderated by the regulatory framework, plays a significant role towards the performance of FA construction projects. The study further concludes that procurement contract risk management enhances the performance of FA construction projects.

Based on the comprehensive findings of this study, several recommendations are offered to enhance the performance of FA construction projects in LGAs in Tanzania. These recommendations are intended for policymakers, procurement practitioners, FA committee members, and other stakeholders involved in public sector construction and procurement oversight. Policymakers should integrate principles of supply risk management, internal control systems, and procurement contract administration tailored to the FA approach. Also, Public Procurement Regulatory Authority (PPRA) should strengthen its inspection and audit systems to monitor FA construction projects more closely, ensuring compliance with procurement laws, quality standards, and contract terms. LGAs should institutionalise effective internal control mechanisms, such as clear approval protocols, real-time stock management, and effective record-keeping, to enhance cost control and transparency in FA projects.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

The construction sector is one of the most significant economic sectors in every country due to its contribution to employment creation and the construction of public infrastructure for service delivery. The industry contributes significantly to a country's Gross Domestic Product (GDP), making it one of the areas that has captured policymakers' and other stakeholders' attention worldwide (Bissah and Nkurumah, 2021). However, the performance of construction projects has been observed to be coupled with numerous challenges, including delays, cost overruns, and quality problems (Ingle *et al.*, 2021; Mellado *et al.*, 2020; Mahamid, 2016). The challenge is more severe in developing countries, where achieving the performance of construction projects is still a far-fetched goal (Sayyed *et al.*, 2023; Mwelu *et al.*, 2021). The observed poor performance is caused by several factors, including shortage of skilled personnel, inadequate technology, corruption and collusive practices, and failure to adhere to required standards in construction projects (Ingle *et al.*, 2021; Mwelu *et al.*, 2021).

In response to such challenges, governments worldwide have adopted alternative procurement methods to enhance efficiency and cost-effectiveness in public infrastructure delivery. In Asia and Africa, FA procurement in the public sector was widely implemented (Engelbert *et al.*, 2016). For example, in Ethiopia, Force Account (FA) procurement is used for small construction projects conducted in remote areas where the likelihood of attracting bidders is very low (Gadisa and Zhou, 2020). In Uganda, the Public Procurement and Disposal of Public Assets (PPDA) Act of 2003 stated that FA procurement is advantageous for lower costs in large-volume work because it utilises existing internal resources.

The FA procurement was emphasised by the Government of Tanzania to be employed in construction projects all over the country (Mchopa, 2020; Mwishwa, 2022). FA means a process in which work is carried out by a public or semi-public entity, with recourse to its officers and equipment, or by collaborating with a local technician or another public body (PPA, 2023). The FA is a procurement approach used primarily in public infrastructure projects, in which government institutions undertake construction, rehabilitation, or maintenance work using their own personnel, equipment, and

resources rather than contracting external service providers. This approach is commonly applied in Local Government Authorities' (LGAs) projects, such as the construction of schools, health centres and teachers' houses. In 2016, the Tanzanian government allocated funds to procurement entities for various construction projects, with directives to use FA procurement for their execution (Matto, 2021).

FA procurement usage has recently increased significantly in public institutions, particularly in LGAs where the majority of construction projects were implemented under FA procurement approach; for instance, the Public Procurement Regulatory Authority (PPRA) audit in 2021 indicated that the audit covered 492 projects implemented under FA, out of which 455 belonged to LGAs and the total value of the projects was TZS 63 billion (PPRA, 2021). The government's intention in using the FA approach in construction projects is to reduce costs and facilitate the timely achievement of project goals. This approach is perceived as a cost-effective strategy that enables the government to utilise its own resources, thereby minimising expenses associated with engaging external contractors. However, the construction projects implemented under the FA approach were reported to be poor due to the delays in completion, quality problems, and cost increases (PPRA, 2021, 2022).

PPRA and Controller and Auditor General (CAG) reports, for example, reported cost overruns in public construction projects in various regions of Tanzania and discovered that the majority of projects' costs sometimes exceeded 70% of their contractual value (PPRA, 2021, 2022; National Audit Office (NAOT), 2021). The use of substandard materials and inadequate supervision indicates a lack of compliance (Aloyce *et al.*, 2024). As a result, the observed transgressions are highly prevalent in construction projects, leading to unnecessary procurement and contractual risks during construction project implementation. Hence, management of such risks is critical in guaranteeing the expected outcomes (value for money).

Procurement contract risk management in the construction sector ensures project continuity and mitigates potential disruptions (Khalef *et al.*, 2021). This assurance is important for the success of construction projects by managing supply risks and ensuring internal controls are in place to maintain checks and balances during contract administration. Supply risk management, a key aspect of procurement contract risk management, focuses on ensuring suppliers deliver quality materials at reasonable costs and on time (Sayyed *et al.*, 2023).

The internal control system for procurement plays a significant role in helping organisations minimise and detect fraud and misconduct, thereby ensuring the credibility of procurement operations. According to Koutoupis and Malisiovas (2023), a strong internal control system enhances transparency by establishing clear procedures for authorisation, record keeping, verification, and auditing of procurement activities. Such controls not only deter fraudulent behaviour but also enable early detection of irregularities that may compromise project outcomes (Bajomo *et al.*, 2022). In addition, internal procurement controls ensure that all procurement processes are undertaken in accordance with project objectives, organisational policies, and regulatory requirements, helping organisations avoid penalties, litigation, or reputational damage (Bhagat and Jha, 2023). When internal controls are consistently applied, they reinforce accountability, improve resource utilisation, and contribute directly to the cost-effectiveness and integrity of construction project procurement.

Procurement contract administration is equally important in ensuring that construction projects achieve their intended performance outcomes, as it provides a structured mechanism for managing contractor obligations throughout the project lifecycle (Matto *et al.* 2021). It involves continuous monitoring of compliance with contractual terms, ensuring that contractors adhere to agreed specifications, timelines, quality standards, and cost parameters. Matto *et al.* (2021) highlight that effective contract administration reduces misunderstandings between contracting parties by clearly defining roles, responsibilities, and expectations. Additionally, it facilitates proactive management of variations, claims, and amendments, thereby minimising delays and disputes that can negatively affect project delivery. Gunduz and Elsherbeny (2020) argue that efficient contract administration enhances communication, strengthens collaboration, and promotes early problem-solving, all of which contribute to improved performance outcomes such as quality attainment, cost control, and timely project completion.

As projects become more complex and competition intensifies, contract risk management has become a vital component of successful project management (Khalef *et al.*, 2021). Any contract risks should be identified and investigated as soon as possible so that management methods may be developed to improve the project's performance (Tumuhairwe and Ahimbisibwe, 2016). Studies, including Myeza *et al.* (2021), Iyer *et al.* (2020), and Muhammad *et al.* (2019), have indicated that some projects were completed with delays, cost overruns and unsatisfactory quality because of poor risk management. For instance, in Malaysia, a lack of materials due to a supplier's failure to deliver the project on time is among the significant risks identified

in construction projects. As a result, in Malaysia, some projects are completed with delays and cost overruns due to the project management team failing to manage risks and contracts at large (Qureshi *et al.*, 2020). The study by Maqsoom *et al.* (2021) in Malaysia found that 46.8% of government-funded projects and 37.2% of private projects were completed on time and within budget. Likewise, in Nigeria, the critical risks in public construction procurement include a lack of transparency, competition, corruption, cost-efficiency issues, and a lack of professionalism in the execution of procurement tasks (Federal Government of Nigeria [FGN], 2007).

In Tanzania, as in other developing countries, the construction industry faces significant challenges that hinder effective project performance (Abdallah *et al.*, 2025). The challenges are common due to delays in project completion, caused by inadequate project management, procurement issues, and logistical difficulties (Kikwasi and Sospeter, 2022). The delays have resulted in increased costs because the extension of time required additional financial resources to be injected into project completion (Chamuwange and Ning, 2022). Furthermore, achieving the quality of construction projects in Tanzania is challenging because the procuring entities are failing to adhere to established standards and regulations (Aloyce *et al.*, 2024).

Contract risk management concepts and approaches have been used in the Tanzanian construction sector; however, most industry players remain hesitant about risk management principles, despite recognising the process's advantages (Kavishe, 2018). Consequently, some of the construction projects under the FA approach performed below expectations (PPRA, 2021). This was primarily because the organisation failed to manage supply risks and to prioritise them based on their importance (Safayet *et al.*, 2018). Regulatory authorities created rules and regulations to address risks arising on construction projects. As a result, the laws and regulations must be followed in the building business (Mwelu *et al.*, 2020). Rules and regulations aimed at the construction sector favourably impact both construction projects and sector performance (Ndumia, 2015). Appropriate rules and regulations are the most excellent way to limit risks on construction projects when there is intense customer focus, stakeholder pressure, and top management loyalty (Adeleke *et al.*, 2016).

Although procurement contract risk management offers distinct advantages for construction projects, several strategies and tactics must be employed to enhance project performance in a dynamic, changing environment (Mwaiseje *et al.*, 2024). This means that employing procurement contract risk management is not enough to guarantee the

success of the projects. The contract management team must also have the capabilities and willingness to comply with laws and regulations issued by regulatory authorities (Kabara *et al.*, 2023). According to agency theory, a contractor (agency) that is willing and able to follow all directives from the (owner) principal has a better chance of achieving good project results (Jensen and Meckling, 1976). To consider procurement contract risk management critical to attaining project performance, project managers and their teams must strategically adhere to the regulatory authority instructions. Organisations sticking with the laws and regulations of regulatory authorities in building projects have higher expectations for their future performance than an organisation that tries to avoid it (Mrope *et al.*, 2017)

Based on the highlighted discussions, this study makes contributions to the body of literature by linking procurement contract risk management to the performance of construction projects under the FA approach, as limited studies conducted in developing countries, specifically in Tanzania, have done so. For example, a study by Mikapagaro *et al.* (2018) on the implementation of risk management strategies in joint venture construction projects has focused on risk management in joint venture construction projects. Second, little is known about how the regulatory framework can moderate the relationship between procurement contract risk management and the performance of construction projects under the FA approach in Tanzania.

1.2 Statement of the Problem

The contract of works under the FA approach should be managed effectively by the procuring entity to reduce risks. Procurement contract risk management practices are managed from contract formation, execution and closure (PPRA, 2022). As stipulated in regulation 309 of the Public Procurement Regulation (PPR) of 2024, the procuring entity shall be responsible for the effective management of any procurement of goods, services, or works it undertakes and shall monitor costs and the timely completion of works. However, despite this regulatory framework, construction projects implemented under the FA approach continue to experience significant challenges, including project delays, cost overruns, poor documentation of material usage, and weak financial accountability (Matto, 2021; Mchopa, 2020). Also, both performance and compliance audits for the four years of the audited procuring entity in Tanzania showed poor performance or failure to meet the intended targets for construction projects under FA procurement (PPRA, 2022; PPRA, 2021; PPRA, 2020; PPRA, 2019).

Empirical evidence from CAG reports further reinforces this concern. The CAG, in various audit reports between 2019 and 2022, consistently reported that many FA construction projects across different LGAs performed below expectations. The audits identified several weaknesses, including delays in project completion, unplanned cost variations, mismanagement of materials, and a lack of timely supervision. In some cases, projects were abandoned or completed at substandard levels due to poor planning and limited technical capacity at the local level (NAOT, 2019, 2021, 2022). Additionally, the CAG reports highlighted inadequate risk identification and mitigation practices, poor contract monitoring, and insufficient documentation as recurring issues that undermine the success of FA projects

To address these challenges, the Government, through the PPRA, issued a harmonised guideline in 2020 to improve the implementation and performance of construction projects under the FA procurement approach. This guideline outlines standardised procedures and emphasises the need for strengthened institutional arrangements to enhance accountability and efficiency in the execution of FA projects. One of the key provisions of the guideline is the mandatory formation of specialised committees to supervise and implement FA projects. These include the procurement committee, construction committee and the receiving and inspection committee. By establishing these committees, the guideline aims to promote a coordinated, transparent approach to FA project management. Despite these initiatives, the performance of construction projects under FA procurement has not improved significantly. Delays, cost overruns, and quality concerns remain prevalent, indicating that the existing guidelines are either not effectively implemented or insufficient to address the underlying problems.

Furthermore, previous research presents conflicting views on the influence of procurement contract risk management on construction project performance. While some scholars (Myeza *et al.*, 2021; Federico *et al.*, 2014) argue that risk management contributes positively to project outcomes, Mubin (2016); Kerzner (2017); Khan *et al.* (2019) found no significant impact. Notably, most of these studies are either conducted in different contexts or fail to provide concrete mechanisms through which contract risk management can improve the performance of FA construction projects in Tanzanian LGAs. This creates a knowledge gap, as there is limited empirical evidence to explain how procurement contract risk management influences the quality attainment, timely completion, and cost-effectiveness of FA projects. In light of this, the current study aims

to assess the influence of procurement contract risk management on the performance of FA construction projects in LGAs in Tanzania.

1.3 Research Objectives

1.3.1 Main objective

The main objective of this study is to assess the influence of procurement contract risks management on the performance of FA construction projects in LGAs in Tanzania.

1.3.2 Specific objectives

To operationalise the main objective, the study specifically intended to:

- i. Determine the influence of supply risk management on the timely completion of FA construction projects.
- ii. Analyse the effects of the procurement internal control system on the cost-effectiveness of FA construction projects.
- iii. Examine the influence of procurement contract administration and quality attainment of FA construction projects.
- iv. Determine the moderating role of the regulatory framework on procurement contract risk management and the performance of FA construction projects.

1.4 Hypotheses

The following main alternative hypotheses guided the study:

- H₁: Supply risk management positively influence the timely completion of FA construction projects.
- H₂: Procurement internal control systems positively influence the cost-effectiveness of FA construction projects.
- H₃: Procurement contract administration positively influence the quality attainment of FA construction projects.
- H₄: The regulatory framework moderates the influence of procurement contract risk management on the performance of FA construction projects.

1.5 Justification of the Study

The findings of this study contribute significantly to policymakers, practitioners, and academic researchers by providing insights into procurement contract risk management and its role in enhancing the performance of FA construction projects in Tanzania's LGAs. Effective procurement contract risk management is essential for ensuring the successful implementation of FA construction projects. This study presents empirical

evidence that informs policymakers on key areas requiring attention in the design and implementation of policies, regulations, and laws governing procurement contract risk management. By identifying challenges and gaps in the existing regulatory framework, the study highlights necessary policy adjustments to minimise contract risks and enhance project performance. Furthermore, the study underscores the role of procurement contract risk management in mitigating claims and disputes, assisting policymakers in formulating regulations that promote transparency, accountability, and efficiency in FA projects.

FA construction projects are exposed to various risks, including financial, operational, and contractual risks, which often lead to delays, cost overruns, and disputes. The findings of this research provide practical insights to FA committees, procurement officers, and other stakeholders in the construction industry regarding effective contract risk management strategies. Key factors such as supply risk management, internal control systems, contract administration, and regulatory frameworks are examined to propose solutions for mitigating risks associated with FA projects. The study's recommendations enhance project implementation, improve efficiency, and ensure value for money in public FA construction projects. Moreover, the study suggests measures to strengthen legal and regulatory frameworks, ensuring improved procurement contract risk management. By highlighting gaps in existing procurement laws and regulations, the study provides insights into the necessary reforms to improve contract risk management. A well-structured regulatory framework is essential in preventing legal disputes, ensuring compliance with procurement guidelines, and fostering fair and transparent contract management processes in FA construction projects.

This research expands the existing body of knowledge on procurement contract risk management in FA construction projects. While previous studies have focused on procurement practices and construction project performance, there is limited empirical evidence on the specific effects of contract risk management on FA projects in Tanzania's LGAs. By addressing this knowledge gap, the study offers new theoretical and empirical insights that contribute to academic discussions and future research. The findings are relevant to scholars, researchers, and students specialising in procurement and project management, providing a foundation for further research and knowledge dissemination.

1.6 Literature Review

1.6.1 Definition of key concepts

1.6.1.1 Force Account (FA)

FA is a procurement approach whereby public or semi-public agencies or departments utilise their own personnel and equipment to carry out construction activities (URT, 2023). This approach enables the Procuring Entity (PE) to leverage its internal resources, such as labour and equipment, to execute construction projects. In this study, FA is defined as a procurement approach in which LGAs engage local artisans ("*fundis*") to construct classrooms. The implementation process involves forming various committees, including the Procurement Committee, the Receiving and Inspection Committee, and the Construction Committee, to oversee and manage the projects.

1.6.1.2 Procurement Contract Risks Management

Procurement Contract risk management is the process that enables organisations to maximise the value of their contracts by continually recognising, monitoring, and mitigating risks throughout the contract (Khalef *et al.*, 2021). Therefore, in this study, procurement contract risk management encompasses risks from selecting suppliers and supplying inputs through contract closure. This involves key strategies such as supply risk management, internal control systems for procurement, and procurement contract administration.

1.6.1.3 Procurement Internal Control System

It is a management process that involves everyone in an organisation working together to improve operational effectiveness and efficiency, financial reporting accuracy and reliability, and adherence to relevant laws and internal policies (Myeza *et al.*, 2021). In this study, the procurement internal control system is a risk management component that involves segregation of duties, authorisation procedures, stock control, record keeping, and internal checks to achieve project objectives.

1.6.1.4 Supply Risk Management

Is a process of planning, procurement and managing the flow of materials from the supplier to the organisation in order to avoid supply disruption (Zhao *et al.*, 2013). In this study, supply risk management is the process of managing suppliers from selection

through delivery of materials to the procuring entity. This involves key strategies such as multi-sourcing, effective supplier selection, post-qualification and effective communication with suppliers.

1.6.1.5 Procurement Contract Administration

Contract administration is the process of ensuring that a construction contract between a client and a contractor is executed in accordance with its terms (Mwenda and Ochiri, 2019). In this study, contract administration is the process of effectively managing contracts from the time they are prepared until they are closed through proper risk management, relationship management, disputes management and monitoring and control

1.6.1.6 Performance of construction projects

Performance of construction projects refers to the extent to which a construction project meets its predefined objectives in terms of time, cost, quality, and scope (Aloyce *et al.*, 2024). It involves evaluating whether the project is completed within the scheduled timeframe, stays within the allocated budget, meets the required quality standards, and fulfills the intended purpose or functionality. In this study, the performance of construction projects is assessed based on key indicators such as timely completion, cost-effectiveness and quality attainment.

1.6.2 Theoretical Review

This study is built on the foundation of one leading theory and two supportive theories. The leading theory is transaction cost theory (1937), and the second theory is institutional theory (1983). These three theories are relevant to this study because they explain the variables.

1.6.2.1 Transaction Cost Theory

The basic idea behind transaction cost theory is that there are always transaction costs involved in running a business. Because of the nature of interactions, the concept is derived from Coase's (1937) ideas and is widely used in management and business research. Transaction costs are the costs associated with contracting, both *ex ante* (e.g., negotiating) and *ex post* (e.g., contract execution and dispute resolution) (Williamson, 1979). Therefore, the theory provides important insights applicable to procurement and supply chain operations. For instance, transaction costs can include the costs of placing

orders, processing orders, arranging deliveries, handling enquiries, and all other activities that occur when organisations do business with one another.

Meanwhile, the transaction cost perspective addresses the need for buyers to protect themselves against supplier opportunism (Williamson, 1979). Contracts are commonly regarded as the primary formal means of safeguarding transactions on the buying side (Humphreys *et al.*, 2004). Contracts govern the bargaining process between the parties involved. Contracts are considered negotiating tools because they define the scope of work and the terms of the agreement. The theory establishes a sound framework for public officials engaged in contract management (Rashel, 2016). Based on transaction cost theory, a connection between procurement contract risk management and the performance of construction projects will be established. For example, a study conducted by Wever *et al.* (2012) on supply chain risk from the perspective of transaction cost theory in a dynamic and uncertain business environment.

Public procurement management focuses on the effective management of contracts between public procuring entities and suppliers, as ineffective contract management can result in cost increases and the inability to implement projects due to associated costs and effort. The majority of contract management issues occur during the development and implementation phases. Contract management costs and the increased risk of contract failure may outweigh the potential benefits of these contracts. Thus, managing contract risk from contract preparation through contract closure requires considerable expense and effort. According to the transaction cost theory, the difficulty of contract management is a representation of the costs and effort incurred by organisations linked to the management of formal contracts with their suppliers (Williamson, 1993; Zhao *et al.*, 2018)

Therefore, in managing procurement contract risks, transaction costs include the costs of searching for the best contractors and suppliers, supervising the contract, keeping records, and stock control. These costs, if ignored, will increase the cost of all projects. Hence, the crucial consideration in the management of contract risks in construction projects is the trade-off between the transaction costs incurred when contract risks are poorly managed and the costs of properly managing them. This is because the high risk of contract increases transaction costs of managing contracts and hence reduces value for money. While this theory is ideal for this study and emphasises the transaction costs of managing procurement contract risk, it ignores the crucial aspects of social norms,

rules, and regulatory frameworks in shaping organisational behaviour when managing contract risks; thus, institutional theory is introduced.

1.6.2.2 Institutional Theory

Institutional theory, as presented by Scott (2004), offers a comprehensive framework for understanding how organisations are shaped by the broader institutional environments in which they operate. Scott (2004) defines institutions as multifaceted, enduring social structures composed of symbolic elements, social activities, and material resources. Thus, institutions influence organisational behaviour through three main pillars: the regulative, normative, and cultural-cognitive systems. Organisations may feel pressured to adopt commonly accepted behaviour to obtain legitimacy (Dacin, 1997) and maintain a socially relevant position (Brammer *et al.*, 2012; Campbell, 2007). The regulative pillar emphasises rules, laws, and enforcement mechanisms that guide actions through coercion or incentives. The normative pillar focuses on values and norms, shaping behaviour through social obligations and moral expectations. Lastly, the cultural-cognitive pillar centres on shared understandings and taken-for-granted beliefs that individuals internalise and use to interpret the world around them. Of these, the regulative pillar is most pertinent to this study. It focuses on formal rules, laws, and compliance mechanisms that enforce behaviour through sanctions or incentives.

In this study, institutional theory provides a clear understanding of how internal control systems in procurement influence the cost-effectiveness of construction projects. This theory emphasises the role of social norms, rules, and regulatory frameworks in shaping organisational behaviour (Muhwezi *et al.*, 2023; Nawaz and Guribie, 2024). In the context of procurement, internal control systems ensure compliance with these institutional rules, promoting transparency, accountability, and efficiency (Azman *et al.*, 2024). Key components of these systems, such as segregation of duties, ensure that no single individual controls all aspects of a procurement transaction, thereby reducing the risk of fraud and errors (Cao and Wang, 2023). Stock control mechanisms help manage inventory efficiently, preventing overstocking and stockouts. The authorisation process ensures that all procurement actions are approved by appropriate personnel, maintaining a high level of accountability. Record keeping provides a transparent audit trail, facilitating monitoring and evaluation of procurement activities.

From an institutional perspective, these controls enhance organisational legitimacy and compliance with best practices, ultimately leading to more efficiency and cost-

effectiveness in FA construction projects. Also, by adhering to regulatory requirements and standardising procurement processes, these controls reduce the likelihood of unforeseen expenses, contributing significantly to the cost-effective outcomes in construction projects.

In this study, institutional theory provides a valuable lens for understanding how procurement internal control systems influence the cost-effectiveness of construction projects implemented under the Force Account (FA) approach. Procurement processes, particularly in public sector construction, are governed by a complex web of institutional rules aimed at promoting accountability, transparency, and efficiency. As argued by Muhwezi *et al.* (2023) and Nawaz and Guribie (2024), these systems do not merely serve technical functions but also reflect the institutional pressures organisations face to conform to good governance practices and regulatory standards.

Therefore, institutional theory serves as a foundational framework for this study by illuminating how procurement internal controls serve a dual purpose: ensuring operational efficiency and reinforcing the legitimacy of public organisations involved in construction. These controls, when properly instituted and enforced, play a pivotal role in achieving cost-effectiveness outcomes in FA construction projects and in aligning organisational practices with regulatory requirements.

1.6.2.3 Agency Theory

Agency theory explains the relationship between two parties: a principal, who delegates authority, and an agent, who carries out tasks on the principal's behalf (Jensen and Meckling, 1976). However, this relationship often gives rise to conflicts of interest. The agent may pursue personal goals that are not fully aligned with the principal's interests, leading to what are commonly referred to as "agency problems" (Leepsa and Panda, 2017). To address these challenges, principals typically design mechanisms and systems to align the agent's objectives with their own, thereby ensuring that agents act in the principal's best interest (Ross, 1973).

In this study, procuring entities serve as the principal, while the FA committees act as internal agents responsible for managing procurement-related activities. Given this dynamic, a robust internal control system for procurement is vital. Such a system plays a crucial role in harmonising the interests of both the principal and the agent by promoting the cost-effectiveness of construction processes. A study by Adi and Rohman (2023) highlighted the relevance of agency theory in procurement, demonstrating how

internal control systems can help prevent fraud in the acquisition of goods and services. According to agency theory, internal control mechanisms such as monitoring procedures, clearly defined performance metrics, and incentive structures are instrumental in reducing information asymmetry and deterring opportunistic behaviour from agents. These controls help ensure that agents act in a manner consistent with the principal's expectations and interests.

From a procurement perspective, a well-established internal control system provides the principal with assurance that agents are working diligently to fulfil their obligations, particularly by optimising resource use and minimising unnecessary construction costs (Mwaiseje *et al.*, 2025). In this study, key internal procurement control indicators, including segregation of duties, authorisation processes, record-keeping, and stock control, are examined through the lens of agency theory. These elements serve as safeguards that guide agents' decisions and actions, encouraging behaviour aligned with the principal's overarching goal of achieving cost-effective implementation of FA construction projects. When agents consistently adhere to these internal control measures, they are better positioned to make informed and responsible decisions. Ultimately, this alignment fosters accountability, transparency, and efficiency throughout the procurement process, helping to bridge the gap between agent and principal interests.

1.7 Empirical Literature Review

Supply risk management plays a crucial role in ensuring the timely completion of construction projects by minimising potential disruptions arising from unreliable sourcing, supplier inefficiencies, or communication breakdowns (Mwaiseje *et al.*, 2024). Supply risk management in this study includes Multi-sourcing, effective supplier selection, post-qualification, and effective communication with suppliers. Multi-sourcing allows organisations to procure materials from multiple suppliers rather than depending on a single source. This approach reduces the likelihood of supply chain disruptions and material shortages, enhancing the reliability and continuity of supply (Mehrjerdi and Shafiee, 2021). Multi-sourcing mitigates risks associated with supplier failures, thereby supporting the uninterrupted progress of construction activities and contributing to the project's timely completion (Dong *et al.*, 2022). Additionally, effective supplier selection is essential, as a project's ability to meet timelines depends heavily on suppliers' reliability, quality, and delivery capabilities. Studies by Krop and Iravo (2016), Changalima *et al.* (2024), and Sharma and Joshi (2023) highlight that

selecting competent suppliers increases the likelihood of achieving procurement objectives, including timely delivery of quality materials, factors directly linked to project success and timely completion.

Moreover, the post-qualification process is vital in evaluating a supplier's technical, financial, and operational capabilities before awarding contracts. Through this process, organisations can avoid engaging unqualified or under-resourced suppliers who may cause project delays (Mahmoudi and Javed, 2022). Researchers such as Dobos and Vörösmarty (2023) and Patil and Kumthekar (2016) have found that effective post-qualification significantly enhances procurement performance and, when applied rigorously, ensures that selected suppliers meet the standards required for timely project delivery. Lastly, effective communication with suppliers is fundamental in building trust, clarity, and transparency regarding delivery timelines, quality expectations, and project milestones. Strong communication reduces misinterpretations and improves coordination, as noted by Murphy and Sashi (2018), Msemwa *et al.* (2017), and Kimario (2021). Through consistent engagement and feedback, procurement entities are better positioned to align supplier activities with project demands, avoiding unnecessary delays. Despite the significance of each of these elements individually, existing studies offer limited integration regarding how these components collectively contribute to timely completion through effective supply risk management in FA construction projects. Therefore, this study proposes the following consolidated hypothesis:

H1: Supply risk management positively influences the timely completion of FA construction projects.

Internal control systems in procurement play a pivotal role in enhancing the cost-effectiveness of FA construction projects by fostering accountability, transparency, and efficiency throughout project implementation (Muhwezi *et al.*, 2023). Key components of these internal controls include segregation of duties, authorisation processes, stock control, and record-keeping. Segregation of duties helps reduce the risks of errors, fraud, and conflicts of interest by distributing responsibilities among different personnel (Chiu and Jans, 2019). The literature appreciates the role of segregation of duties in enhancing project performance. For instance, studies by Ferrer *et al.* (2020) and Rattini (2023) indicated that a well-defined project, through segregation of duties, leads to high levels of accountability, proper risk control, and, lastly, enhances project performance. While previous studies by Njoka and Gikonyo (2023) and Ngari (2017) have focused on the role of segregation in improving quality and reducing errors, its effect on cost-

effectiveness, particularly in FA construction projects, remains underexplored. Similarly, a well-defined authorisation process is vital for ensuring financial discipline and transparency across a project's lifecycle (Bhagat and Jha, 2023). The literature underscores the link between proper authorisation and improved project outcomes, including timely approvals, effective expenditure control, and budget compliance. Yet, few studies have addressed its specific contribution to cost-effectiveness in FA construction settings.

Additionally, stock control and record-keeping are essential to ensuring efficient resource use and maintaining transparency in procurement practices. Stock control activities, such as forecasting material needs, monitoring inventory levels, and accurately issuing materials, help avoid unnecessary delays and reduce waste, thereby promoting cost-effective execution of construction projects (Bajomo *et al.*, 2022). Meanwhile, effective record-keeping supports performance evaluation and compliance with legal frameworks, such as Tanzania's Public Procurement Act (PPA) of 2023, which mandates retention of documentation for at least 5 years. Despite its recognised role in cost savings and supplier tracking, record-keeping is often undervalued, especially in developing contexts. The literature of Frontoni *et al.* (2020) and Ashika and Monisha (2019) has consistently linked these components to enhanced project and organisational performance, yet there is limited empirical evidence on their integrated effect on the cost-effectiveness of FA construction projects. Based on the highlighted discussions in the literature review above, this study proposes the following hypothesis:

H2: Procurement internal control systems positively influence the cost-effectiveness of FA construction projects.

Procurement contract administration plays a pivotal role in achieving quality attainment in construction projects by ensuring that all contractual obligations are properly managed, monitored, and executed throughout the project lifecycle (Mwaiseje *et al.* 2024). In this study, procurement contract administration includes key components such as risk management, relationship management, dispute management, and monitoring and control.

Risk management involves identifying, assessing, and mitigating potential threats that could impact the project's success in terms of time, cost, and quality (Bissah and Nkurumah, 2021). Effective risk management strategies help to address uncertainties stemming from material shortages, procurement delays, and workforce inefficiencies

(Khalef *et al.*, 2021; Tumuhairwe and Ahimbisibwe, 2016). Studies indicate that poor risk management has often led to delays, cost overruns, and substandard quality in construction projects (Myeza *et al.*, 2021; Iyer *et al.*, 2020), while others argue that improving risk management knowledge and practice can enhance construction outcomes (Szymański, 2017; Khan *et al.*, 2019). Therefore, proactive risk assessment and response planning are key elements of contract administration to ensure project quality.

Another integral aspect of procurement contract administration is relationship management, which governs the interaction between the procuring entity and its stakeholders, such as contractors, suppliers, and regulatory bodies (Meng, 2012). Healthy, collaborative relationships grounded in trust, open communication, and mutual respect have been shown to improve project performance (Meng, 2012; Kim and Nguyen, 2018). When strong relationships are established, project teams are more likely to maintain focus on quality through coordinated efforts and shared objectives (Daboun *et al.*, 2023; Hoque and Hasan, 2022). Consequently, well-managed stakeholder relationships form a critical foundation for achieving high-quality outputs in construction projects.

In addition, dispute management within procurement contract administration helps mitigate conflicts that arise during project execution (Vo *et al.*, 2020). Disputes can arise from ambiguities in contracts, poor communication, or misaligned expectations (Tabis and Jha, 2023). Implementing effective dispute-resolution mechanisms, such as early negotiations, regular audits, and proactive communication, can significantly reduce the impact of such conflicts on project quality (Vo *et al.*, 2020; Wang *et al.*, 2023). Preventive measures embedded in contract administration, such as clear documentation and risk-sharing agreements, support the delivery of high-quality outcomes by minimising delays and cost overruns.

Lastly, monitoring and control are critical tools in contract administration to track performance and ensure compliance with quality standards. Monitoring ensures that contract implementation aligns with project specifications and that deviations are addressed promptly (Obondi, 2022; Kissi *et al.*, 2019). Regular site supervision, performance evaluations, and reporting mechanisms enable contract administrators to take corrective actions when quality lapses are observed (Callistus *et al.*, 2018). This continuous oversight mechanism is essential in public procurement contexts to maintain

accountability and ensure that quality benchmarks are met in FA construction projects. Although individual aspects such as risk, relationship, dispute, and monitoring management have been studied independently, there is limited literature examining how these elements collectively influence quality attainment through procurement contract administration in FA construction projects. Thus, this study proposes the following consolidated hypothesis:

H3: Procurement contract administration positively influences the quality attainment of FA construction projects.

The regulatory framework, encompassing laws, policies, and regulations, plays a crucial role in various sectors by establishing clear guidelines and standards (Rehman and Ishak, 2023). This framework emphasises ensuring that businesses, organisations, and even individuals comply with the defined laws and regulations to promote fairness, transparency, and accountability (Kabara *et al.*, 2023). Also, the regulatory framework helps in mitigating risk, protecting the public interest and maintaining effective operations of the organisation through setting and enforcing rules and policies (Kabara *et al.*, 2023)

As hypothesised earlier, supply risk management, the internal control system for procurement, and procurement contract administration may be relevant in explaining the performance of FA construction projects. In the context of FA, projects are regulated by the PPA of 2023 and the Public Procurement Regulations (PPR) of 2024. In this regard, the role of the predictor variable on the performance of FA construction projects may be explained by the presence of a regulatory framework. Specifically, the moderating role of regulatory frameworks has been examined across contexts, demonstrating how they can shape the relationship between specific project management practices and overall project outcomes (Kabara *et al.*, 2023). For instance, regulatory frameworks have been shown to moderate the relationship between project management frameworks and the sustainability of emerging contractors in construction projects (Ebekozi *et al.*, 2023), as well as between economic factors and risk management in construction projects (Rehman and Ishak, 2023). Also, other studies directly link the regulatory framework to project performance (Ndumia, 2015). However, the specific roles of predictor variables in FA projects remain an area yet to be thoroughly explored. In this regard, it was hypothesised that;

H4: Regulatory framework positively moderates the influence of procurement contract risk management and the performance of FA construction projects.

1.8 Conceptual Framework

The conceptual framework for this study illustrates the specific relationships between each independent variable and the corresponding dimensions of the dependent variable, in line with the study objectives and the four papers. The framework assumes that the performance of construction projects under the FA approach is determined by procurement contract risks management, with performance assessed through timely completion, cost effectiveness, and quality attainment. In line with Objective One (Paper One), supply risk management, including multi-sourcing, effective supplier selection, post-qualification, and effective communication with suppliers, directly influences the timely completion of FA construction projects. Objective Two (Paper Two) focuses on procurement internal control systems, where segregation of duties, authorisation procedures, stock control, and proper record keeping contribute to cost effectiveness. Objective Three (Paper Three) examines procurement contract administration through risk management, relationship management, dispute management, and monitoring and control to enhance the quality attainment of FA construction projects. Finally, Objective Four (Paper Four) integrates all preceding findings by holistically assessing procurement contract risk management and its impact on overall project performance under FA, with the regulatory framework acting as a moderating variable that shapes the strength and direction of the identified relationships. This integrated final objective explains why the conceptual model appears comprehensive, as it intentionally captures all variables and hypotheses in a unified structure, as indicated in Figure 1.

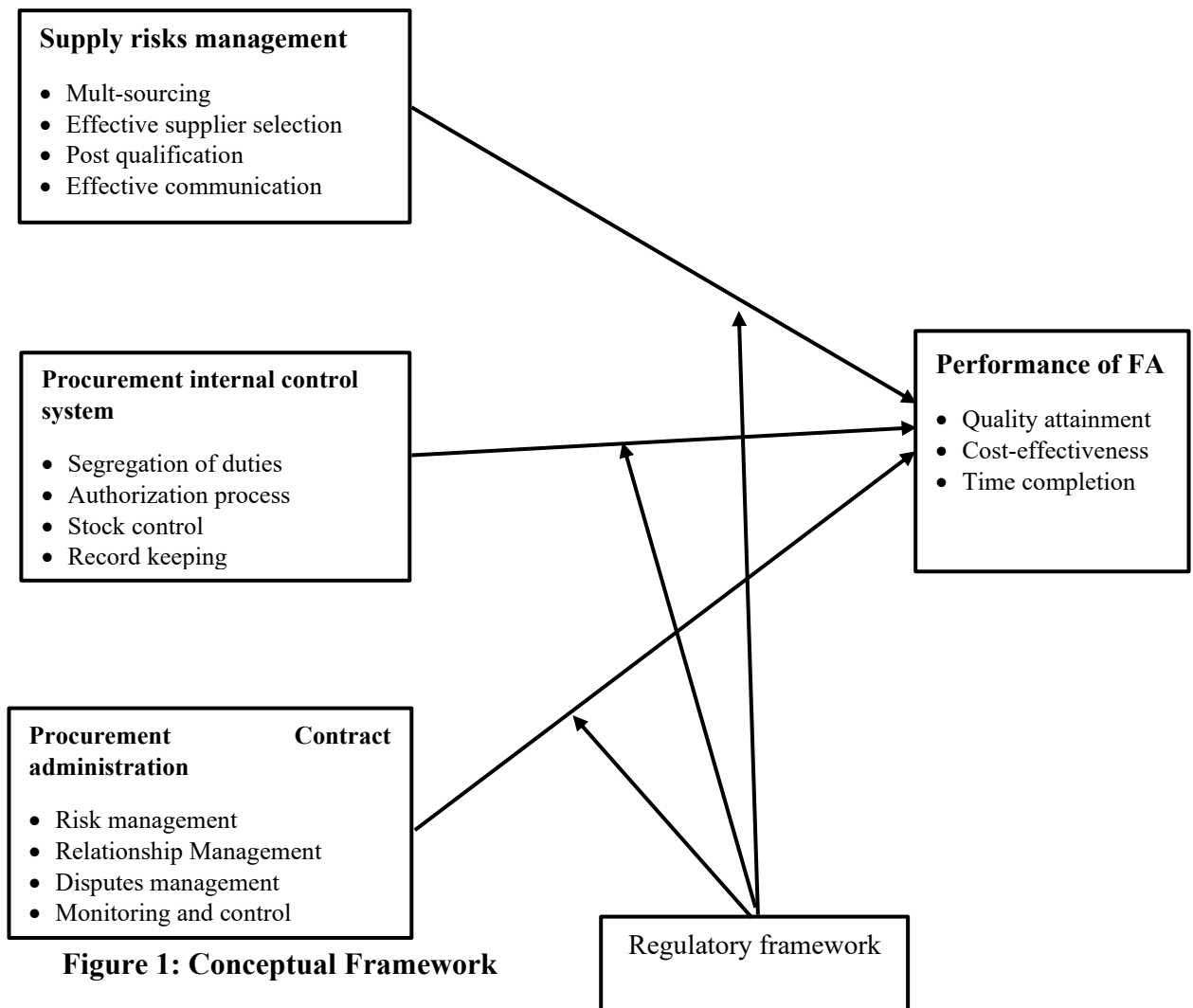


Figure 1: Conceptual Framework

1.9 Methodology

1.9.1 Research Philosophy, Approach

This study adopted a positivist philosophy, emphasising objectivity in data collection and in the methodology for analysing causal relationships and confirming theories. It is a deductive approach capable of establishing relationships between variables, testing hypotheses, and conducting experiments by operationalising variables and metrics. Hypothesis test results are used to improve and broaden scientific understanding (Park *et al.*, 2020). This study focused on collecting quantitative data, which were then utilised to assess the hypotheses. Similarly, positivist studies often use quantitative approaches to examine causal linkages, giving a foundation for generalising conclusions and replicating findings (Creswell and Creswell, 2018; Park *et al.*, 2020). As a result, this study is characterised as positivist because it examines relationships using hypothesis testing and theory confirmation.

This study used a quantitative research approach for the displayed numerical data, for testing theories and hypotheses, for generalising the research findings, and for measuring the causal relationship between variables (Mulisa, 2022). Thus, a quantitative approach was regarded as vital in this study, emphasising testing and confirming the relationship between procurement contract risk management and the performance of FA construction projects. Furthermore, statistical techniques were used to measure and analyse numerical data when assessing the relationship between variables. The variables in this study were grouped into dependent variables, including the performance of FA construction projects, and independent variables, such as supply risk management, procurement internal control system, procurement contract administration, and regulatory framework, as moderating variables. Generally, the relationship between these variables was examined using the quantitative approach

1.9.2 Research design

An explanatory cross-sectional research design was used for this study, as data were collected at a single point in time, making it the most appropriate choice. This design was found to be cost-effective and efficient for collecting data on all variables, compared to other designs, such as the longitudinal design. According to Saunders *et al.* (2019), an explanatory cross-sectional research design is more suitable when the research aims to investigate certain practices and beliefs within the entire population of

interest while considering a specific social or natural setting. Additionally, the design was chosen because the study does not aim to track changes over time due to internal or external interventions. Also, a cross-sectional research design aims to describe and generalise the relationships between distinct variables and conditions, considering both instances and cases. This approach focuses on establishing general models that connect various variables under specific conditions. Results from a cross-sectional design test (or reject) existing theories regarding relationships (Hunziker and Blankenagel, 2021). In contrast, a longitudinal research design primarily focuses on measuring the same variable repeatedly across multiple time points, collecting data from the same cases over time (Bala, 2020). The present study prioritised understanding relational patterns among variables within the population at one point in time, making the cross-sectional explanatory design the most fitting choice.

1.9.3 Description of study area, population, and unit of analysis

This study was conducted in selected LGAs in the Dodoma region, Tanzania, specifically focusing on primary schools implementing FA construction projects. LGAs were chosen because they have a higher number of FA construction projects compared to other categories of procuring entities. For example, the PPRA audit in 2021 revealed that it covered 492 projects undertaken under FA, of which 455 were in LGAs, 25 in Parastatal Organisations, and 12 in Agencies, with a total value of TZS 63 billion. The Dodoma region was selected as the study area to collect information on FA construction projects in primary schools, as it has a large number of such projects. For example, in the Financial Year (FY) 2021/2022, a budget of 2.71 billion was allocated to the construction of 237 primary school classrooms. Similarly, a budget of 2.79 billion was set out for the classroom in FY 2022/2023 (URT, 2022, 2023). Primary schools were specifically chosen based on the large number of FA projects in the Dodoma region (URT, 2022). The target population for this study comprised members of the FA committees from selected primary schools in the Dodoma region. Specifically, the study focused on 1,800 respondents drawn from 120 primary schools across selected LGAs. Each school contributed 15 members from key committees, including the Receiving and Inspection Committee, the Construction Committee, and the Procurement Committee. These members were selected to provide the necessary technical insights required to achieve the study's objectives. Therefore, the unit analysis of this study is primary schools' FA construction projects, while the unit of inquiry was the members of the FA committees responsible for supervising and executing FA construction projects at the school level.

1.9.4 Sampling procedures and sample size

Both probability and non-probability sampling techniques were used in sample selection and in the study area, respectively. Purposive sampling was used to select the Dodoma region due to having a large number of audited FA projects in 2021/2022. Also, primary schools were purposely selected based on the availability of FA projects. However, in each selected primary school, simple random sampling was used to select three (3) members of the FA committees. The method was selected because it ensures that every member of the population (primary schools) has an equal chance of being selected. By randomly selecting three members from each school, we can create a representative sample that correctly reflects the characteristics and variety of the primary school population. This reduces bias and increases the generalizability of the findings (Noor *et al.*, 2022).

The sample size for this study was determined using Yamane's (1967) formula, as adopted by Kuswanto *et al.* (2020), since the study population was known. This formula is particularly useful because it allows researchers to select a sample based on the desired level of accuracy, which depends on the confidence level and margin of error in statistical testing (Creswell, 2014; Magigi, 2015). According to Leavy (2017), the confidence level represents the degree of certainty that the results accurately reflect the population, while the margin of error, also known as the confidence interval, indicates the acceptable level of error in the study findings. Both are expressed as percentages. For this study, a 95% confidence level and 5% margin of error (confidence interval) were applied. The formula is indicated in equation 1:

$$n = N / [1 + N (e^2)] \dots\dots\dots (1)$$

Whereby:

n = number of samples;

N = total population size (For this case, N=1800); and

e = error of tolerance (e = 0.05)

$$n = 1800 / [1 + 1800 (0.05^2)]$$

Therefore, the sample size is 327 respondents.

However, the sample size was adjusted to account for a 10% non-response rate, increasing it to 360 respondents to improve the response rate. This adjustment aligns with the recommendation by Dolnicar *et al.* (2016), who emphasised that increasing the sample size can enhance a study's statistical power. Despite these efforts, only 318

individuals, representing 88.3% of the targeted respondents, provided responses during data collection.

1.9.5 Types and Sources of Data

In data analysis, data can be classified as either qualitative or quantitative. This study is situated within the quantitative research approach, which uses numerical data to examine relationships among the study variables (Hair *et al.*, 2020). Quantitative data were appropriate for addressing all study objectives because the research sought to establish causal relationships among the constructs. Quantitative data are expressed numerically and are useful for quantifying phenomena, attributes, perceptions, and behaviours. They also enable the application of descriptive and inferential statistical techniques, which are essential for assessing cause-and-effect associations between the variables of interest.

To measure the constructs, the study employed a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) for all independent, moderating, and dependent variables. The scale items were adapted from prior literature, and the selected measures have been scientifically validated in accurately capturing the intended constructs (Yağcı, 2019). Both methodological and practical considerations guided the decision to use a five-point scale. A five-point scale reduces respondent fatigue, enhances clarity, and is easier for participants to interpret in survey settings, particularly where respondents may have varying levels of familiarity with structured questionnaires (Kusmaryono *et al.*, 2022). Additionally, previous empirical studies have demonstrated that five-point scales provide reliable and consistent results comparable to seven-point scales while minimising cognitive burden on respondents (Yaska and Nuhu, 2024). Therefore, the five-point format was considered the most appropriate for ensuring high-quality, comprehensible, and reliable responses for the present study.

1.9.6 Data Collection

Data for this study were gathered via questionnaires from respondents at the primary schools surveyed. The two primary questions, which are typically included in questionnaires for the majority of research projects, are open-ended and closed-ended (Pallant, 2020). Structured questionnaires are produced by the latter, while unstructured questionnaires are produced by the former. A structured questionnaire was used in this study (see Appendix I). The used structured questionnaire comprised closed-ended

questions with options (Hair *et al.*, 2020). By using predefined questions, this method makes it easier to gather data from a large number of responders, which can then be readily examined quantitatively (Saunders *et al.*, 2019). Additionally, as the study collected data from several primary schools in the Dodoma region, a structured questionnaire was useful for collecting information to meet the study's goals.

There were four main components of the final structured questionnaire used to collect data (see Appendix I). Information on the respondents' profiles, including their demographics (sex, age, education level, and work experience), as well as the type of FA committee and the name of the primary school, is included in the first section. The questionnaire's second section included attributes of procurement contract risk management, such as supply risk management, procurement internal control systems, and procurement contract administration, and the third section asked about the regulatory framework as a moderator. Lastly, section four covered aspects of performance of FA construction projects, such as timely completion, quality achievement, and cost-effectiveness. The FA committee members, as the unit of inquiry, were given copies of structured questions. With the assistance of a research assistant who had been briefed on the questionnaire's characteristics, the drop-pick approach was used. According to Saunders *et al.* (2019), the research assistant was selected for their familiarity with the research topic and understanding of specific data collection processes. Additionally, it was decided to distribute questionnaires during data collection using the drop-off/pick-up method because it is the most effective method for reducing the possibility of nonresponse bias by increasing the number of significant responses (Allred and Ross-Davis, 2011).

1.9.7 Common Method Bias

Given that this thesis adopts a paper-based format in which data for each study were collected via self-administered questionnaires, the potential for common method bias (CMB) was considered. In line with recommended procedures, each paper assessed CMB using the Harman single-factor test, which examines whether a single unrotated factor accounts for the majority of the variance in the data. Across studies, results consistently showed that the first factor accounted for less than 50% of the total variance, indicating that CMB was not a major concern (Podsakoff *et al.*, 2003; Harman, 1967).

In addition to this test, variance inflation factor (VIF) values for the main constructs were examined to detect potential collinearity-related bias. In all papers, the VIF values remained below the recommended thresholds (3–3.3), confirming the absence of

significant method-related bias in the data (Kock, 2015). Overall, the combination of Harman's single-factor tests and VIF assessments provides adequate assurance that common method bias did not threaten the validity of the findings reported in the individual papers.

1.9.8 Validity and reliability

Studies that adopt a quantitative approach, particularly in management and social science research, place strong emphasis on reliability and validity to assess research quality (Saunders *et al.*, 2019). Reliability ensures that measurement instruments consistently produce stable results, while validity ensures that the instruments accurately measure what they are intended to measure. Therefore, several tests were conducted to evaluate the reliability and validity.

1.9.9 Reliability

Reliability refers to the extent to which a measurement yields consistent and repeatable results when carried out by different individuals, at different times, and under varying conditions (Bryman and Bell, 2011). When another researcher replicates a study under similar conditions and produces comparable outcomes, the data is deemed reliable. One of the most common methods for assessing reliability is to determine the reliability coefficient, which indicates the level of correlation among tests, items, or raters. A key aspect of this is internal consistency, which examines how closely related the items within a particular construct are. This is typically measured using Cronbach's alpha coefficient (Pallant, 2020). Cronbach's alpha evaluates the degree of consistency among test items, with values ranging from 0 to 1; higher value reflects stronger reliability (Cronbach, 1951; Tavakol and Dennick, 2011). While a single test item may have a weak correlation with the true score, a larger set of well-aligned items is more likely to show a stronger correlation.

However, prior to full-scale data collection, a pilot study of the survey instrument was conducted to ensure its reliability. According to Creswell and Creswell (2018), the technique enables survey researchers to evaluate a survey instrument's reliability and validity before its final distribution. Similarly, Hair *et al.* (2020) concluded that when researchers pilot-test the questionnaire or conduct a pre-test, they may collect data from a sample similar to the final respondents to refine or develop a scale for measuring a construct. The objective of the pilot testing is to identify issues with the data collection instrument and investigate possible ways to resolve them.

In addition, this technique is used to estimate the time required to complete the questionnaire and to enhance the reliability of the research (Saunders *et al.*, 2019). As a result, during the pilot study, ambiguities were clarified, resulting in some improvements to the survey instrument (Bryman and Bell, 2011). These measures were taken to ensure that the survey instrument yields consistent results after data collection from respondents.

In addition, this study employed Cronbach's alpha to assess the internal reliability of the items used to measure each variable. This technique was used because it enables assessing how closely related items are within a group (Saunders *et al.*, 2019). According to Cronbach (1951) and Tavakol and Dennick (2011), a Cronbach's coefficient alpha value of 0.7 or above is considered to be acceptable for achieving the internal consistency reliability. In addition, composite or construct reliability was assessed. For each item of the construct, an optimal weight was established to assess the Maximal Reliability (Max R(H)) scores, and data with a score of 0.7 or above were considered reliable (Zarrinabadi *et al.*, 2022).

1.9.10 Validity

Validity refers to the degree to which a research instrument accurately captures the concept it is intended to measure (Hair *et al.*, 2020). It reflects the authenticity and credibility of the research outcomes. Validity is evaluated through both conceptual reasoning and empirical analysis. The theoretical evaluation involves converting abstract concepts into measurable items, typically under the guidance of subject-matter experts, such as academic reviewers or field professionals, who assess whether each item appropriately represents the intended construct. In contrast, the empirical assessment involves statistical analysis to determine the instrument's effectiveness in measuring the specified construct.

In studies utilising Structural Equation Modeling (SEM), the most commonly reported types of validity include content validity and construct validity (Dash and Paul, 2021). Content validity refers to how well a scale or set of items represents all facets of the concept being studied (Pallant, 2020). To ensure this form of validity, the current study conducted a thorough review of existing literature to identify appropriate constructs and adopted previously validated items that align with established theoretical frameworks.

Expert opinions were also sought prior to the full rollout of data collection to confirm that the items sufficiently cover each construct, thereby enhancing the instrument's overall validity.

Construct validity, on the other hand, tests whether a scale truly measures the theoretical concept it is intended to assess. This is done not by relying on a single measure, but by examining how the construct relates to others in theoretically expected ways (Said *et al.*, 2011). Construct validity is evaluated through two key aspects: convergent and discriminant validity. Convergent validity checks whether different measures that are supposed to be related actually show strong correlations, while discriminant validity examines whether constructs that are expected to differ indeed do so (Hair *et al.*, 2010; Hamid *et al.*, 2017; Pallant, 2020).

In this research, both convergent and discriminant validity were examined. Convergent validity was assessed using Average Variance Extracted (AVE), with values of 0.5 or higher indicating acceptable levels of convergent validity. Additionally, factor loadings of at least 0.6 were required to support convergent validity (Hair *et al.*, 2010). An AVE of 0.5 or more suggests that a latent construct explains at least half of the variance in its observed variables (Bagozzi and Yi, 1988). Discriminant validity, which ensures that a construct is empirically distinct from others, was tested using the Fornell-Larcker criterion. This approach compares each construct's square root AVE with its correlations with other constructs. According to Fornell and Larcker (1981), discriminant validity is confirmed when a construct's AVE square root is greater than its correlations with other variables. The results confirming the reliability and validity of the study's instruments are detailed in Chapters Two through Five of this research report.

1.9.11 Variable measurements

The dependent variable of this study, the performance of FA construction projects, was evaluated using three (3) key indicators: the attainment of quality standards, the timely completion of works, and cost-effectiveness. These indicators were adapted from earlier scholarly contributions, including those of Maqsoom *et al.* (2021), Mwaiseje *et al.* (2024), Hoque and Hasan (2022), and Faten Albtoush *et al.* (2020). The independent variables relating to procurement contract risk management comprised three major dimensions: supply risk management, the procurement internal control system, and

procurement contract administration. Supply risk management was assessed using four (4) constructs drawn from established literature, including Chungalima *et al.* (2024), Chintapalli (2021), Kimario (2021), and Vörösmarty and Dobos (2020). The procurement internal control system was also measured using four constructs, primarily adopted from Scoleze Ferrer *et al.* (2020), Frontoni *et al.* (2020), and Namukasa (2017), and subsequently refined to align with the contextual boundaries of the present study.

Furthermore, procurement contract administration was evaluated using four constructs adapted from prior empirical work, including Francis *et al.* (2022), Kissi *et al.* (2019), and Demirkesen and Ozorhon (2017). The moderating variable, namely the regulatory framework, was operationalised through three constructs: laws, guidelines, and regulations sourced from the studies of Rehman and Ishak (2023) and Ndumia (2015). A five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was employed to measure all independent, moderating, and dependent variables. These measurement scales were chosen owing to their demonstrated scientific reliability and validity in accurately capturing the intended constructs (Yağcı, 2019).

1.9.12 Data Analysis

The process of transforming raw data into more meaningful information with deeper context by using analytical and statistical tools is an integral part of data analysis (Saunders *et al.*, 2019). Pallant (2020) emphasised the importance of thoroughly checking data for entry errors, as such mistakes can significantly distort the results of data analysis. For example, inaccuracies during data entry may result in missing values, which can adversely affect the analysis. In line with this guidance, the present study began with a preliminary data assessment to identify any missing data. Following this screening, a descriptive analysis was conducted to provide a clear overview and summary of the dataset. The descriptive statistics were primarily reported using means, standard deviations, and frequencies. Therefore, in the analysis of data, both descriptive and inferential statistics were utilised, specifically SEM in AMOS version 21 and SmartPLS 4, for moderation regression analysis to determine the pattern of hypothesised relationships.

In the analysis of the first and second objectives, Covariance-based Structural Equation Modelling (CB-SEM) was employed to examine the relationships among the variables.

CB-SEM is more relevant for testing the existing theories (Hair *et al.*, 2017). CB-SEM was considered for testing the first and second objectives, which aimed to examine the relationships between supply risk management and the procurement internal control system, as dimensions of procurement contract risk management, and between the procurement internal control system and timely completion, as a dimension of performance of FA construction projects. Therefore, because the study aimed to establish the relationships between latent or observed variables and their observed variables (items or manifest variables, as presented in chapters two and three), CB-SEM was appropriate for this purpose.

The first part of CB-SEM is Confirmatory Factor Analysis (CFA), which was conducted to analyse the constructs' items used in the structured questionnaire. The latent construct is separated from the other variables using CFA, and the greatest variance is shared among the variables related to the latent construct (Fan *et al.*, 2016). To examine the extent to which a set of measured variables adequately represents a set of constructs, this multivariate statistical procedure can be employed. It is a device for validating or refuting the measurement theory (Marcoulides and Ing, 2012). In this study, CFA was conducted to assess the validity and reliability of all constructs. Therefore, after assessing the CFA model fit indices, the results were presented to report the necessary measures to satisfy measurement theory.

After the CFA, the structural model is conducted to determine the nature of the relationships between exogenous and endogenous variables (Hair *et al.*, 2010). Once the measurement models of the latent constructs are validated through CFA, the path can be causal or covariance-based (Dash and Paul, 2021). The structural model specifies the causal relationships among the variables in the hypothesised model. In these objectives, the structural model was analysed to evaluate the path analysis of the hypothesised relationships between supply risk management and the procurement internal control system, as independent variables, towards the timely completion and cost effectiveness of FA construction projects, as dependent variables. Therefore, upon satisfaction of the structural model indices, the results of the hypothesised relationships were discussed in terms of the level of significance (p-value) and standardised beta coefficient (β).

For objectives three and four, partial least squares structural equation modelling (PLS-SEM) was employed. Specifically, it utilised PLS-SEM in SmartPLS 4, which is a

multivariate statistical analysis technique used to analyse complex relationships between observed and latent variables (Becker et al., 2023; Hair et al., 2019; Hair. The model was used because it does not require strict assumptions about data distribution and sample size, making it suitable for non-normal data (*Hair et al.*, 2019). Additionally, PLS-SEM is effective for predicting key target constructs and handling complex models with multiple relationships and constructs, offering strong insights into underlying patterns and causal pathways within the data (Becker *et al.*, 2023). Also, PLS-SEM was used in the study due to its suitability for handling reflective measurements. Reflective measurements are particularly relevant in PLS-SEM assessment because they assume that observed variables are manifestations of underlying latent constructs.

Specifically, this study employed PLS-SEM in objectives three and four due to its wide consideration in social science disciplines such as operational management, strategic management, marketing management, but also supply chain management (Basheer *et al.*, 2016; Belo *et al.*, 2020; Breitling, 2019; Changelima, 2024; Tinali, 2022).. Moreover, this study chose to employ PLS-SEM, as the analysis focused on testing the theoretical framework. (Sarstedt *et al.*, 2017). PLS-SEM is an exploratory model and can be applied to assess complex relationships among the study variables with a small sample size (Dash and Paul, 2021; Hair *et al.*, 2011, 2019, 2021).

This study used both the measurement and structural model stages for the effective application of PLS-SEM (Zeng *et al.*, 2021). The measurement model assessment evaluates the reliability and validity of the constructs and their indicators. It includes checking indicator reliability, internal consistency reliability using composite reliability or Cronbach's alpha, convergent validity using Average Variance Extracted (AVE), and discriminant validity using the Fornell-Larcker criterion and cross-loadings (Dash and Paul, 2021). The structural model assessment examines the relationships among the constructs by estimating path coefficients, assessing R-squared values to determine explained variance, evaluating effect sizes (f-squared), and assessing predictive relevance (Q-squared) using techniques such as blindfolding (Sarstedt. Additionally, model fit is assessed using metrics such as the Standardised Root Mean Square Residual (SRMR) to ensure the model accurately represents the data (Kock, 2015).

1.9.13 Ethical Considerations

Before initiating data collection, the researcher ensured compliance with ethical standards by obtaining a research permit and ethical clearance from Moshi Co-operative University (MoCU). Recognising the paramount importance of ethical considerations in research, the researcher also obtained authorisation from the President's Office - Regional Administration and Local Government of the United Republic of Tanzania, as indicated in Appendix II. This authorisation facilitated data collection across designated study areas, in Dodoma region. A key ethical principle adhered to was the respect for voluntary participation. Participants were clearly informed of their right to withdraw from the study at any point without any repercussions. To safeguard participants' anonymity, assurances were given that their identities would remain confidential and that the information they provided would not be used in a manner that could harm them. Throughout the research process, the names of participants and their respective organisations were not disclosed to ensure the confidentiality of the reported information. To address potential concerns among participants during data collection, the researcher included supervisors' contact information on the data collection tools. This information, comprising mobile phone numbers and email addresses, provided participants with a direct line of communication to seek clarification or raise any issues regarding the study.

1.9.14 Organisation of the study

This thesis is organised into six main chapters, excluding the preliminary and appendix sections. The preliminary pages include essential components such as the title page, declaration, copyright statement, certification, dedication, acknowledgements, table of contents, list of tables, list of figures, abbreviations, and an extended abstract. Chapter One lays the groundwork for the entire thesis by presenting the introduction, problem statement, research objectives, study justification, theoretical foundations, conceptual framework, research methodology, and ethical considerations. The core content begins in Chapter Two, which includes a published manuscript addressing the findings related to the first research objective. Chapter Three presents a manuscript focused on the second objective, while Chapter Four contains another published manuscript discussing the results of the third research objective. Chapter Five presents a published manuscript that addresses the fourth objective of the study. Each manuscript is structured to meet the submission standards of the respective target journals and publishers. The final

chapter, Chapter Six, provides a summary of the key findings, draws conclusions, offers recommendations, outlines the study's contributions, and suggests directions for future research.

REFERENCES

- Abdallah, A., Doloi, H., & Holzer, D. (2025). Exploring contextual issues impacting delivery and performance of public sector construction projects in Tanzania. *Built Environment Project and Asset Management*, 15(2), 228-246. <https://doi.org/10.1108/BEPAM-03-2024-0068>
- Abusafiya, H. A., & Suliman, S. M. (2017). Causes and effects of cost overrun on construction project in Bahrain: Part I (ranking of cost overrun factors and risk mapping). *Modern Applied Science*, 11(7), 20-27. <https://doi.org/10.5539/mas.v11n7p20>
- Acharya, N. K., Kim, S. Y., & Lee, Y. (2014). Factors affecting timely completion of construction projects. In *Proceedings of the Fifth Asia Pacific Industrial Engineering and Management Systems Conference*. Held in Jeju, Korea, October 12th -15th 2015, 1-13.
- Adeleke, A. Q., Bahaudin, A. Y., & Kamaruddeen, A. M. (2016). Preliminary analysis on organisational factors influencing effective construction risk management: A case study of Nigerian construction companies. *Sains Humanika*, 8(2), 1-7. <https://doi.org/10.11113/sh.v8n2.876>
- Allred, S. B., & Ross-Davis, A. (2011). The drop-off and pick-up method: An approach to reduce nonresponse bias in natural resource surveys. *Small-Scale Forestry*, 10(3), 305–318. <https://doi.org/10.1007/s11842-010-9150-y>
- Aloyce, D., Monko, R. J., & Luvara, V. G. (2024). Critical audit indicators for assessing construction projects' performance (CPP) at pre-contract stage in Tanzania. *International Journal of Construction Management*, 24(5), 530-539. <https://doi.org/10.1080/15623599.2023.2179682>
- Ashika, M., & Monisha, V. (2019). Material management in construction projects using an inventory management system. *IRE Journals*, 3(5), 52-58.
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74–94. <https://doi.org/10.1007/BF02723327>
- Bajomo, M., Ogbeyemi, A., & Zhang, W. (2022). A systems dynamics approach to the management of material procurement for the Engineering, Procurement and Construction industry. *International journal of production economics*, 244, 108390. <https://doi.org/10.1016/j.ijpe.2021.108390>

- Bala, J. (2020). An Overview of Longitudinal Research Designs in Social Sciences. *Studies in Indian Politics*, 8(1), 105. <https://doi.org/10.1177/2321023020918068>
- Basheer, M. F., Siam, M. R. A., Awn, A. M., & Hassan, S. G. (2016). Exploring the role of TQM and supply chain practices for firm supply performance in the presence of information technology capabilities and supply chain technology adoption: A case of textile firms in Pakistan. *Uncertain Supply Chain Management*, 7(2), 275–288. <https://doi.org/10.5267/j.uscm.2018.9.001>
- Becker, J.-M., Cheah, J.-H., Gholamzade, R., Ringle, C. M., & Sarstedt, M. (2023). PLS-SEM's most wanted guidance. *International Journal of Contemporary Hospitality Management*, 35(1), 321–346. <https://doi.org/10.1108/IJCHM-04-2022-0474>
- Belo, I. F. de J. M., Amaral, A. M., Belo, T. F., & Amaral, A. M. (2020). The Mediation Effects of Purchasing Strategy and Supplier Integration on the Relations Between Purchasing Skills and Corporate Performance. *Timor Leste Journal of Business and Management*, 2(1), 1–13. <https://doi.org/10.51703/bm.v2i2.1>
- Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *Nursing Plus open*, 2 (2016), 8-14. <https://doi.org/10.1016/j.npls.2016.01.001>
- Bhagat, G., & Jha, K. N. (2023). Corruption risks in public construction. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 15(2), 04522062. <https://doi.org/10.1061/JLADAH.LADR-936>
- Bissah, Z. B., & Nkrumah, V. (2021). Project Risk Management Practices in the Construction Industry in Ghana: A Case Study of Two Construction Companies in Sekondi Takoradi Metropolis. *International Journal of Innovative Science and Research Technology*, 6(5), 759–768.
- Boateng, A., Ameyaw, C., & Mensah, S. (2022). Assessment of systematic risk management practices on building construction projects in Ghana. *International Journal of Construction Management*, 22(16), 3128-3136. <https://doi.org/10.1080/15623599.2020.1842962>

- Breitling, T. (2019). Inter-functional coordination of purchasing and logistics: impact on supply chain performance. *Supply Chain Forum*, 20(2), 71–88. <https://doi.org/10.1080/16258312.2019.1612226>
- Bryman, A. & Bell, E. (2011). *Business Research Methods* (3rd Ed). Oxford University Press Inc. New York, 765pp.
- Callistus, T., & Clinton, A. (2018). The role of monitoring and evaluation in construction project management. In *Intelligent Human Systems Integration: Proceedings of the 1st International Conference on Intelligent Human Systems Integration (IHSI 2018): Integrating People and Intelligent Systems*, January 7-9, 2018, Dubai, United Arab Emirates (pp. 571-582). Springer International Publishing. https://doi.org/10.1007/978-3-319-73888-8_89
- Chamuwange, S. K., & Ning, Y. (2022). Identifying the factors affecting the cost management of road construction projects in Tanzania. *Journal of Civil, Construction and Environmental Engineering*, 7(3), 35-39.
- Changalima, I. A., Ismail, I. J., & Mchopa, A. D. (2024). Effects of supplier selection and supplier monitoring on public procurement efficiency in Tanzania: a cost-reduction perspective. *Vilakshan-XIMB Journal of Management*, 21(1), 55-65. <https://doi.org/10.1108/XJM-04-2022-0077>
- Changalima, I. A. (2024). It's fine for them, but what about us? Exploring the role of supplier management practices on public buyer satisfaction. *Social Sciences and Humanities Open*, 9(January), 100849. <https://doi.org/10.1016/j.ssaho.2024.100849>
- Cherry, K. (2019). How does the Cross-sectional Research Method work? [<https://www.verywellmind.com>]. Site visited on 12/08/2022
- Chiu, T., & Jans, M. (2019). Process mining of event logs: A case study evaluating internal control effectiveness. *Accounting Horizons*, 33(3), 141-156. <https://doi.org/10.2308/acch-52458>
- Coase, R. H. (1937). Some notes on monopoly price. *The Review of Economic Studies*, 5(1), 17-31.
- Creswell, J. W. & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Los Angeles, United States of America: Sage Publications, Inc.

- Creswell, J. W (2014). Research Design: Qualitative and mixed-method approaches. Sage Publication Incorporated, USA, 114pp.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297–334. <https://doi.org/10.1007/BF02310555>
- Daboun, O., Md Yusof, A., & Khoso, A. R. (2023). Relationship management in construction projects: Systematic literature review. *Engineering Management Journal*, 35(2), 120-143. <https://doi.org/10.1080/10429247.2022.2041962>
- Dash, G., & Paul, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. *Technological Forecasting and Social Change*, 173(8), 121092. <https://doi.org/10.1016/j.techfor e.2021.121092>
- Dobos, I., & Vörösmarty, G. (2023). Revealing differences in supplier performance with DEA cross-efficiency. *International Journal of Procurement Management*, 18(1), 124-140. <https://doi.org/10.1504/IJPM.2023.132588>
- Dolnicar, S., Grün, B., & Leisch, F. (2016). Increasing sample size compensates for data problems in segmentation studies. *Journal of Business Research*, 69(2), 992-999. <https://doi.org/10.1016/j.jbusres.2015.09.004>
- Dong, L., Geng, X., Xiao, G., & Yang, N. (2022). Procurement strategies with unreliable suppliers under correlated random yields. *Manufacturing & service operations management*, 24(1), 179-195. <https://doi.org/10.1287/msom.2020.0918>
- Ebekozien, A., Aigbavboa, C., Samsurijan, M. S., Amadi, G. C., & Duru, O. D. S. (2023). Moderating effect of Nigerian government policy support on the relationship between project management framework and emerging construction contractors' sustainability. *International Journal of Building Pathology and Adaptation*, 41(6), 269-289. <https://doi.org/10.1108/IJ BPA-01-2023-0007>
- Engelbert, A., Kaltenborn, M., & Reit-Born, N. A. (2016). *Effective corruption control: Supplier remedies in public procurement in Kenya, Uganda and Tanzania-A comparative analysis of mechanisms and their implementation*. Published by Logos Verlag, Berlin. 37pp
- Fan, Y., Chen, J., Shirkey, G., John, R., Wu, S. R., Park, H., & Shao, C. (2016). Applications of structural equation modeling (SEM) in ecological studies: an updated review. *Ecological Processes*, 5(1), 1–12.

<https://doi.org/10.1186/s13717-016-0063-3>

- Federico, A., Ferrada, X., Howard, R., & Rubio, L. (2014). Risk management in construction projects: a knowledge-based approach. *Procedia - Social and Behavioural Sciences*, 119 (2014), 653–662. doi.org/10.1016/j.sbspro.2014.03.073
- Ferrer, P. S. S., Galvão, G. D. A., & de Carvalho, M. M. (2020). Tensions between compliance, internal controls and ethics in the domain of project governance. *International Journal of Managing Projects in Business*, 13(4), 845-865. <https://doi.org/10.1108/IJMPB-07-2019-0171>
- FGN. (2007). Federal Government of Nigeria Official Gazette: Public Procurement Act 2007, Arrangement of Sections. Lagos, Nigeria. FGN printers: 94 (65).
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.2307/3151312>
- Frontoni, E., Marinelli, F., Rosetti, R., & Zingaretti, P. (2020). Optimal stock control and procurement by reusing obsolescence in manufacturing. *Computers & Industrial Engineering*, 148, 106697. <https://doi.org/10.1016/j.cie.2020.106697>
- Gadisa, B., & Zhou, H. (2020). Exploring influential factors leading to the poor performance of public construction project in Ethiopia using structural equation modelling. *Engineering, Construction and Architectural Management*, 28(6), 1683-1712. <https://doi.org/10.1108/ECAM-12-2019-0689>
- Gunduz, M., & Elsherbeny, H. A. (2020). Construction contract administration performance assessment tool by using a fuzzy structural equation model. *Sustainability*, 12(2), 523. <https://doi.org/10.3390/su12020523>
- Hair Jr, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, 109, 101-110. <https://doi.org/10.1016/j.jbusres.2019.11.069>
- Hair, J. F, Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed, a silver bullet. *Journal of Marketing Theory and Practice*, 19(2), 139–151. <https://doi.org/10.2753/MTP1069-6679190202>

- Hair, J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. *International Journal of Multivariate Data Analysis*, 1(2), 107–123. <https://doi.org/10.1504/ijmda.2017.10008574>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, 31(1), 2-24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Hair, Joseph F, Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis* (7th ed.). New York: Pearson.
- Hamid, M. R., Sami, W., & Mohmad Sidek, M. H. (2017). Discriminant Validity Assessment: Use of Fornell & Larcker criterion versus HTMT Criterion. *Journal of Physics: Conference Series*, 890(1), 1–<https://doi.org/10.1088/1742-6596/890/1/012163>
- Hoque, M. I., & Hasan, M. (2022). Factors affecting the construction quality in Bangladesh. *International Journal of Building Pathology and Adaptation*, (ahead-of-print). <https://doi.org/10.1108/IJBPA-03-2022-0037>
- Humphreys, P. K., Li, W. L., & Chan, L. Y. (2004). The impact of supplier development on buyer–supplier performance. *Omega*, 32(2), 131-143. <https://doi.org/10.1016/j.omega.2003.09.016>
- Hunziker, S., & Blankenagel, M. (2021). Research design in business and management. Wiesbaden: SpringerGabler, 1.
- Ingle, P. V., Mahesh, G., & MD, D. (2021). Identifying the performance areas affecting the project performance for Indian construction projects. *Journal of Engineering, Design and Technology*, 19(1), 1-20. <https://doi.org/10.1108/JEDT-01-2020-0027>
- Iyer, K. C., Kumar, R., & Singh, S. P. (2020). Understanding the role of contractor capability in risk management: A comparative case study of two similar projects. *Construction Management and Economics*, 38(3), 223–238. <https://doi.org/10.1080/01446193.2019.1590614>
- Jensen, M.C. & Meckling, W.H. (1976). Theory of the firm: managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360

- Kabara, A. S., Abdullah, D. F., Khatib, S. F., Bazhair, A. H., & Al Amosh, H. (2023). Moderating Role of Governance Regulatory Compliance on Board Diversity and Voluntary Disclosure of Non-Financial Firms in a Developing Country. *Sustainability*, 15(5), 4527. <https://doi.org/10.3390/su15054527>
- Kavishe, N. (2018). Risks associated with public private partnership (PPP) housing projects delivery in Tanzania. *International Journal of Construction Engineering and Management*, 7(2), 81-87.
- Khalef, R., El-adaway, I. H., Assaad, R., & Kieta, N. (2021). Contract risk management: A comparative study of risk allocation in exculpatory clauses and their legal treatment. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 13(1), 1-19
- Khan, M.W., Ali, Y., De Felice, F., Petrillo, A. (2019). Occupational health and safety in construction industry in Pakistan using modified-SIRA method. *Saf Sci*. 118 (2019):109–118
- Kikwasi, G. J., & Sospeter, N. G. (2022, June). Challenges facing supply chain management on time delivery of construction projects in Tanzania. In *Construction in 5D: Deconstruction, Digitalization, Disruption, Disaster, Development: Proceedings of the 15th Built Environment Conference* (pp. 257-267). Cham: Springer International Publishing.
- Kim, S. Y., & Nguyen, V. T. (2018). A Structural model for the impact of supply chain relationship traits on project performance in construction. *Production Planning & Control*, 29(2), 170-183. <https://doi.org/10.1080/09537287.2017.1398846>
- Kimario, H.F. & Mwagike, L.R. (2021).The influence of communication in the buyer-supplier integration on procurement performance of large manufacturing firms in Tanzania. *International Journal of Supply Chain Management*, 10(5), 32.
- Kissi, E., Agyekum, K., Baiden, B. K., Tannor, R. A., Asamoah, G. E., & Andam, E. T. (2019). Impact of project monitoring and evaluation practices on construction project success criteria in Ghana. *Built Environment Project and Asset Management*, 9(3), 364-382. <https://doi.org/10.1108/BEPAM-11-2018-0135>

- Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of E-Collaboration*, 11(4), 1–10. <https://doi.org/10.4018/ijec.2015100101>
- Koutoupis, A. G., & Malisiovas, T. (2023). The effects of the internal control system on the risk, profitability, and compliance of the US banking sector: A quantitative approach. *International Journal of Finance & Economics*, 28(2), 1638-1652. <https://doi.org/10.1002/ijfe.2498>
- Kusmaryono, I., Wijayanti, D., & Maharani, H. R. (2022). Number of response options, reliability, validity, and potential bias in the use of the Likert scale in education and social science research: A literature review. *International Journal of Educational Methodology*, 8(4), 625-637.
- Kuswanto, H., Pratama, W. B. H., & Ahmad, I. S. (2020). Survey data on students' online shopping behaviour: A focus on selected university students in Indonesia. *Data in brief*, 29, 105073. <https://doi.org/10.1016/j.dib.2019.105073>
- Leavy, P. (2017). *Research design: quantitative, qualitative, mixed Methods, arts-based, and community-based participatory research approaches*. The Guilford Press. doi.org/10.1177/1558689817751775.
- Magigi, W. (2015). *Research Proposal Development and Report Writing*, 1st ed., Safi, Moshi, Tanzania.
- Mahamid, I. (2016). Factors contributing to poor performance in construction projects: studies of Saudi Arabia. *Australian Journal of Multi-Disciplinary Engineering*, 12(1), 27-38. <https://doi.org/10.1080/14488388.2016.1243034>
- Mahmoudi, A. & Javed, S. A. (2022). Performance evaluation of construction subcontractors using the Ordinal Priority Approach. *Evaluation and Programme Planning*, 91: 102022. <https://doi.org/10.1016/j.evalprogplan.2021.102022>
- Maqsoom, A., Babar, Z., Shaheen, I., Abid, M., Kakar, M. R., Mandokhail, S. J., & Nawaz, A. (2021). Influence of construction risks on cost escalation of highway-related projects: exploring the moderating role of social sustainability requirements. *Iranian Journal of Science and Technology, Transactions of Civil Engineering*, 45(3), 2003-2015.

- Marcoulides, G. A., & Ing, M. (2012). Automated Structural Equation Strategies. In R. H. Hoyle (Ed.), *Handbook of Structural Equation Modeling* (pp. 690–702). New York, United States of America: The Guilford Press
- Matto, M.C. (2021). Identifying the latent shortcomings of force account projects in Tanzania: the case of construction projects in the education sector. *Engineering, Construction and Architectural Management*. doi.org/10.1108/ECAM-06-2021-0525
- Matto, M.C., Ame, A. M., & Nsimbila, P. M. (2021). Influence of contract management on value-for-money procurement in Tanzania. *International Journal of Procurement Management*, 14(6), 724-741. doi.org/10.1504/ijpm.2021.117889
- Mchopa, A. (2020). Applicability of force account approach in procurement of works in Tanzania. *Journal of International Trade, Logistics and Law*, 6 (2), 137–143.
- Mehrjerdi, Y. Z. & Shafiee, M. (2021). A resilient and sustainable closed-loop supply chain that employs a variety of sourcing and information-sharing mechanisms. *Journal of Cleaner Production*, 289: 125141. https://doi.org/10.1016/j.jclepro.2020.125141
- Mellado, F., Lou, E. C., & Becerra, C. L. C. (2020). Synthesising performance in the construction industry: An analysis of performance indicators to promote project improvement. *Engineering, Construction and Architectural Management*, 27(2), 579-608. https://doi.org/10.1108/ECAM-01-2022-0066
- Meng, X. (2012). The effect of relationship management on project performance in construction. *International Journal of Project Management*, 30(2), 188–198. doi.org/10.1016/j.ijproman.2011.04.002
- Mikapagaro, N. A., Tesha, D., Maro, G. C., & Edson, B.K. (2018). The Implementation of Risk Management Strategies in Joint Venture Building Projects in Dar-Es-Salaam, Tanzania. *International Journal of Engineering Trends and Technology*, 66(3), 133–153. doi.org/10.14445/22315381/ijett-v66p223
- Mrope, P. N., Namusonge, G., & Amuhaya Iravo, M. (2017). DOES Compliance with rules ensure better performance? An assessment of the effect of compliance with procurement legal and regulatory framework on performance of public procurement in Tanzania. *European Journal of Logistics, Purchasing and Supply Chain Management*, 5(1), 40–50.

- Msemwa L. S., Ruoja C., & Kazungu I. (2017). The impact of communication on buyer-supplier relationships and the operation of maize markets in Hai District, Tanzania
- Mubin, S., & Mubin, G. (2016). Risk analysis for construction and operation of gas pipeline projects in Pakistan. *Pakistan Journal of Engineering and Applied Sciences*, 10(3), 23-32.
- Muhwezi, M., Mutebi, H., Mayanja, S. S., Tukamuhabwa, B., Namagembe, S., & Kalema, R. (2023). Information integration, procurement internal controls, material and purchasing procedure standardisation and procurement performance in humanitarian organisations. *Journal of Humanitarian Logistics and Supply Chain Management*, 13(4), 410-432. <https://doi.org/10.1108/JHLSCM-11-2021-0115>
- Mulisa, F. (2022). When Does a Researcher Choose a Quantitative, Qualitative, or Mixed Research Approach? *Institute of Education and Behavioural Sciences*, 53(1), 113–131. <https://doi.org/10.1007/s10780-021-09447-z>
- Murphy, M., & Sashi, C. M. (2018). Communication, interactivity, and satisfaction in business-to-business relationships. *Industrial Marketing Management*, 68, 1–12. <https://doi.org/10.1016/j.indmarman.2017.08.020>
- Mwaiseje, S. S., Mchopa, A. D., Panga, F. P., & Nkuhi, M. S. (2024). Exploring the nexus between procurement contract administration and quality attainment of force account construction projects in Tanzania. *Cogent Engineering*, 11(1), 2432516. <https://doi.org/10.1080/23311916.2024.2432516>
- Mwaiseje, S.S., Mchopa, A.D. & Panga, F.P. (2024). "Supply risk management and timely completion of force account construction projects among local government authorities in Dodoma, Tanzania. *International Journal of Building Pathology and Adaptation*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/IJBPA-12-2023-0192>
- Mwelu, N., Davis, P. R., & Watundu, S. (2020). Compliance mediating role within the road construction regulatory framework. *Journal of Public Procurement*, 20(3), 209–233. doi.org/10.1108/JOPP-12-2018-0052
- Mwenda, M. M., & Ochiri, D. G. (2019). Influence of Contract Management Practices on Performance of State Corporations in Kenya. *International Journal of Supply Chain and Logistics*, 3(1), 50-75. doi.org/10.47941/ijscsl.v3i1.283

- Mwishwa, Y. H. (2022). Development of extranet project system to guide implementation of force account on government construction projects in Tanzania. *MUST Journal of Research and Development*, 2(1), 14-14.
- Myeza, L., Nkhi, N., & Maroun, W. (2021). Risk management factors contributing to transgressions in the procurement practices in South African SOEs. *Journal of Accounting in Emerging Economies*, 11(5), 735–751. doi.org/10.1108/JAEE-03-2021-0073
- NAOT. (2022). The Annual General Report of the Controller and Auditor General on Audit of the Local Government Authorities for the Financial Year 2021/2022, NAOT, Dodoma.
- NAOT. (2021). Performance Audit Report on Monitoring and Supervision of Projects Implemented Through Force Account Method in Education Sector, National Audit Office of Tanzania (NAOT), Dodoma.
- NAOT. (2020). The Annual General Report of the Controller and Auditor General on Audit of the Local Government Authorities for the Financial Year 2019/2020, NAOT, Dodoma.
- NAOT. (2019). The Annual General Report of the Controller and Auditor General on Audit of the Local Government Authorities for the Financial Year 2018/2019, NAOT, Dodoma.
- Ndumia, S. N. (2015). Influence of regulatory framework on performance of building construction projects in Nairobi County, Kenya. Doctoral dissertation, University of Nairobi: Kenya.
- Ngari, G. M. (2017). The effect of internal controls on the financial performance of microfinance institutions in Kenya. *International Academic Journal of Economics and Finance*, 2(3), 112-140.
- Njoka, B. K., & Gikonyo, N. (2023). Influence of approval processes on performance of capital projects in energy-based state corporations in Kenya. *International Academic Journal of Human Resource and Business Administration*, 4(3), 378-387. https://iajournals.org/articles/iajhrb_a_v4_i3_378_387.pdf
- Noor, S., Tajik, O., & Golzar, J. (2022). Simple random sampling. *International Journal of Education & Language Studies*, 1(2), 78-82. <https://doi.org/10.22034/ijels.2022.162982>

- Obondi, K. (2022). The utilization of project risk monitoring and control practices and their relationship with project success in construction projects. *Journal of Project Management*, 7(1), 35-52
- Pallant, J. (2020). SPSS Survival Manual: A step-by-step guide to data analysis using IBM SPSS (7th ed.). New York, United States: Routledge.
- Park, Y. S., Konge, L., & Artino, A. R. (2020). The Positivism Paradigm of Research. *Academic medicine*, 95(5), 690-694. <https://doi.org/10.1097/ACM.0000000000003093>
- Patil, A. A., & Kumthekar, M. B. (2016). Supplier Evaluation and selection methods in the construction industry. *International Research Journal of Engineering and Technology (IRJET)*, 3(6), 515-521.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. & Podsakoff, N.P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88 (5), 879-903.
- PPA. (2023). Public Procurement Act of 2023. Ministry of Finance and Planning, Government Printers.
- PPR. (2024). Public Procurement Regulations of 2024. Ministry of Finance and Planning, Government Printers
- PPRA (2018). *Annual Performance Evaluation Report for the Financial Year 2017/18*. Public Procurement Regulatory Authority, Tanzania
- PPRA (2019). *Annual Performance Evaluation Report for the Financial Year 2018/19*. Public Procurement Regulatory Authority, Tanzania.
- PPRA (2020). *Annual Performance Evaluation Report for the Financial Year 2019/20*. Public Procurement Regulatory Authority, Tanzania.
- PPRA (2021). *Annual Performance Evaluation Report for the Financial Year 2020/21*. Public Procurement Regulatory Authority, Tanzania.
- PPRA (2022). *Annual Performance Evaluation Report for the Financial Year 2021/22*. Public Procurement Regulatory Authority, Tanzania
- Qureshi, M. A., Sohu, S., & Keerio, M. A. (2020). The impacts of operational risks in the supply chain of construction projects in Malaysia. *Tehnički vjesnik*, 27(6), 1887-1893.
- Rashid, I.M. (2019). Contract management and performance characteristics: An empirical and managerial implication for Indonesia. *Management Science Letters*, 9(8), 1289-1298.

- Rattini, V. (2023). Worker autonomy and performance: Evidence from a real-effort experiment. *Journal of Economics & Management Strategy*, 32(2), 300-327. <https://doi.org/10.1111/jems.12511>
- Rehman, M., & Ishak, M. (2023). Moderation role of government acts, laws and policies between economic factors and risk management: A case study of Saudi Arabia contractors. *Journal of Project Management*, 8(4), 213-226.
- Ross, S. A. (1973). The economic theory of agency: The principal's problem. *The American Economic Review*, 63(2), 134-139.
- Safayet, M. A., Islam, M. H., & Ahmed, S. (2018). A case study on risk management in existing construction project in Bangladesh. *Journal of Logistics, Informatics and Service Science*, 5(1), 1-16.
- Said, H., Badru, B. B., & Shahid, M. (2011). Confirmatory factor analysis (CFA) for testing validity and reliability instrument in the study of education. *Australian Journal of Basic and Applied Sciences*, 5(12), 1098–1103
- Salia, P. J. (2016). Effects of microcredit on the performance of women-owned microenterprises and household welfare in Arusha, Dar es Salaam, and Mwanza cities. Doctoral Dissertation. Sokoine University of Agriculture Morogoro: Tanzania
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2020). Handbook of Market Research. In *Handbook of Market Research*. <https://doi.org/10.1007/978-3-319-05542-8>
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2020). Handbook of Market Research. In *Handbook of Market Research*. <https://doi.org/10.1007/978-3-319-05542-8>
- Saunders, M., Lewis, P., & Thornhill, A. (2019). Research methods for business students (8th ed.). Harlow, United Kingdom: Pearson Education Limited.
- Sayyed, Y., Hatamleh, M. T., & Alaya, A. (2021). Investigating the influence of procurement management in construction projects on the innovation level and the overall project performance in developing countries. *International Journal of Construction Management*, 10 (03), 1-30.
- Sharma, M. and Joshi, S. (2023). Digital supplier selection reinforces supply chain quality management systems, improving firm performance. *The TQM Journal*, 35(1), 102-130. <https://doi.org/10.1108/TQM-07-2020-0160>
- Szymański, P. (2017). Risk management in construction, Poland projects. *Paweł in Risk*, doi.org/10.1016/j.proeng.2017.11.036

- Tabish, S. Z. S., & Jha, K. N. (2023). Dispute avoidance in public construction projects. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 15(1), 04522033. [https://doi.org/10.1061/\(ASCE\)LA.1943-4170.0000577](https://doi.org/10.1061/(ASCE)LA.1943-4170.0000577)
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55. <https://doi.org/10.5116/ijme.4dfb.8dfd>
- Tinali, G. Z. P. (2022). Technology Usage and Public Procurement Performance in Tanzania. *University of Dar es Salaam Library Journal*, 17(1), 18–37. <https://doi.org/10.4314/udslj.v17i1.3>
- Tumuhairwe, R., & Ahimbisibwe, A. (2016). Procurement records compliance, effective risk management and records management performance: evidence from Ugandan public procuring and disposing entities. *Records Management Journal*, 26(1), 83-101. <https://doi.org/10.1108/RMJ-06-2015-0024>
- URT. (2021). Ripoti Makadirio ya Mapato na Matumizi kwa mwaka fedha 2022/2023. Ofisi ya Rais - Tawala za Mikoa na Serikali za Mitaa, Government Printers
- URT. (2022). Ripoti Makadirio ya Mapato na Matumizi kwa mwaka fedha 2021/2022. Ofisi ya Rais - Tawala za Mikoa na Serikali za Mitaa, Government Printers
- Vo, K. D., Nguyen, P. T., & Nguyen, Q. L. H. T. T. (2020). Disputes in managing projects: A case study of construction industry in Vietnam. *The Journal of Asian Finance, Economics and Business*, 7(8), 635-644. <https://doi.org/10.13106/jafeb.2020.vol7.no8.635>
- Wang, J., Zhang, S., Fenn, P., Luo, X., Liu, Y., & Zhao, L. (2023). Adopting BIM to facilitate dispute management in the construction industry: A conceptual framework development. *Journal of Construction Engineering and Management*, 149(1), 03122010. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0002419](https://doi.org/10.1061/(ASCE)CO.1943-7862.0002419)
- Williamson, O. E. (1979). Transaction-cost economics: the governance of contractual relations. *The journal of Law and Economics*, 22(2), 233-261.
- Williamson, O. E. (1993). Transaction cost economics and organization theory. *Industrial and corporate change*, 2(2), 107-156.

- Yaska, M., & Nuhu, B. M. (2024). Assessment of Measures of Central Tendency and Dispersion Using Likert-Type Scale. *African Journal of Advances in Science and Technology Research*, 16(1), 33-45. <https://doi.org/10.62154/ajastr.2024.016.01037>
- Zarrinabadi, N., Rezazadeh, M., & Shirinbakhsh, S. (2022). “I Can Learn How to Communicate Appropriately in this Language.” Examining the Links between Language Mindsets and Understanding L2 Pragmatic Behaviours. *Journal of Intercultural Communication Research*, 51(3), 309–325
- Zeng, N., Liu, Y., Gong, P., Hertogh, M., & König, M. (2021). Do right PLS and do PLS right: A critical review of the application of PLS-SEM in construction management research. *Frontiers of Engineering Management*, 8, 356-369. <https://doi.org/10.1007/s42524-021-0153-5>
- Zhao, li, Huo, B., Sun, L., & Zhao, X. (2013). The impact of supply chain risk on supply chain integration and company performance: a global investigation. *Supply Chain Management: An International Journal*, 18(2), 115–131. doi.org/10.1108/13598541311318773

CHAPTER TWO
PUBLISHED PAPER ONE
SUPPLY RISK MANAGEMENT AND TIMELY COMPLETION OF FORCE
ACCOUNT CONSTRUCTION PROJECTS AMONG LOCAL GOVERNMENT
AUTHORITIES IN DODOMA, TANZANIA

2.1 An overview

This chapter presents a published paper that addresses the study's first objective. The paper, published in the International Journal of Building Pathology and Adaptation by Emerald Publishing Limited, is accessible via the following DOI: <https://doi.org/10.1108/IJBPA-12-2023-0192>. The study explores the relationship between supply risk management and the timely completion of Force Account construction projects among Local Government Authorities (LGAs) in Dodoma, Tanzania. The attached paper provides a detailed and comprehensive presentation of the research findings, offering valuable insights into how effective supply risk management practices can enhance project delivery timelines under the Force Account approach.

Supply risk management and timely completion of force account construction projects among local government authorities in Dodoma, Tanzania

International
Journal of
Building
Pathology and
Adaptation

Received 18 December 2023
 Revised 14 May 2024
 5 June 2024
 Accepted 4 July 2024

Shadrack Samwel Mwaiseje

*Department of Procurement and Supply Management,
 College of Business Education – Dodoma Campus, Dodoma, Tanzania, and
 Alban Dismas Mchopa and Faustine Peter Panga
 Department of Procurement and Supply Chain Management,
 Moshi Co-operative University, Moshi, Tanzania*

Abstract

Purpose – The study's purpose is to contribute to the supply risk management literature by examining its implications in Tanzania, specifically in the timely completion of force account construction projects in Local Government Authorities (LGAs).

Design/methodology/approach – A cross-sectional survey design was employed to gather data from 318 respondents in primary schools within the Dodoma region. A covariance-based structural equation modelling (CB-SEM) structural equation modelling was employed to examine the relationship of the variables.

Findings – The study's findings underscore the crucial role of supply risk management, including multi-sourcing, effective supplier selection, post-qualification of suppliers, and effective communication with suppliers in the timely completion of FA construction projects. Notably, effective supplier selection emerges as the most influential factor, significantly contributing to the timely completion of these projects.

Research limitations/implications – The study focused on LGAs in Tanzania. It is important to exercise caution when making broad generalizations about the findings. Also, the study was based on a cross sectional survey design; future research could consider a longitudinal design approach.

Practical implications – This study offers practical insights for procurement practitioners and members of the Force Account committee in the public sector, offering guidance on how to improve the management of supply risks and, consequently, enhance the timely completion of construction projects.

Originality/value – This study stands out in the literature by examining the implications of supply risk management on the timely completion of force account construction projects in Tanzania. It significantly enriches the existing knowledge of supply risk management, particularly in the context of effective supplier selection in public procurement. These insights are of great value to researchers, practitioners, and policymakers in the field.

Keywords Construction projects, Force account, Procurement, Supply risk management, Timely completion of projects

Paper type Research paper

1. Introduction

Globally, the successful completion of a project is significantly influenced by the implementation of a suitable procurement management plan (Deshpande *et al.*, 2020). To achieve a project delivery triangle, including cost, time, and quality, it is important to select a capable and suitable supplier who can deliver materials without any disruptions (Cengiz *et al.*, 2017). Also, it is critical to choose an appropriate procurement strategy, given that every project possesses distinct characteristics and demands (Ghosh and Sar, 2022). Supplier management, as among procurement strategies, must be considered in enhancing



International Journal of Building
 Pathology and Adaptation
 © Emerald Publishing Limited
 2398-4708
 DOI 10.1108/IJBPA-12-2023-0192

IJBPA

the performance of construction projects because the organisation will be able to select the supplier who can meet the objectives of the project. According to [Ahsan and Kumar \(2018\)](#), a substantial portion of the overall project expenses is allocated to procurement in the majority of international projects. Consequently, there has been a growing scholarly focus on the effectiveness of performance-based contracts and the efficiency of supplier management ([Ambaw and Telgen, 2017](#); [Kumar et al., 2015](#)). As a result, this study intends to assess how supply risk management can be used in influencing the timely completion of the force account (FA) construction project.

In the context of Tanzania's public procurement, the acquisition of goods, services, and works is critical to ensuring the efficient operation of procuring entities and the delivery of public services ([Changalima et al., 2022](#)). Procurement of works is among the critical and important aspects of public organisations ([Mchopa, 2015](#)). Around 60% of the Tanzania budget belongs to construction projects (procurement of works), which include but are not limited to the construction of buildings, infrastructure development, repair and maintenance of existing projects, and construction of water projects ([The United Republic of Tanzania \[URT\], 2022](#)). These projects are crucial for the growth of sustainable national development. The FA approach was emphasised by the government to be employed in current construction projects all over the country ([Mchopa, 2015](#); [Mwishwa, 2022](#)). [URT \(2023\)](#) defines FA as the use of public or semi-public organisations or departments to construct or renovate public infrastructures while utilizing the existing workforce and only recruiting additional labour when necessary. In 2016, the Tanzanian government allocated funds to procuring entities for various construction projects, with the directives to use the FA approach for the execution of construction projects ([Matto, 2023](#)). However, these projects faced the challenge of suppliers delivering materials on time to the site, cost overruns due to poor recording of materials costs, and quality of materials used in construction projects. It is the basis of these problems that motivate the researchers to conduct the study on how supply risk management can influence the timely completion of FA projects.

The relationship between potential suppliers and buying organizations is crucial for achieving the timely completion of projects and the overall performance of construction projects. According to studies conducted by [Krop and Iravo \(2016\)](#), [Changalima et al. \(2022\)](#), and [Kimario and Kira \(2023\)](#), buying organisations regard suppliers as valuable assets. As a result, supply risk management within buying organisations may become critical to ensuring that building projects are completed on the expected schedule. From a global perspective, supply disruptions have become more common in the construction industry. [El-Baz and Ruel \(2021\)](#) opined that the issues of political instability, natural disasters, economic crises, and pandemic diseases such as COVID-19 harm the availability and supply of building materials for construction projects. Hence causes cost overruns, delays of projects, and quality problems. In Africa, supply disruptions are caused by insufficient infrastructure, limited industrial capabilities, and logistical constraints, resulting in delays and cost increases. Specifically, in Tanzania, risk management in building projects appears to be weak, insufficient, and inconsistent ([Msomba et al., 2018](#)). This suggests that the country is limited in prioritising adequate risk management. As a result, one area that requires special attention is supply risk management in the context of construction projects.

Construction projects performed using the FA approach in LGAs are unattractive because of delays in project completion, increased cost and inadequate testing of materials, which result in quality problems ([Matto, 2023](#); [Mchopa, 2015](#)). Furthermore, the audit conducted by the Public Procurement Regulatory Authority (PPRA) and Controller Auditor General (CAG) indicates the unfavourable performance of FA construction projects in LGAs due to the presence of delays and cost overruns ([PPRA, 2022, 2021](#); [NAOT, 2020, 2019](#)). The government, through PPRA, has issued FA guidelines to ensure the effectiveness of the

construction projects. The guideline insisted on the establishment of FA committees such as the procurement committee, construction committee, and inspection and receiving committee. These committees work independently to ensure the value of the FA project is achieved. Despite these efforts, there is still unfavourable performance in construction projects under the FA approach. As a result, this study intends to examine the influence of supply risk management on the timely completion of FA construction projects.

Similarly, this study is motivated by limited literature linking supply risk management and timely completion of construction projects in public procurement in Tanzania. Previous studies focus on business performance in relation to supply risk management (Munir *et al.*, 2020) and risk in supply chain management as a mechanism of disruption management (El-Baz and Ruel, 2021). Other studies focus on the influence of supply risk management on the performance of the organisation (Hoffmann *et al.*, 2013; Manhart *et al.*, 2020), but studies that examine the influence of supply risk management on the timely completion of FA construction projects in the angle of public procurement remain limited. As a result, this study intends to contribute to the body of literature by assessing the role of supply risk management in the timely completion of construction projects in Tanzania's public procurement.

2. Literature review and hypothesis formulation

2.1 Transactional cost theory

The Transaction Cost Theory (TCT) highlights that companies can increase their economic efficiency by reducing their transaction costs (Williamson, 1993). This theory offers a framework for examining how contractual interactions within a supply chain are governed. The idea clarifies the different elements that support inter-organizational cooperation in supply chains. The methods used in supplier management align with the interactions between buyers and suppliers and incorporate strategies for optimising the targeted gains. Transaction costs are obvious, and some may be hidden in buyer-supplier relationships depending on the type of supplier growth techniques (direct or indirect). Published research has provided some evidence linking supplier management techniques to reduced prices (Changalima *et al.*, 2023a; Lee, 2022).

TCT is applicable in construction projects because when estimating the project cost in building projects, uncertainty is a constant (Li *et al.*, 2015). There will be uncertainty about how the work will be done, about the working circumstances during the project's execution, and so forth. These unknowns pose hazards to the project; they could result in unforeseen expenses and jeopardise the project's overall budget. These extra expenses are sometimes referred to as transaction costs (Abdel-Galil *et al.*, 2022). Construction projects typically contain uncertainty because of the several parties involved in project contracting, project design, and project execution (Ikuabe *et al.*, 2020). Projects are fraught with a variety of uncertainties. These include estimates-related uncertainties (such as inadequate estimation, specifications, knowledge, etc.), contracting party uncertainties (such as work quality and dependability, performance, and motivation), and project cycle uncertainties (such as incomplete design and implementation), all of which have an impact on the project's cost and performance.

Also, in TCT, the relationship between supply risk management and transaction cost is established. For example, Wever *et al.* (2012) conducted a study on supply chain risk by using TCT in a dynamic and uncertain corporate setting. When there is significant uncertainty, transaction costs rise (Rindfleisch, 2020), and performance suffers (Munir *et al.*, 2020). Rindfleisch (2020) discovered that greater uncertainty resulted in increased transaction costs. These imply that the poor performance of the supplier in delivering materials for the projects is likely due to the high amount of uncertainty. If the uncertainty is less, supplier performance

will be high, hence supply risk will be avoided. As a result, it is better to control supply risk by reducing the transaction cost of finding a suitable and capable supplier, maintaining efficient supplier records, supervision cost, and following up on order costs. If these are ignored, it will increase the cost of the overall project.

2.2 Multi-sourcing

Multi-sourcing is a very important operation in procurement management as it allows the procuring entity to have multiple sources of supply instead of depending on a single source. This situation enables organisations to reduce the possibility of supply risks, ensuring the cost-effectiveness of delivering processes (Mehrerji and Shafiee, 2021). In this study, multi-sourcing is defined as the situation whereby the organisation uses more than one supplier in a construction project instead of depending on one source of supply. Multi-sourcing increases the chance of the organisation to have a reliable and continuity supply of materials from different suppliers. This is advantageous to construction projects because there will be assurance of supply of materials, thereby avoiding stoppage of the project for waiting materials. The literature appreciates the role of multi-sourcing in enhancing procurement performance. For instance, the study conducted by Khemiri *et al.* (2017) indicated that dealing with multiple suppliers as multi-sourcing strategies leads to supply risk reduction, quality of product, cost reduction and enhanced overall performance of procurement in the organisation. Similarly, Dong *et al.* (2022) emphasised that clear multi-sourcing helps to reduce the probability of supply chain disruption and enhance the continuity of the project. The reviewed studies recommend that efficiency in selecting multiple sources of supply in projects enhances the chance of improving the reliability of supply, risk management, and the success of the whole project. Hence, the present study focused on the angle of timely completion in FA construction projects through supply risk management. Based on the literature reviewed, the following hypothesis is proposed.

H1. Multi-sourcing influences the timely completion of FA construction projects.

2.3 Effective supplier selection

Organisations perceive suppliers as important assets in procurement management, as the success of procurement in an organisation depends on the selection of good suppliers (Krop and Iravo, 2016). Suppliers are regarded as assets because they facilitate the organisation's existence and continuity; without supplies, the organisation will not survive (Phochanikorn and Tan, 2019). Through effective supplier selection, the organisation can be sure of quality products, cost efficiency, and continuity of supply. Studies conducted by Nair *et al.* (2015), Chagalima *et al.* (2023b) and Sharma and Joshi (2023) recognise the role of supplier selection and procurement performance as well as organisational performance. The studies insist that if the organisation puts much effort into selecting a good supplier, there is the possibility of achieving the intended objectives like assurance of quality products and timely delivery. The current study stands in the angle that effective supplier selection influences the timely completion of FA construction projects. Purchasing organisations can be able to improve their operational efficiency, supply chain operation and overall business performance by employing much effort in selecting a good supplier (Van der Westhuizen and Ntshingila, 2020). Therefore, it is very important to assess the achievement of timely completion of construction projects through effective supplier selection. According to the importance of supplier selection in procurement operations, the study proposes the following hypothesis.

H2. Effective supplier selection influences the timely completion of FA construction projects.

2.4 Post-qualification

For the procurement process to be completed efficiently, the post-qualification process is important. Since it helps to qualify suppliers based on their personnel skills, resources they own, and capability to meet the needs of the projects (Vörösmarty and Dobos, 2020). Through post-qualification, it is easy for organisations to avoid the risks of selecting incapable suppliers because the issues of financial capability, reliability, and technical competence will be checked (Mahmoudi and Javed, 2022). Studies conducted by Dobos and Vörösmarty (2023), Patil and Kumthekar (2016) and Jafari (2013) appreciate the role of post qualification of supplier/contractor and performance of procurement in the organisation. Further, the studies elaborate that high performance of the project is achieved if the post-qualification process is conducted efficiently through physical visits and verifying the accuracy of submitted documents. In the present study, post-qualification of suppliers is related to the timely completion of FA construction projects. Timely completion of projects in public procurement is very important because the organisation will be able to achieve value for money by avoiding delays and cost overruns (Sinesilassie *et al.*, 2017). Furthermore, timely completion helps the government quickly provide services to the public and meet their expectations promptly (Famiyeh *et al.*, 2017). As a result, it is relevant to assess the role of post-qualification processes in the timely completion of FA construction projects. We suggest the following hypothesis.

H3. Post-qualification influences the timely completion of FA construction projects.

2.5 Effective communication with suppliers

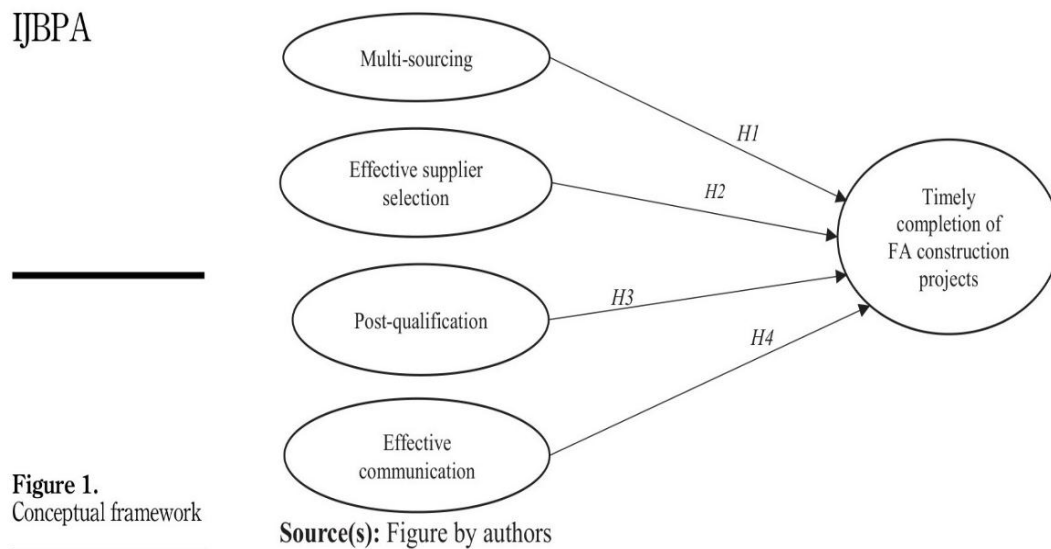
Communication facilitates feedback and understanding of the subject matter. Therefore, if there is effective communication with the supplier in the buying organisation, it helps to enhance a common understanding of the project requirements, such as quality achievement, quantities, and time of delivery (Murphy and Sashi, 2018). This organisation can achieve the intended objective because the misreading of information can be minimised; hence, the procurement process could be fast and accurate. Also, transparency and trust in a cooperative relationship can be achieved if there is strong communication (Msemwa *et al.*, 2017). It was believed that the maximum quality of service and reliability of the supplier is more achieved if the supplier is well informed and respected. The current study believes that effective communication with suppliers is related to the timely completion of FA construction projects. A body of studies shows that successful communication with suppliers is critical for a variety of reasons (Kimario and Mwagike, 2021; Loice, 2015). These include guaranteeing an efficient delivery timetable, preserving product quality, and improving overall procurement performance (Kimario and Mwagike, 2021). It is also widely considered that regular communication with suppliers improves supply chain performance for both suppliers and customers (Kim, 2017), hence boosting organisational performance through collaboration. Based on these assumptions, the present study hypothesised that.

H4. Effective communication with suppliers influences the timely completion of FA construction projects.

2.6 Conceptual framework

Figure 1 illustrates the conceptual framework utilised in this research. It was constructed through a review of relevant literature and the formulation of hypotheses firmly rooted in TCT. In academic research, a conceptual framework offers an organised map of important relationships of variables, concepts, and theories that help researchers create a logical and coherent structure for their studies (Kivunja, 2018). The model posits that supply risk management results in the timely completion of FA construction projects. Multi-sourcing,

IJBPA



effective supplier selection, post-qualification, and effective communication with suppliers are utilised to represent the dimensions of supply risk management. The model posits that there exists a direct link between these dimensions and the timely completion of FA construction projects. Structural equation modelling (SEM) can be employed to test the relationships between these variables and assess the overall fit of the model to the data collected during the research.

3. Methodology

3.1 Research design

Cross-sectional survey research was adopted, which entails gathering data at a specific point in time. This design is suitable because it is capable and efficient of gathering a large amount of data in a very short period, easy to minimise cost, and appropriate for the study, which intends to analyse the causal relationship of the variables (Setia, 2016; Changalima *et al.*, 2022). Also, the design is useful in this study because the study objectives were not to capture information on changes over time but to get a general snapshot of the relationship between variables of the study. However, to address the potential impact of time lag, the study employed robust statistical techniques to validate our model. Model fit indices such as CFI, TLI, and RMSEA were reported to ensure the model's adequacy. Measurement invariance was tested to confirm that constructs were measured consistently across different groups. Also, the common bias method was addressed by Harman's single-factor test in order to ensure that our results are not unduly influenced by measurement artefacts (Hazen *et al.*, 2015).

3.2 Study area

The study was conducted at primary schools in LGAs available in the Dodoma region. LGAs were selected based on the merit of having a large number of Procuring entities (PEs) in Tanzania. Also, the majority of construction projects were implemented in LGAs rather than in another category. For example, 455 construction projects belonging to LGAs were audited by PPRA in 2021, compared to 25 projects under Parastatal Organisations and 12 projects to Agencies; the audit covered 492 construction projects with a value of TZS 63 billion. The Dodoma region was selected as an area to collect the data concerning FA construction

projects in primary schools since it has a large number of such projects. For example, in the 2020/2022 Financial Year (FY), Dodoma region planned to construct 237 classrooms in primary schools for a budget of 2.71 billion. Similarly, a budget of 2.79 billion was set out for classroom and teacher housing building in FY 2022/2023 (URT, 2022, 2023). Selecting primary schools in the Dodoma region as an area of study based on the fact that there is availability of FA construction projects (URT, 2022).

3.3 Target population and sample

The study targeted population consisted of 1800 respondents who were obtained from 120 primary schools in 8 LGAs in the Dodoma region and 15 members of the FA committee. The sample size was 360 respondents calculated by means of the Yamane formula as used by previous studies (Changalima *et al.*, 2023b; Kazungu and Kubenea, 2023), taking into account a 95% confidence interval. However, during the process of collecting data, only 318 individuals, which is comparable to 88.3% of the total respondents, were able to provide their responses. In each selected primary school, simple random sampling was used to select 3 members of the FA committees from each selected primary school. The method was selected because it ensures that every member of the population (primary schools) has a fair chance of being chosen. By randomly selecting three members from each school, we can create a representative sample that correctly reflects the characteristics and variety of the primary school population. This reduces bias and increases the generalizability of the findings (Noor *et al.*, 2022). Members from the procurement committee, receiving and inspection committee and construction committee were selected based on the fact that all FA construction activities are supervised and controlled by them. Hence, the data were collected from the members of the FA committee, actually formed by the primary school teachers and representatives from the village committee.

3.4 Data collection method

The collection of data was conducted by using a questionnaire. Because the method is very powerful in collecting a large number of responses from respondents in a reasonable time. The questionnaire was structured based on the study's variables. Twenty-four items related to the study's main variables were used to formulate questions which were responded to by the FA committee members. Prior to full-scale data collection, the study used professional experts to pre-test questionnaires to ensure content validity. Also, the pilot study was conducted in the Morogoro region, where data was not collected in order to ensure the clarity and comprehensiveness of the questionnaire. Therefore, the study used twenty five experts who are capable and experienced in at least 5 years in FA projects and were considered in a pre-testing. Feedbacks were obtained and the final questionnaire was improved to accommodate their recommendations. Data for this study were gathered from March to December of 2023. Additionally, the surveys were physically dispersed, utilising the drop-and-pick technique in order to guarantee a greater response rate. This strategy was designed to offer respondents adequate time and increase the possibility of getting a sufficient number of completed questionnaires.

3.5 Variable measurement, reliability and validity

The supply risk management dimensions, such as effective supplier selection, multi-sourcing, post-qualification and effective communication with suppliers, were included in the study as independent variables, and timely completion of FA construction was referred to as the dependent variable. The questionnaire was designed based on the measurement items that were derived from previous research but with minor modifications to suit this study's scope. Specifically, the variable multi-sourcing was determined by the items adopted from

IJBPA

Chintapalli (2021) and Namdar *et al.* (2018). Effective supplier selection was measured by items adopted from Chandalima *et al.* (2023a). Post-qualification processes were measured by items derived from Vörösmarty and Dobos (2020) and Jafari (2013). Effective communication with suppliers was determined by items adopted from Kimario and Mwagike (2021) and Loice (2015). Moreover, timely completion items were adopted from Maqsoom *et al.* (2021) and Yap *et al.* (2021). The study employed multi-item measures to quantify the constructs of the study, which were measured using a 5-point Likert scale as applied by previous studies whose items were adopted. The measures were selected based on their scientific validation in accurately assessing the constructs (Yağcı, 2019).

The findings presented in Table 1 indicated that the value of Cronbach's alpha (α) is greater than 0.7, which is within the acceptable range for measuring internal consistency

Variables/items	Factor loadings	CR	α	AVE
<i>Effective communication with the supplier (EFC)</i>		0.9151	0.9150	0.7292
• A large number of suppliers to deal with can reduce the risk of supply tremors	0.8131			
• More supplier base reduces the risk of dependence on suppliers and enables getting a reasonable price	0.8421			
• We rely on many suppliers to get the best supplier easier	0.8552			
• The risk of materials delays can be reduced if we deal with many suppliers	0.8591			
<i>Multi-sourcing (MSO)</i>		0.8932	0.8911	0.6781
• A formal supplier selection process is performed	0.7832			
• Our supplier selection criteria ensure only suppliers meeting our standards are selected	0.8051			
• The selection process has often identified suppliers with a history of high performance	0.8431			
• The least-cost consideration has always guided the determination of the supplier	0.8372			
<i>Effective supplier selection (ESS)</i>		0.8660	0.8612	0.6191
• A formal supplier selection process is performed	0.7873			
• Our supplier selection criteria ensure only suppliers meeting our standards are selected	0.8381			
• The selection process has often identified suppliers with a history of high performance	0.7732			
• The least-cost consideration has always guided the determination of the supplier	0.7953			
<i>Post-qualification (PSQ)</i>		0.8341	0.8291	0.5602
• We conduct post qualification to be sure of supplier performance	0.6661			
• We conduct post-qualification for the sake of determining the financial capability of the supplier	0.7832			
• We conduct post-qualification to be sure of the current commitment of the supplier	0.8002			
• Post qualification enables the procuring entity to get a reliable supplier	0.7333			
<i>Timely completion (TCO)</i>		0.7602	0.7581	0.5141
• The purchasing team ensures the availability of the required materials at the right time	0.6872			
• The project team ensured all activities in the project were conducted as planned	0.7082			
• All team members speak on time management in the project	0.7981			

Table 1.
Reliability and validity **Source(s):** Table by authors

reliability. Similarly, higher than 0.7 indicated the value of composite reliability, which is also within the range recommended in the literature; the value was supposed to be higher than 0.7 (Hair *et al.*, 2006). Furthermore, there is the success of convergent validity since the value of standardised factor loading was greater than 0.6, and the average variance extracted (AVE) was employed. It was recommended that a value greater than or equal to 0.5 indicate that convergent validity was achieved. In this study, as shown in Table 1, all values of AVE are greater than 0.5. Lastly, discriminant validity was achieved since the square root of AVE, as shown diagonally in Table 2, was indicated to be higher than the value of the intercorrelation between the variables and other variables (Fornell and Larcker, 1981).

3.6 Data analysis

Data analysis was conducted using Covariance-Based Structural Equation Modelling (CB-SEM). CB-SEM is known as a very powerful and reliable multivariate statistical model for the analysis of latent variables (Hooper *et al.*, 2008; Hooper *et al.*, 2008). SEM was suitable for the research, which contained multiple constructs assessed using different numbers of items. Also, the study used CB-SEM because of having a large sample size, and the study was confirmatory research, which aimed to test theory rather than exploratory research, which is suitable for PLS-SEM (Hazen *et al.*, 2015). In the supply chain kinds of literature (Changalima *et al.*, 2023a; Kusi-Sarpong *et al.*, 2022), CB-SEM were used as a data analysis method to test the relationship of the variables, which is why this study considered CB-SEM to conduct analysis. Also, in construction research, CB-SEM was used in different studies (Zaman *et al.*, 2021; Khoza and Haupt, 2021).

4. Findings

4.1 Common bias method

The common method bias (CMB) was checked by using the Harman single-factor test. Unrotated factor analysis was conducted in this study in order to determine if the single component can be able to explain the majority of the observed variance. The results indicated that approximately 36.64% of the variance could be ascribed to a singular cause. The CMB could be an issue if the value is above 50% (Podsakoff *et al.*, 2003).

4.2 Evaluation of the measurement model

By using AMOS 21 software, Confirmatory Factor Analysis (CFA) was performed in order to assess the compatibility test and psychometric elements of the measurement model, as depicted in Figure 2. The goodness-of-fit statistics ($\chi^2/df = 2.0861$, Goodness Fit Index (GFI) = 0.9132, Comparative Fit Index (CFI) = 0.9560, Tucker-Lewis' coefficient (TLI) = 0.9472, Incremental Fit Index (IFI) = 0.9561, Adjusted Goodness of Fit Index (AGFI) = 0.8841, RMSEA = 0.0592) which shows the accurate fitness of the observed data in the model (Hair *et al.*, 2006; Hooper *et al.*, 2008). Internal consistency, convergent and

Variables	EFC	MSO	ESS	PSQ	TCO
EFC	0.8541				
MSO	0.3491	0.8242			
ESS	0.3382	0.4812	0.7871		
PSQ	0.5961	0.5002	0.3622	0.7482	
TCO	0.4862	0.5503	0.6503	0.5591	0.7101

Source(s): Table by authors

Table 2.
Discriminant validity

IJBPA

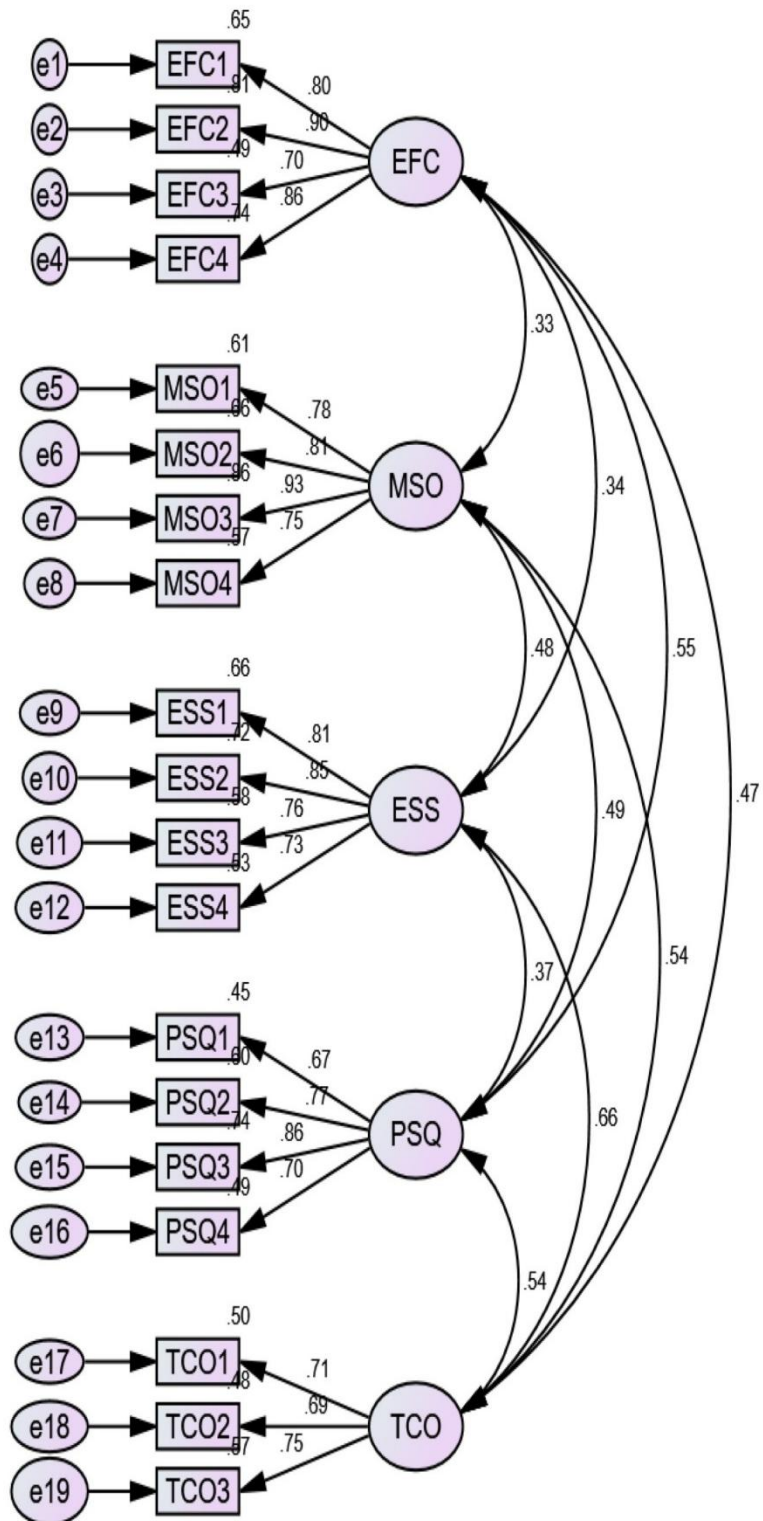


Figure 2.
Results of CFA

Source(s): Figure by authors

discriminant validity were assessed to evaluate the psychometric features of the latent variables and the measuring items.

4.3 Relationships among research variables in the structural model

The structural model's good fitness is evident from the fact that all fit indices, as shown in Table 3. This indicated that the findings of the study support and relate to the hypothesised structural model. A path analysis was also done to see how multi-sourcing, effective supplier selection, post-qualification, and good communication with suppliers affected the timely completion of the FA construction project. The study developed and tested hypotheses in order to examine the relationship of variables. As indicated in Table 3 and Figure 3, the results show that H1 (t -value = 2.6841, p = 0.0071 and β = 0.1501) implies that hypothesis 1 was supported. The findings indicate that the timely completion of FA construction projects is highly influenced by having effective supplier selection (t -value = 6.3461, p < 0.001, and β = 0.2753), as proposed in hypothesis (H2), the results show that H3 (p = 0.005, t -value = 2.8020, and β = 0.1872) indicates that hypothesis 3 was supported and the findings indicate that there is a positive significant relationship between effective communication with suppliers and timely completion of FA construction projects (p -value is less than 0.001, t = 2.1922, and β = 0.1142). Also, in these findings, effective supplier selection contributes much more than other variables towards enhancing the timely completion of the FA construction project as the t -value and β are greater than all variables.

5. Discussion

The findings of the study revealed that multi-sourcing is an important factor in explaining the timely completion of the FA construction project. This postulates that when an organisation uses multi-sourcing results in an increase in the timely completion of construction projects. Therefore, multi-sourcing is a significant predictor of the timely completion of construction projects and, hence, a necessary factor in improving the performance of the project. This relationship is based on the fact that dealing with a single supplier in a construction project can be a risk because supply disruptions will lead to delays in the completion of the project. Multi-sourcing strategies allow the organisation to be sure of continuity of supply because if one supplier fails to deliver timely and quality products for the projects, the organisation will switch to another reliable supplier. Furthermore, sometimes, the project experiences unforeseen circumstances caused by the supplier's failure to deliver the product, which can be solved if there is an alternative supplier. The findings are consistent with the study done by Khemiri *et al.* (2017), who established the link between multi-sourcing and procurement performance. Also, the finding is aligned with the study done by Dong *et al.* (2022), who insist on the importance of using multiple sources of supply in order to avoid the risk of supply chain disruption that a single supplier can cause. Furthermore, the findings support the

Hypothesised relationship	S. E	T-value	Estimate	p-value	Hypothesis decision
MSO $\leftarrow$ MSO	0.0561	2.6841	0.1501	0.0071	Supported
TCO $\leftarrow$ EFC	0.0521	2.1922	0.1142	0.0053	Supported
TCO $\leftarrow$ ESS	0.0432	6.3461	0.2753	0.0001	Supported
TCO $\leftarrow$ PSQ	0.0670	2.8020	0.1872	0.0282	Supported

Note(s): Model fit indices: χ^2/df = 2.0862, RMSEA = 0.0591, GFI = 0.9123, NFI = 0.9191, IFI = 0.9561, TLI = 0.9473, CFI = 0.9561, and AGFI = 0.8843

Source(s): Table by authors

Table 3.
Structural path
analysis results

IJBPA

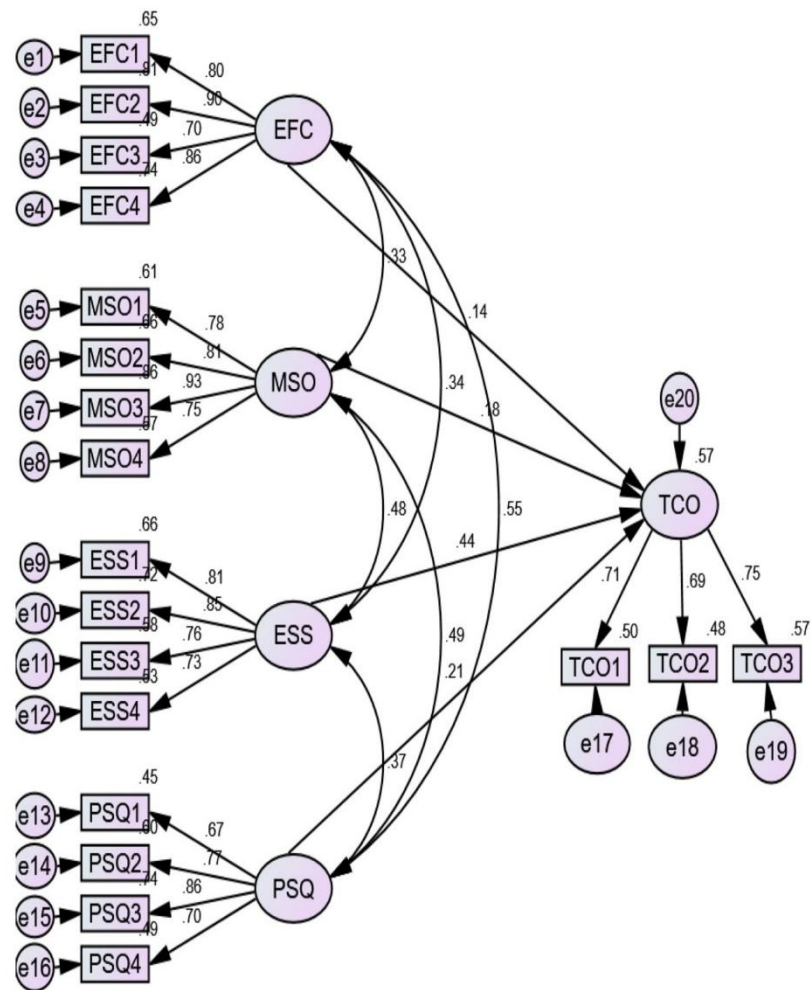


Figure 3.
Structural model

Source(s): Figure by authors

assumption of transaction cost theory on asset specificity and uncertainty. Suppliers are regarded as assets in an organisation because the organisation incurs transaction costs to search for and select suppliers, but there is uncertainty about suppliers failing to supply quality products in a timely manner. This will increase the transaction cost of searching for a new supplier, but if there is a multi-source, the transaction cost will be reduced to its maximum.

The H2 of the study was achieved since the timely completion of FA construction projects is highly influenced by effective supplier selection. Therefore, effective supplier selection is the most significant factor which contributes to the timely completion of the FA construction project. The possible explanation for that relationship relies on the fact that timely completion of the project is more likely to not be achieved if the organisation selects an incapable supplier. For instance, if the supplier is not reliable, financial instability and lack of technical know-how lead to delays and increased costs of selecting another capable supplier. Therefore, choosing a supplier who is capable of delivering quality materials in a timely manner and cost-effectiveness is important for the survival of the project. Hence, the performance of the project will be achieved. Also, reliable suppliers with a good track record of timely deliveries help to improve project efficiency and reduce supply disruptions. The findings of this study aligned with Changalima *et al.* (2023a), who found that effective supplier selection is

important in enhancing public procurement efficiency because it avoids the cost of re-evaluating suppliers and searching for new suppliers. Furthermore, [Hosseini et al. \(2022\)](#) insist on the importance of supplier selection in reducing uncertainty and cost reduction in an organisation. Similarly, the finding aligned with TCT in the assumption of asset specificity, which insists on reducing transaction costs dedicated to a certain asset. Through effective supplier selection, the costs associated with re-evaluation, re-work and modification can be reduced.

Concerning the [H3](#) the findings indicate that the unit increase of post-qualification improves the timely completion of the FA construction project by 18.7%. This implies that among the predictors of timely completion of FA projects, post-qualification processes are not ignored. The explanation of this relationship is based on the fact that conducting post-qualification after selecting a supplier will help the organisation to get a competent and reliable supplier because the issue of financial capability, ownership of equipment, and quality of the product will be checked physically before entering into the contract with suppliers. So, the project management team was required to ensure the selection of a supplier was done after the completion of post qualification process for the sake of getting a capable supplier who could fulfil the requirements of the project timely. Furthermore, suppose the organisation will be able to examine suppliers thoroughly in the post-qualification stage. In that case, the ability of suppliers to supply building materials and other suppliers in the time indicated can be achieved. The findings are linked with Studies conducted by [Dobos and Vörösmarty \(2023\)](#), [Patil and Kumthekar \(2016\)](#) and [Jafari \(2013\)](#), who appreciate the role of post qualification of supplier/contractor and performance of procurement in the organisation. Further, the studies elaborate that high performance of the project is achieved if the post-qualification process is conducted efficiently through physical visits and verifying the accuracy of submitted documents.

Lastly, the findings indicate that there is a positive significant relationship between effective communication with suppliers and timely completion of FA construction projects. The reason behind this relationship is based on the fact that communication increases the chance of understanding. Thus, if the organisation is able to communicate effectively with suppliers leads to a common understanding of the requirements of the project. If the supplier understands the requirements of the project, he will be able to deliver the material on time and in the quality required. Also, through communication, misinterpretation/misunderstanding of requirements will be minimised, which could potentially delay the project. Clear and concise communication acts as a link to ensure smooth operations of the project because each part of the project can understand exactly what the project requires; hence, overall project performance will be achieved. These findings match with the study done by [Agarwal and Narayana \(2020\)](#), who found an association between procurement performance and proper communication with suppliers. Likewise, [Nguyen et al. \(2022\)](#) found that communicating with suppliers effectively is very important because it helps to improve innovation, knowledge and quality achievement. Furthermore, the findings are linked with TCT as communication with suppliers reduces the uncertainty of supply disruption. Thus transaction cost, which is associated with uncertainty of supply, will be reduced.

6. Conclusion and recommendations

The literature on the influence of risk management in the performance of construction projects is apparently available ([Abas et al., 2022](#); [Ghosh and Sar, 2022](#); [Amoah and Pretorius, 2020](#)). However, evidence-based studies are scarce on the role of supply risk management in the timely completion of FA construction projects in public procurement in developing countries like Tanzania. Based on this, the current study used the TCT to assess how timely completion of the FA construction projects can be achieved through employing supply risk

management strategies. On the part of the findings, it can be concluded that effective supplier selection is the main factor among the three that explains the relationship between supply risk management and timely completion of the FA construction project, as the coefficient beta is high compared to all factors. Therefore, all indicators of supply risk management were found to have a positive and significant relationship to the timely completion of the FA construction project. In this regard, employing supply risk management strategies will help the organisation to achieve the timely completion of the construction project because all risks associated with supplier failure will be solved through proper supply risk management which is scientifically proven in this paper. The study recommends that the members of the FA committee and procurement practitioners undergo training in order to improve their knowledge of how supply risk management strategies can be employed for the benefit of achieving timely completion of construction projects.

7. Implication of the study

7.1 Theoretical implication

By examining the influence of supply risk management on the timely completion of FA construction projects' study variables in the context of LGA in Tanzanian public procurement, our current study contributes to the available body of literature. This contributes to a wide understanding of the standpoint of timely completion of FA construction projects in Tanzania, which is very important for the development of the nation. Also, a study developed and tested a model of timely completion of FA construction projects from the angle of supply risk management for better understanding. In addition, the study contributes to the TCT, which insists on the importance of understanding how transaction costs in construction projects can be reduced by dealing with uncertainty and asset specificity. Therefore, the study adds to the TCT the issue of supply risk management in construction projects.

7.2 Practical implication

The study offers practical insights to practitioners involved in FA construction projects in public organisations. It provides practical insights to procurement practitioners and members of FA construction projects in dealing with supply risk management to enhance the timely completion of projects. Furthermore, the study emphasises how supply risk management can be employed to reduce the risk of delays in the completion of FA construction projects. In this case, the study's findings can be used by procurement practitioners and members of the FA committee in making decisions concerning the use of supply risk management in public procurement construction projects in Tanzania. Thus, procurement practitioners and members of FA committees in LGAs are the primary beneficiaries of the study's findings. In this regard, before entering into any construction project, it is important to consider and be proactive on how supply risk disruption can be solved. Hence, the issue of effective supplier selection, multi-sourcing, post-qualification, and proper record-keeping should be in place. Through this, public organisations can be sure of achieving timely completion of construction projects because supply risk management strategies were considered before the commencement of the project.

8. Limitations and areas for further study

The study was limited in terms of scope and geographical coverage. In scope, the study considered only the timely completion of the project as an indicator in measuring the performance of the construction project. Thus, other indicators, such as cost and quality, were not considered. Therefore, the study provides the basis for future studies to include other

measures of the performance of construction projects to extend this research. Furthermore, the study was conducted in Tanzania, specifically in LGAs, where the management of procurement practices, especially in FA construction projects, may differ from other contexts; hence, generalisation of the study's findings must be done with care and attention. This is relevant as the way procurement laws and regulations govern procurement conduct differs across countries. Also, the study was based on a cross-sectional survey design; future research could consider a longitudinal design approach. In addition, further study should consider using of other indicators of building performance, as the current study focuses primarily on timely completion; others should look at quality attainment and cost-effectiveness.

References

- Abas, M., Khattak, S.B., Habib, T. and Nadir, U. (2022), "Assessment of critical risk and success factors in the construction supply chain: a case of Pakistan", *International Journal of Construction Management*, Vol. 22 No. 12, pp. 2258-2266, doi: [10.1080/15623599.2020.1783597](https://doi.org/10.1080/15623599.2020.1783597).
- Abdel-Galil, E., Ibrahim, A.H. and Alborkan, A. (2022), "Assessment of transaction costs for construction projects", *International Journal of Construction Management*, Vol. 22 No. 9, pp. 1618-1631, doi: [10.1080/15623599.2020.1738204](https://doi.org/10.1080/15623599.2020.1738204).
- Agarwal, U.A. and Narayana, S.A. (2020), "The impact of relational communication on buyer-supplier relationship satisfaction: the importance of trust and commitment", *Benchmarking*, Vol. 27 No. 8, pp. 2459-2496, doi: [10.1108/BIJ-05-2019-0220](https://doi.org/10.1108/BIJ-05-2019-0220).
- Ahsan, K. and Kumar Paul, S. (2018), "Procurement issues in donor-funded international development projects", *Journal of Management in Engineering*, Vol. 34 No. 6, 04018041, doi: [10.1061/\(ASCE\)ME.1943-5479.0000648](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000648).
- Ambaw, B.A. and Telgen, J. (2017), "The practice of performance-based contracting in developing countries public procurement: the case of Ethiopia", *Journal of Public Procurement*, Vol. 17 No. 3, pp. 402-431, doi: [10.1108/JOPP-17-03-2017-B005](https://doi.org/10.1108/JOPP-17-03-2017-B005).
- Amoah, C. and Pretorius, L. (2020), "Evaluation of the impact of risk management on project performance in small construction firms in South Africa: the case study of construction systems", *Journal of Engineering, Design and Technology*, Vol. 18 No. 3, pp. 611-634, doi: [10.1108/JEDT-06-2018-0098](https://doi.org/10.1108/JEDT-06-2018-0098).
- Cengiz, A.E., Aytekin, O., Ozdemir, I., Kusan, H. and Cabuk, A. (2017), "A multi-criteria decision model for construction material supplier selection", *Procedia Engineering*, Vol. 196, pp. 294-301, doi: [10.1016/j.proeng.2017.07.202](https://doi.org/10.1016/j.proeng.2017.07.202).
- Changalima, I.A., Ismail, I.J. and Mchopa, A.D. (2023a), "The impact of supplier selection and monitoring on public procurement efficiency in Tanzania: a cost-cutting approach", *Vilakshan – The XIMB Journal of Management*, Vol. 21 No. 1, pp. 55-65, doi: [10.1108/xjm-04-2022-0077](https://doi.org/10.1108/xjm-04-2022-0077).
- Changalima, I.A., Israel, B., Amani, D., Panga, F.P., Mwaiseje, S.S., Mchopa, A.D., Kazungu, I. and Ismail, I.J. (2023b), "Do internet marketing capabilities interact with the effect of procedural capabilities for public procurement participation on SMEs' sales performance?", *Journal of Public Procurement*, Vol. 23 3/4, pp. 416-433, doi: [10.1108/JOPP-01-2023-0001](https://doi.org/10.1108/JOPP-01-2023-0001).
- Changalima, I.A., Mchopa, A.D. and Ismail, I.J. (2022), "Supplier development and public procurement performance: are contract management difficulties important?", *Cogent Business and Management*, Vol. 9 No. 1, doi: [10.1080/23311975.2022.2108224](https://doi.org/10.1080/23311975.2022.2108224).
- Chintapalli, P. (2021), "Multi-sourcing due to supply unpredictability and buyer risk aversion", *EURO Journal of Computational Optimisation*, Vol. 9 July, 100009, doi: [10.1016/j.ejco.2021.100009](https://doi.org/10.1016/j.ejco.2021.100009).
- Deshpande, S., Roy, H., Dhingra, T. and Gupta, S. (2020), "Sustainable procurement for improving project performance for oil and gas projects", *International Journal of Procurement Management*, Vol. 13 No. 2, pp. 143-179, doi: [10.1504/IJPM.2020.106555](https://doi.org/10.1504/IJPM.2020.106555).

- Dobos, I. and Vörösmarty, G. (2023), "Revealing differences in supplier performance with DEA cross-efficiency", *International Journal of Procurement Management*, Vol. 18 No. 1, pp. 124-140, doi: [10.1504/IJPM.2023.132588](https://doi.org/10.1504/IJPM.2023.132588).
- Dong, L., Geng, X., Xiao, G. and Yang, N. (2022), "Procurement strategies with unreliable suppliers under correlated random yields", *Manufacturing and Service Operations Management*, Vol. 24 No. 1, pp. 179-195, doi: [10.1287/msom.2020.0918](https://doi.org/10.1287/msom.2020.0918).
- El Baz, J. and Ruel, S. (2021), "Can supply chain risk management strategies help to lessen the impact of disruptions on supply chain resilience and robustness? Evidence from an empirical survey during the COVID-19 pandemic", *International Journal of Production Economics*, Vol. 233, 107972, doi: [10.1016/j.iipe.2020.107972](https://doi.org/10.1016/j.iipe.2020.107972).
- Famiyeh, S., Amoatey, C.T., Adaku, E. and Agbenohevi, C.S. (2017), "Major reasons of construction time and expense overruns: a study of selected educational sector projects in Ghana", *Journal of Engineering, Design, and Technology*, Vol. 15 No. 2, pp. 181-198, doi: [10.1108/JEDT-11-2015-0075](https://doi.org/10.1108/JEDT-11-2015-0075).
- Fornell, C. and Larcker, D.F. (1981), "Structural equation models with unobservable variables and measurement error: algebra and statistics", *Journal of Marketing Research*, Vol. 18 No. 3, pp. 382-388, doi: [10.1177/002224378101800313](https://doi.org/10.1177/002224378101800313).
- Ghosh, S.K. and Sar, A.K. (2022), "Impact of effective supply chain management and supply chain risk management capabilities on construction project performance", *Indian Journal of Science and Technology*, Vol. 15 No. 11, pp. 505-517, doi: [10.17485/ijst/v15i12.2194](https://doi.org/10.17485/ijst/v15i12.2194).
- Hair, J., Black, W., Babin, B., Anderson, R. and Tatham, R. (2006), *Multivariate Data Analysis*, 6th ed., Pearson Prentice Hall, Upper Saddle River, NJ.
- Hazen, B.T., Overstreet, R.E. and Boone, C.A. (2015), "Suggested reporting guidelines for structural equation modeling in supply chain management research", *The International Journal of Logistics Management*, Vol. 26 No. 3, pp. 627-641, doi: [10.1108/IJLM-08-2014-0133](https://doi.org/10.1108/IJLM-08-2014-0133).
- Hoffmann, P., Schiele, H. and Krabbendam, K. (2013), "Uncertainty, supply risk management, and their performance implications", *Journal of Purchasing and Supply Management*, Vol. 19 No. 3, pp. 199-211, doi: [10.1016/j.pursup.2013.06.002](https://doi.org/10.1016/j.pursup.2013.06.002).
- Hooper, D., Coughlan, J. and Mullen, M. (2008), "Evaluating model fit: a synthesis of the structural equation modelling literature", *7th European Conference on Research Methodology for Business and Management Studies*, Vol. 2008, pp. 195-200.
- Hosseini, Z.S., Flapper, S.D. and Pirayesh, M. (2022), "Sustainable supplier selection and order allocation under demand, supplier availability, and supplier grading uncertainties", *Computers and Industrial Engineering*, Vol. 165, 107811, doi: [10.1016/j.cie.2021.107811](https://doi.org/10.1016/j.cie.2021.107811).
- Ikuabe, M., Oke, A.E. and Aigbavboa, C. (2020), "Impact of contractors' opportunism on construction project transaction costs: construction professionals' perception", *Journal of Financial Management of Property and Construction*, Vol. 25 No. 1, pp. 125-141, doi: [10.1108/JFMPC-04-2019-0040](https://doi.org/10.1108/JFMPC-04-2019-0040).
- Jafari, A. (2013), "A contractor pre-qualification model based on the quality function deployment method", *Construction Management and Economics*, Vol. 31 No. 7, pp. 746-760, doi: [10.1080/01446193.2013.825045](https://doi.org/10.1080/01446193.2013.825045).
- Kazungu, I. and Kubenea, H. (2023), "Customer satisfaction as a mediator of service facility and word of mouth in higher learning institutions", *Journal of Applied Research in Higher Education*, Vol. 15 No. 5, pp. 1649-1663, doi: [10.1108/JARHE-04-2022-0128](https://doi.org/10.1108/JARHE-04-2022-0128).
- Khemiri, R., Elbedoui-Maktouf, K., Grabot, B. and Zouari, B. (2017), "A fuzzy multi-criteria decision-making method for controlling performance and risk in integrated procurement-production planning", *International Journal of Production Research*, Vol. 55 No. 18, pp. 5305-5329, doi: [10.1080/00207543.2017.1308575](https://doi.org/10.1080/00207543.2017.1308575).
- Khoza, J.D. and Haupt, T.C. (2021), "Measuring health and safety performance of construction projects in South Africa", *IOP Conference Series: Earth and Environmental Science*, Vol. 654 No. 1, 012031, IOP Publishing, doi: [10.1088/1755-1315/654/1/012031](https://doi.org/10.1088/1755-1315/654/1/012031).

-
- Kim, M. and Chai, S. (2017), "The impact of supplier innovation, information exchange, and strategic sourcing on supply chain agility from a global viewpoint", *International Journal of Production Economics*, Vol. 187, pp. 42-52, doi: [10.1016/j.ijpe.2017.02.007](https://doi.org/10.1016/j.ijpe.2017.02.007).
- Kimario, H.F. and Kira, A.R. (2023), "Cause – effect relationship of trust of buyer – suppliers' integration on procurement performance in large manufacturing firms in Tanzania", *Journal of Global Operations and Strategic Sourcing*, Vol. ahead-of-print No. ahead-of-print, doi: [10.1108/JGOSS-12-2021-0101](https://doi.org/10.1108/JGOSS-12-2021-0101).
- Kimario, H.F. and Mwagike, L.R. (2021), "The influence of communication in the buyer-supplier integration on procurement performance of large manufacturing firms in Tanzania", *International Journal of Supply Chain Management*, Vol. 10 No. 5, p. 32.
- Kivunja, C. (2018), "Distinguishing between theory, theoretical framework, and conceptual framework: a systematic review of lessons from the field", *International Journal of Higher Education*, Vol. 7 No. 6, pp. 44-53, doi: [10.5430/ijhe.v7n6p44](https://doi.org/10.5430/ijhe.v7n6p44).
- Krop, E. and Iravo, M.A. (2016), "The impact of supplier selection on the performance of the procurement function in the public sector: a case study of West Pokot County Government", *International Academic Journal of Procurement and Supply Chain Management*, Vol. 2 No. 2, pp. 51-73.
- Kumar, R., Singh, R.K. and Shankar, R. (2015), "Critical success factors for implementation of supply chain management in Indian small and medium enterprises and their impact on performance", *IIMB Management Review*, Vol. 27 No. 2, pp. 92-104, doi: [10.1016/j.iimb.2015.03.001](https://doi.org/10.1016/j.iimb.2015.03.001).
- Kusi-Sarpong, S., Mubarik, M.S., Khan, S.A., Brown, S. and Mubarak, M.F. (2022), "Intellectual capital, blockchain-driven supply chain and sustainable production: role of supply chain mapping", *Technological Forecasting and Social Change*, Vol. 175, 121331, doi: [10.1016/j.techfore.2021.121331](https://doi.org/10.1016/j.techfore.2021.121331).
- Lee, G. (2022), "Matching task complexity with supplier management to enhance outsourcing performance", *SAGE Open*, Vol. 12 No. 3, pp. 1-12, doi: [10.1177/21582440221123460](https://doi.org/10.1177/21582440221123460).
- Li, H., Arditi, D. and Wang, Z. (2015), "Determinants of transaction costs in construction projects", *Journal of Civil Engineering and Management*, Vol. 21 No. 5, pp. 548-558, doi: [10.3846/13923730.2014.897973](https://doi.org/10.3846/13923730.2014.897973).
- Loice, K. (2015), "Effect of buyer-supplier relationships on procurement performance: evidence from Kenyan supermarket", *European Scientific Journal*, Vol. 1, pp. 1857-7881.
- Mahmoudi, A. and Javed, S.A. (2022), "Performance evaluation of construction subcontractors using the Ordinal Priority Approach", *Evaluation and Programme Planning*, Vol. 91, 102022, doi: [10.1016/j.evalprogplan.2021.102022](https://doi.org/10.1016/j.evalprogplan.2021.102022).
- Manhart, P., Summers, J.K. and Blackhurst, J. (2020), "A meta-analytic review of supply chain risk management: evaluate buffering and bridging strategies and firm performance", *Journal of Supply Chain Management*, Vol. 56 No. 3, pp. 66-87, doi: [10.1111/JSCM.12219](https://doi.org/10.1111/JSCM.12219).
- Maqsoom, A., Choudhry, R.M., Umer, M. and Mehmood, T. (2021), "Influencing factors indicating time delay in construction projects: impact of firm size and experience", *International Journal of Construction Management*, Vol. 21 No. 12, pp. 1251-1262, doi: [10.1080/15623599.2019.1613206](https://doi.org/10.1080/15623599.2019.1613206).
- Matto, M.C. (2023), "Identifying the latent shortcomings of force account projects in Tanzania: the case of construction projects in the education sector", *Engineering, Construction and Architectural Management*, Vol. 30 No. 2, pp. 787-804, doi: [10.1108/ECAM-06-2021-0525](https://doi.org/10.1108/ECAM-06-2021-0525).
- Mchopa, A. (2015), "Integrating contract management practices to achieve value for money in Tanzanian public procurement: evidence from selected procuring organisations in Moshi municipality", *Journal of Public Procurement*, Vol. 15 No. 2, pp. 129-149, doi: [10.1108/JOPP-15-02-2015-B001](https://doi.org/10.1108/JOPP-15-02-2015-B001).
- Mehrjerdi, Y.Z. and Shafiee, M. (2021), "A resilient and sustainable closed-loop supply chain that employs a variety of sourcing and information-sharing mechanisms", *Journal of Cleaner Production*, Vol. 289, 125141, doi: [10.1016/j.jclepro.2020.125141](https://doi.org/10.1016/j.jclepro.2020.125141).
-

- Msemwa, S., Ruoja, C. and Kazungu, I. (2017), "Influence of communication in buyer-supplier relationship and the performance of maize markets in Hai district Tanzania", *International Journal of Economics, Business and Management Research*, Vol. 1 No. 1, pp. 89-108.
- Msomba, P.E., Samson, Z.M. and Mlinga, R.S. (2018), "Identifying critical risk categories in Tanzanian construction projects", *International Journal of Engineering Research and Technology (IJERT)*, Vol. 7 No. 02, pp. 99-104.
- Munir, M., Jajja, M.S.S., Chatha, K.A. and Farooq, S. (2020), "Supply chain risk management and operational performance: the enabler role of supply chain integration", *International Journal of Production Economics*, Vol. 227, 107667, doi: [10.1016/j.ijpe.2020.107667](https://doi.org/10.1016/j.ijpe.2020.107667).
- Murphy, M. and Sashi, C.M. (2018), "Communication, interactivity, and satisfaction in business-to-business relationships", *Industrial Marketing Management*, Vol. 68, pp. 1-12, doi: [10.1016/j.indmarman.2017.08.020](https://doi.org/10.1016/j.indmarman.2017.08.020).
- Mwishwa, Y.H. (2022), "Development of extranet project system to guide implementation of force account on government construction projects in Tanzania", *MUST Journal of Research and Development*, Vol. 2 No. 1, p. 14.
- Nair, A.J. Jayaram and Das, A. (2015), "Strategic purchasing includes supplier selection, appraisal, and performance", *International Journal of Production Research*, Vol. 53 No. 20, pp. 6263-6278, doi: [10.1080/00207543.2015.1047983](https://doi.org/10.1080/00207543.2015.1047983).
- Namdar, J., Li, X., Sawhney, R. and Pradhan, N. (2018), "Supply chain resilience for single and multiple sourcing in the presence of disruption risks", *International Journal of Production Research*, Vol. 56 No. 6, pp. 2339-2360, doi: [10.1080/00207543.2017.1370149](https://doi.org/10.1080/00207543.2017.1370149).
- National Audit Office of Tanzania (NAOT) (2019), "The annual general report of the controller and auditor general on audit of the local government authorities for the financial year 2018/2019", NAOT, Dodoma.
- National Audit Office of Tanzania (NAOT) (2020), "The annual general report of the controller and auditor general on audit of the local government authorities for the financial year 2019/2020", NAOT, Dodoma.
- Nguyen, H., Onofrei, G., Akbari, M. and McClelland, R. (2022), "Improving quality and innovation performance: the importance of supplier communication and knowledge development", *Total Quality Management and Business Excellence*, Vol. 33 Nos 3-4, pp. 410-433, doi: [10.1080/14783363.2020.1858711](https://doi.org/10.1080/14783363.2020.1858711).
- Noor, S., Tajik, O. and Golzar, J. (2022), "Simple random sampling", *International Journal of Education and Language Studies*, Vol. 1 No. 2, pp. 78-82, doi: [10.22034/ijels.2022.162982](https://doi.org/10.22034/ijels.2022.162982).
- Patil, A.A. and Kumthekar, M.B. (2016), "Supplier Evaluation and selection methods in the construction industry", *International Research Journal of Engineering and Technology (IRJET)*, Vol. 3 No. 6, pp. 515-521.
- Phochanikorn, P. and Tan, C. (2019), "A new extension of a multi-criteria decision-making model for sustainable supplier selection in an intuitionistic fuzzy environment", *Sustainability*, Vol. 11 No. 19, p. 5413, doi: [10.3390/su11195413](https://doi.org/10.3390/su11195413).
- Podsakoff, P.M., Mac Kenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.
- PPRA (2021), "Annual performance evaluation report for fiscal year 2020/2021", Tanzania's Public Procurement Regulatory Authority.
- PPRA (2022), "Annual performance evaluation report for fiscal year 2021/2022", Public Procurement Regulatory Authority of Tanzania.
- Rindfleisch, A. (2020), "Transaction cost theory: past, present and future", *AMS Review*, Vol. 10 No. 1, pp. 85-97, doi: [10.1007/s13162-019-00151-x](https://doi.org/10.1007/s13162-019-00151-x).
- Setia, M.S. (2016), "Methodology series module 3: cross-sectional studies", *Indian Journal of Dermatology*, Vol. 61 No. 3, pp. 261-264.

- Sharma, M. and Joshi, S. (2023), "Digital supplier selection reinforces supply chain quality management systems, improving firm performance", *The TQM Journal*, Vol. 35 No. 1, pp. 102-130, doi: [10.1108/TQM-07-2020-0160](https://doi.org/10.1108/TQM-07-2020-0160).
- Sinesilassie, E.G., Tabish, S.Z.S. and Jha, K.N. (2017), "Critical factors affecting schedule performance: a case of Ethiopian public construction projects—engineers' perspective", *Engineering, Construction and Architectural Management*, Vol. 24 No. 5, pp. 757-773, doi: [10.1108/ECAM-03-2016-0062](https://doi.org/10.1108/ECAM-03-2016-0062).
- URT (2022), "Ripoti Makadirio Ya Mapato Na Matumizi Kwa Mwaka Fedha 2021/2022", *Ofisi ya Rais – Tawala za Mikoa na Serikali za Mitaa*, Government Printers.
- URT (2023), *Public procurement act number 10 of 2023*, Ministry of Finance and Planning, Government Printers.
- URT (2023), "Ripoti Makadirio Ya Mapato Na Matumizi Kwa Mwaka Fedha 2022/2023", *Ofisi ya Rais – Tawala za Mikoa na Serikali za Mitaa*, *Ofisi ya Rais – Tawala za Mikoa na Serikali za Mitaa*, Government Printers.
- Van der Westhuizen, J. and Ntshingila, L. (2020), "The effect of supplier selection, supplier development and information sharing on SME's business performance in Sedibeng", *International Journal of Economics and Finance*, Vol. 12 No. 2, pp. 290-304.
- Vörösmarty, G. and Dobos, I. (2020), "A literature review of sustainable supplier evaluation with Data Envelopment Analysis", *Journal of Cleaner Production*, Vol. 264, 121672, doi: [10.1016/j.jclepro.2020.121672](https://doi.org/10.1016/j.jclepro.2020.121672).
- Wever, M., Wognum, P.M., Trienekens, J.H. and Omta, S.W.F. (2012), "Supply chain-wide consequences of transaction risks and their contractual solutions: towards an extended transaction cost economics framework", *Journal of Supply Chain Management*, Vol. 48 No. 1, pp. 73-91, doi: [10.1111/j.1745-493X.2011.03253.x](https://doi.org/10.1111/j.1745-493X.2011.03253.x).
- Williamson, O.E. (1993), "Transaction cost economics meets posnerian law and economics", *Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift für die gesamte Staatswissenschaft*, Vol. 149 No. 1, pp. 99-118.
- Yağcı, M. (2019), "A valid and reliable tool for examining computational thinking skills", *Education and Information Technologies*, Vol. 24 No. 1, pp. 929-951, doi: [10.1007/s10639-018-9801-8](https://doi.org/10.1007/s10639-018-9801-8).
- Yap, J.B.H., Goay, P.L., Woon, Y.B. and Skitmore, M. (2021), "Revisiting critical delay factors for construction: analysing projects in Malaysia", *Alexandria Engineering Journal*, Vol. 60 No. 1, pp. 1717-1729, doi: [10.1016/j.aej.2020.11.021](https://doi.org/10.1016/j.aej.2020.11.021).
- Zaman, U., Florez-Perez, L., Khwaja, M.G., Abbasi, S. and Qureshi, M.G. (2021), "Exploring the critical nexus between authoritarian leadership, project team member's silence and multi-dimensional success in a state-owned mega construction project", *International Journal of Project Management*, Vol. 39 No. 8, pp. 873-886, doi: [10.1016/j.ijproman.2021.10.007](https://doi.org/10.1016/j.ijproman.2021.10.007).

Corresponding author

Shadrack Samwel Mwiseje can be contacted at: mwiseje@gmail.com

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgroupublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com

CHAPTER THREE
PUBLISHED PAPER TWO
PROCUREMENT INTERNAL CONTROL SYSTEMS AND
COST-EFFECTIVENESS IN FORCE ACCOUNT CONSTRUCTION
PROJECTS

3.1 An overview

This chapter presents a published paper that addresses the second objective of this study. The paper, published in African Business Management Journal, Vol. 3, No. 1, 2025 <https://journals.udom.ac.tz/index.php/abmj>. The study explores the relationship between Procurement Internal Control Systems and Cost-effectiveness in Force Account Construction Projects. The attached paper provides a detailed and comprehensive presentation of the research findings, offering understandings into how Procurement Internal Control Systems can enhance Cost-effectiveness in Force Account Construction Projects.

Procurement internal control systems and cost-effectiveness in force account construction projects

Shadrack Samwel Mwaiseje^{1*}, Faustine Peter Panga² and Alban Dismas Mchopa²

¹Department of Procurement and Supplies Compliance, Public Procurement Regulatory Authority, Dodoma, Tanzania

²Department of Procurement and Supply Chain Management, Moshi Co-operative University, Moshi, Tanzania

*Correspondence: mwaiseje@gmail.com

Abstract

Public organisations consistently face challenges in achieving cost-effectiveness in construction projects, and this issue remains a global concern. In response to this issue, the present study examines the role of procurement internal control systems on cost-effectiveness in force account (FA) construction projects in local government authorities (LGAs). A cross-sectional research design with a sample size of 318 respondents from selected LGAs in Dodoma, Tanzania was used. Data were collected using a structured questionnaire and analysed using covariance-based structural equation modelling. The findings revealed that attributes of procurement internal control systems that include stock control ($\beta = 0.165$, $p < 0.015$), record keeping ($\beta = 0.355$, $p < 0.001$), authorisation process ($\beta = 0.233$, $p < 0.002$), have significant and positive relationships with cost-effectiveness in FA construction projects. The study's findings failed to confirm the significant link between the segregation of duties and the cost-effectiveness in FA construction projects ($\beta = 0.094$, $p < 0.095$). These results imply that among the considered procurement internal control systems; segregation of duties does not significantly matter in explaining cost-effectiveness in FA construction projects in LGAs. The study was limited by its geographical context. Therefore, the generalisation of findings should be done with caution because the study relied on the evidence from FA construction projects in primary schools within LGAs in Tanzania. This study provides valuable practical insights for procurement practitioners and members of the FA committee in the public sector. It guides the adherence to the procurement internal control systems to enhance the cost-effectiveness in construction projects.

Received
11 April 2025
Received in revised form
17 May 2025
03 June 2025
06 June 2025
Accepted
08 June 2025

Keywords:
Construction projects
Cost-effectiveness
Force account
Local government
Internal control systems

1. Introduction

Cost-effectiveness in construction projects is considered a challenge in public organisations. This is normally because of increasing costs compared to the estimated budget due to poor project management, inflation, and the use of poor-quality materials, which leads to reworkings (Beste & Klakegg, 2022; Chadee et al., 2023). Achieving cost-effectiveness is important in the government because the money saved can be used to improve society's welfare, hence leading to increased trust in the government (Obi et al., 2021; Sinesilassie, 2019). Force account (FA) procurement approach has been extensively implemented in the public sector in many developing nations, particularly in Africa (Engelbert et al., 2016; Mwaiseje et al., 2024). For example, in Ethiopia, FA procurement is used when the construction projects are small and conducted in a remote area where the possibility of bidders being attracted is very low (Gadisa & Zhou, 2021). In Tanzania, the usage of FA procurement has increased significantly in public organisations, particularly in local government authorities (LGAs), where 80% of construction projects are implemented by using FA approach (PPRA, 2021). FA construction projects involve the use of in-house labour, equipment, and materials by a government agency or organisation to complete construction work (United Republic of Tanzania (URT), 2023). The use of FA in projects allows for the greater flexibility, easy-to-control cost and increased tight eye over the overall construction process.

On the other hand, procurement internal control systems are very important in project management. As they help to prevent fraud and enforce ethical conduct through the establishment of policies, procedures and guidelines (Muhwezi et al., 2023). They consist of different activities which, if they work together, can help to achieve the intended objectives of the organisations. These activities include segregation of duties, which involves assigning tasks to different individuals and working without interfering with each other (Ferrer et al., 2020). Through segregation of duties, it is not possible for any person to manipulate the procurement process for private gain (Chiu & Jans, 2019). The authorisation and approval process enable the organisation to be sure of all transactions and not only helps to avoid any unauthorised

procurement but also contributes to the achievement of transparency and accountability of the procurement (Nduhura et al., 2022). Stock control is a very important activity in construction projects because it enables the project management team to be aware of the materials available and if the materials need to be replenished (Frontoni et al., 2020; Ochelle, 2017). Poor stock control may lead to stock-outs which increase delays as well as cost the projects due to the increase in unnecessary operation costs (Paul et al., 2021). Record keeping is used to assess organisational performance; therefore, relevant records must be developed, collected, and managed properly (Namukasa, 2017). That is why past research has to it with performance. Matto (2022) found that strong record keeping results in cost savings. In this regard, procurement internal control enhances the overall performance of public procurement.

Achieving cost-effectiveness which is defined as the ability to complete construction projects within the allocated budget while maintaining quality and efficiency, is a critical objective for most organisations. Organisations worldwide struggle to achieve cost-effectiveness in construction projects due to challenges such as poor project management, inadequate planning, and unexpected cost overruns (Albtoush et al., 2020; Chen et al., 2016; Fazil et al., 2021). This issue is particularly noticeable in Africa, where different factors such as economic instability, lack of skilled labour, and inefficient procurement processes further make it difficult in managing costs (Aloyce et al., 2024; Tembo et al., 2024). Tanzania, like other developing countries, experiences difficulties in achieving cost-effectiveness in construction projects (Israel, 2023). PPRA and controller and auditor general (CAG), for example, reported cost overruns in public construction projects in various regions of Tanzania and revealed that the majority of projects' costs sometimes exceeded 70% of their contractual value (National audit office of Tanzania (NAOT), 2021; PPRA, 2021, 2022). Also, in FA construction projects implemented in LGAs, achieving cost-effectiveness was not attractive because 60% of the projects were reported to have inadequate documentation of material costs and expenses exceeding the estimated budget (NAOT, 2019; PPRA, 2021). These inefficiencies indicate weaknesses in oversight and accountability mechanisms, which are central concerns of agency theory. The theory emphasises the principal-agent relationship, where agents are expected to act in the best interests of principals (Jensen & Meckling, 1976). However, in the absence of strong internal controls, information asymmetry and self-interest may result in inefficiencies and misuse of resources. Therefore, the implementation of an effective procurement internal control systems is essential to enhance transparency, accountability, and efficiency in the procurement process, ultimately ensuring the achievement of organisational objectives in construction projects.

Procurement of works constitutes a significant amount of the national budget of Tanzania (Changalima et al., 2021), and it is necessary to make efforts to improve cost-effectiveness in FA construction projects. A number of empirical studies indicate that the success of projects in Tanzania is linked to proper procurement contract management (Matto et al., 2021; Mchopa, 2015) and microeconomic determinants (Makoye et al., 2023). Within a different framework, a body of literature demonstrates a correlation between the inflation rate (Musarat et al., 2021) and corruption (Niazi & Painting, 2017), with the cost performance of construction projects. Scant evidence exists on the impact of the procurement internal control systems on the cost-effectiveness in construction projects. Therefore, the current study addresses this gap by examining the impact of a procurement internal control systems (segregation of duties, authorisation process, record keeping and stock control) on the cost-effectiveness in FA construction projects in Tanzanian LGAs.

The remainder of this paper is divided into six sections. The next section provides a review of the literature, followed by the methodology. Thereafter, the findings and discussion are presented. The subsequent section offers the conclusions, while the final two sections discuss the study's implications and limitations.

2. Literature review and hypothesis development

2.1 Theories governing the study

This study is grounded in two complementary theoretical perspectives: Institutional theory and agency theory. These frameworks provide a more holistic understanding of the way procurement internal control systems influence the cost-effectiveness of FA construction projects.

2.1.1 Institutional theory

Institutional theory, as presented by Scott (2004), offers a framework for understanding how organisations are shaped by the broader institutional environments in which they operate. Scott (2004) defines institutions as multifaceted, enduring social structures composed of symbolic elements, social activities, and material resources. Thus, institutions influence organisational behaviour through three main pillars: the regulative, normative, and cultural-cognitive systems. Organisations may feel pressured to adapt to commonly accepted behaviours in order to obtain legitimacy (Dacin, 1997) and maintain a socially relevant position (Brammer et al., 2012; Campbell, 2007). The regulative pillar emphasizes rules, laws, and enforcement mechanisms that guide actions through coercion or incentives. The normative

pillar focuses on values and norms, shaping behaviour through social obligations and moral expectations. Lastly, the cultural-cognitive pillar centres on shared understandings and taken-for-granted beliefs that individuals internalize and use to interpret the world around them. Of these, the regulatory pillar is most pertinent to this study. It focuses on formal rules, laws, and compliance mechanisms that enforce behaviour through sanctions or incentives.

In this study, the institutional theory provides a clear understanding of how procurement internal control systems influence the cost-effectiveness in construction projects. This theory emphasises the role of social norms, rules, and regulatory frameworks in shaping organisational behaviour (Muhwezi et al., 2023; Nawaz & Guribie, 2024). In the context of procurement, internal control systems ensure compliance with these institutional rules, promoting transparency, accountability, and efficiency (Azman et al., 2024). Key components of these systems, such as the segregation of duties, ensure that no single individual has control over all aspects of a procurement transaction, thereby reducing the risk of fraud and errors (Cao & Wang, 2023). Stock control mechanisms help in managing inventory efficiently, preventing overstocking or stockouts. The authorisation process ensures that all procurement actions are approved by appropriate personnel, maintaining a high level of accountability. Record keeping provides a transparent audit trail, facilitating monitoring and evaluation of procurement activities. From an institutional perspective, these controls enhance organisational legitimacy and compliance with best practices, ultimately leading to more efficiency and cost-effectiveness in FA construction projects. Also, by adhering to regulatory requirements and standardising procurement processes, these controls reduce the likelihood of unforeseen expenses, contributing significantly to the cost-effective outcomes in construction projects.

2.1.2 Agency theory

The agency theory describes the relationship between a principal and agent in which the principals assign decision-making authority to agents to perform certain services on their behalf (Jensen & Meckling, 1976). However, conflicts of interest may arise between the agent's objectives and the principal's interests, resulting in agency problems (Leepsa & Panda, 2017). To address these concerns, the principal plans to develop systems that align the agent's interests with their interests. In this study, the procuring entity acts as the principal and assigns the activities to the members of FA committees as agents. Existing procurement internal control systems are very important towards enhancing the principal and agents' interests through encouraging the cost-effectiveness in the whole construction process. For instance, a study done by Adi and Rohman (2023) indicated the application of agency theory in the relationship between internal control systems and fraud prevention in procurement goods and services. As per agency theory, internal control mechanisms such as monitoring activities, clear performance measurement and incentives enable to minimise of information asymmetry and opportunistic behaviours. In regard to procurement internal control systems, the principal can believe that the agents try to fulfil the principal interest by minimising the cost of construction through optimal resource utilisation. In the present study, procurement internal controls such as segregation of duties, authorisation process, record keeping, and stock control relate with the agency theory. As agents, if they adhere to these indicators, they can be able to make proper decisions based on the principal interests.

2.2 Hypotheses

2.2.1 Segregation of duties and cost-effectiveness

In project management, segregation of duties is essential to ensure suitable control and accountability through separating activities among different personnel in the project (Chiu & Jans, 2019). Dividing responsibilities can help to minimise the risk of mistakes and fraud, as well as help to prevent conflicts of interest. The literature appreciates the role of segregation of duties in enhancing project performance. For instance, the study conducted by Ferrer et al. (2020) and Rattini (2023) indicated that a well-defined project through segregation of duties leads to high levels of accountability, proper risk control, and, lastly, enhances the performance of projects. Similarly, Lill et al. (2020) emphasised that clear segregation of duties helps to reduce the probability of errors and improve the quality of the project. The reviewed studies recommend that a good segregation of duties in projects enhances the chance of improving accountability, risk management, and the success of the whole project. The literature has well studied the advantages of segregation of duties in terms of accountability, risk management, and project performance, but its effect on cost-effectiveness, especially in the context of FA construction projects, has received less attention. Without fully analysing how these techniques affect the cost-effectiveness of project execution, existing studies such as Lill et al. (2020), and Satheesh et al. (2023) have mostly concentrated on results like error reduction and quality enhancement. Hence, the present study focuses on the angle of cost-effectiveness in FA construction projects through the segregation of duties. Based on this, the following hypothesis is proposed:

H1: Segregation of duties positively affects cost-effectiveness in FA construction projects

2.2.2 Authorisation process and cost-effectiveness

To ensure transparency and accountability in the organisation, a clear authorisation process is necessary as it helps to formulate procedures and guidelines for initiation of the project, controlling of expenditure and proper budgeting (Winata & Gultom, 2024). In public construction projects, authorisation process is essential because it helps to obtain necessary approvals of the project life cycle, starting from project commencement up to the authorisation of payment after project completion (Bhagat & Jha, 2023). Previous studies establish the link between the authorisation process and financial performance, business performance and success of the project. For example, the study done by Njoka and Gikonyo (2023) investigated the relationship between the approving procedures and the performance of projects. They highlighted that a well-structured approving procedure significantly influences the performance of the project. Likewise, Ngari (2017) conducted a study on authorisation procedures and the financial performance of construction projects. The study indicated that a clear and well-established authorisation process in terms of clear guidelines and effective control enhances financial performance. The reviewed studies mainly focused on improving business performance and project performance through approving processes but evidence is missing in the linkage between the authorisation process and cost-effectiveness in FA construction projects. Therefore, the study proposes the following hypothesis:

H2: Authorisation process positively affects cost-effectiveness in FA construction projects

2.2.3 Stock control and cost-effectiveness

In construction projects, stock control is relevant in minimising delays and enhancing efficient utilisation of resources through ensuring availability of materials when needed for construction activities (Ochelle, 2017). Stock control activities in construction projects include monitoring stock levels, keeping accurate stock records, proper forecasting of materials requirements and proper issuing and receiving of materials (Bajomo et al., 2022). Having required materials when needed enhances the smooth progress of construction projects because disruptions are avoided. The literature shows a positive link between good stock control procedures and project performance. For example, improved stock control has been linked to reduced material waste, project delays, and improved resource utilisation (Ashika & Monisha, 2019; Frontoni et al., 2020). Consequently, stock control is an essential component in the procuring entity and is associated with greater performance. Most studies have utilised cost to measure project performance (Alavipour & Arditi, 2018; Firouzi et al., 2016). The present research focuses on the cost-effectiveness in FA construction projects through stock control. Then, the following is proposed:

H3: Stock control positively affects cost-effectiveness in FA construction projects

2.2.4 Record keeping and cost-effectiveness

Effective assessment of organisational procurement performance relies on the utilisation of available records. To achieve this, it is necessary to develop, gather, and manage relevant records in a proper manner (ISO, 2016). That is why past research has linked records management with performance outcomes. Matto (2022) believes that strong record keeping helps to save costs. Namukasa (2017) and Ahimbisibwe (2016) found that despite the benefits of managing records, such as improved organisational performance, most organisations do not prioritise it. According to Mohamed et al. (2018), the relevance of records management is often undermined in underdeveloped countries. The study's premise is on the fact that records keeping positively enhances cost-effectiveness in FA construction projects. Organisations preserve records for a variety of purposes, including compliance with legal requirements. In Tanzania, section 71 of the Public Procurement Act (PPA) of 2023 mandates all public organisations to keep a record of their procurement operations for at least 5 years after the contract is completed. Record keeping helps the organisation to identify suppliers through tracking previous performance and helps the project manager to make informed decisions. Thus, studying the role of procurement records in the cost-effectiveness in construction projects is necessary. Previous studies indicated that records keeping improves organisational performance and helps in saving costs, but limited evidence prevails on the link between record keeping and cost-effectiveness in FA construction projects. The study proposes the following:

H4: Record keeping positively affects cost-effectiveness in FA construction projects

3. Methodology

3.1 Study area and research design

This study was conducted in selected LGAs in the Dodoma region, Tanzania specifically focusing on primary schools implementing FA construction projects. LGAs were chosen because they have a higher number of FA construction projects compared to other categories of procuring entities. For example, the PPRA audit in 2021 revealed that 492

projects were undertaken under FA, of which 455 belong to LGAs, 25 to parastatal organisations, and 12 to agencies, with a total value of TZS 63 billion. Dodoma region was chosen as the study area to collect information on FA construction projects in primary schools since it has a large number of FA construction projects. For example, in the financial year (FY) 2021/2022, a budget of 2.71 billion was set up for the construction of 237 primary school classrooms. Similarly, a budget of 2.79 billion was set out for classroom and teacher housing building in FY 2022/2023 (URT, 2022, 2023). Most of these projects were conducted in primary schools within Dodoma region (URT, 2022). A cross-sectional research design was adopted, which entails gathering data at a specific point in time. This design is suitable because it is capable and efficient of gathering a large amount of data in a very short period, easy to minimise cost, and appropriate for the study, which intends to analyse the causal relationship of the variables (Changalima et al., 2021; Setia, 2016). Also, the design is useful in this study because the study objectives were not to capture information on changes over time but to get a general snapshot of the relationship between variables of the study.

3.2 Sample size and data collection

The unit of analysis for this study was construction projects, while the unit of inquiry was the members of the FA committees responsible for supervising and executing FA construction projects at the primary school level. Initially, a total of 120 primary schools were picked from selected LGAs in Dodoma region. The selection was based on the presence of FA construction projects. This purposive sampling ensured that only schools with relevant implemented FA projects were included, allowing for focused data collection aligned with the study's objectives. The sample size of the study was calculated by means of Yamane's (1967) formula ($n = N / [1 + N (e^2)]$) as used by other previous studies (Kazungu & Kubenea, 2023; Mushi et al., 2024), considering a 95% confidence interval. Following the use of Yamane's formula, the estimated sample size was 327 respondents from 1800 respondents who were obtained from 120 primary schools and 15 members of FA committees in selected LGAs. However, Dolnicar et al. (2016) suggested that increasing the sample size can enhance the statistical power of the study and increase the response rate. Therefore, the sample size for this study was increased from 327 to 360 respondents; however, responses from only 318 respondents were included in the final analysis. In each selected school, three (3) FA committee members were chosen using simple random sampling. These members were selected from the three main committees involved in FA construction projects as outlined in the FA guidelines: the procurement committee, the construction committee, and the receiving and inspection committee. Each of these committees typically consists of five (5) members, but one (1) representative from each was randomly selected, resulting in three respondents per school. This approach was chosen to ensure fair representation from all key areas of FA project management team, while maintaining a manageable and representative sample size. This approach reduces bias and increases the generalisability of the findings (Noor et al., 2022).

3.3 Data collection method

The collection of data was conducted by using a questionnaire because the method is very powerful in collecting a large number of responses from respondents in a reasonable time. The questionnaire was structured based on the study's variables. Items related to the study's main variables were used to formulate questions which were responded to by the FA committee members. Prior to full-scale data collection, the study used professional experts to pre-test questionnaires to ensure content validity. Also, the pilot study was conducted in Morogoro region, where data was not collected in order to ensure the clarity and comprehensiveness of the questionnaire. Therefore, the study used 25 experts who were capable with experience (at least a 5 years) in managing FA projects. Feedbacks were obtained and the final questionnaire was improved to accommodate their recommendations. Data for this study were gathered from March to December of 2023. Additionally, questionnaires were physically distributed, the study utilised the drop-and-pick technique in order to guarantee a greater response rate (Allred & Ross-Davis, 2011). This strategy was designed to offer respondents adequate time and increase the possibility of getting a sufficient number of completed questionnaires.

3.4 Measurement of study's variables

The segregation of duties, authorisation process, stock control, and records keeping were included in the study as independent variables, while cost-effectiveness was a dependent variable. The way the questionnaire was designed in this study was determined by the items that were derived from earlier research with minor modifications adhering to the scope of this research. Specifically, the variable 'segregation of duties' was measured using items from Ferrer et al. (2020). The authorisation process was measured using items that were from Ngari (2017). Stock control was measured by items adapted from Frontoni et al. (2020). Record keeping was measured by items derived from Matto (2022) and Namukasa (2017). Furthermore, cost-effectiveness was measured by using items from Albthouse et al. (2020) and Sinesilassie et al. (2017).

3.5 Data analysis

Data analysis was carried out using covariance based-structural equation modelling (CB-SEM). CB-SEM is recognised as a highly powerful and reliable multivariate statistical model for analysing latent variables (Hooper et al., 2008). SEM was suitable for the research, which contained multiple constructs assessed by using different numbers of items. Also, the study used CB-SEM because of having an adequate sample size, and the study aimed to test the hypothesis (Hazen et al., 2015). In the procurement contexts, studies such as Changelima et al. (2024), Kusi-Sarpong et al. (2022), CB-SEM were used as a data analysis method to test the relationship of the variables, which is why this study considered CB-SEM to conduct analysis. Also, in construction research, CB-SEM were used in different studies (Khoza & Haupt, 2021; Zaman et al., 2021). The study also used exploratory factor analysis (EFA) to analyse the relationship of the factors before running the model in AMOS 21 software. During analysis in EFA, it was noted that 19 items were considered for further analysis out of 26 items which were initially established. This decision was reached because it was observed that 7 items overlap each other. To avoid issues with multicollinearity and to enhance the clarity of the analysis, the 7 overlapping items, which measured similar or highly correlated constructs, were excluded to be part of the analysis in AMOS 21.

4. Findings and discussion

4.1 Characteristics of respondents

Table 1 shows that the majority who participated in this study were all members of FA committees in primary schools' construction projects, with ages ranging between 28 and 37 years (142 respondents, 44.7%), followed by those aged 38–47 years (115 respondents, 36.2%), 18–27 years (38 respondents, 11.9%), and 48–57 years (23 respondents, 7.2%). The results further show that most respondents were male (223, or 70.1%) compared to female (95, or 29.9%). Regarding educational qualifications, most respondents held diplomas (144, or 45.3%) and certificates (94, or 29.6%), followed by those with bachelor's degrees (75, or 23.6%) and only a few with master's degrees (5, or 1.5%). This educational profile is consistent with the nature of staffing in primary schools in Tanzania, where most teachers the main participants in FA committees are required to possess certificate or diploma qualifications. Advanced degrees such as master's are not commonly required for their roles. As such, the low representation of master's degree holders does not indicate a bias but rather reflects the realistic educational structure of the FA committee members in the education sector.

In terms of experience, 163 (51.3%) respondents had between 4 to 6 years of involvement in FA construction projects, while 155 (48.7%) had 1 to 3 years of experience. Committees' roles were also well distributed, with 111 (34.9%) respondents from the procurement committee, another 111 (34.9%) from the receiving and inspection committee, and 96 (30.2%) from the construction committee. Therefore, these results indicate that the members of the FA committees who participated in this study possess adequate knowledge of managing FA construction projects in primary schools, supported by their relevant education and practical experience. Although there is a low representation of advanced academic qualifications, the composition of the sample aligns with the operational and demographic realities of FA implementation in Tanzania's LGAs, thus supporting the relevance and applicability of the findings.

Table 1. Characteristics of respondents

Demographics	Categories	Frequency	Percentage (%)
Age	18-27	38	11.9
	28-37	142	44.7
	38-47	115	36.2
	48-57	23	7.2
Sex	Male	223	70.1
	Female	95	29.9
Education	Certificate	94	29.6
	Diploma	144	45.3
	Bachelor degree	75	23.6
	Master's degree	5	1.5
Experience in FA	1-3	155	48.7
	4-6	163	51.3
Type of FA committee	Receiving and inspection committee	111	34.9
	Construction committee	96	30.2
	Procurement committee	111	34.9

Source: Table by the authors

4.2 Common method bias

To assess the presence of common method bias, the Harman single-factor test was employed. An unrotated factor analysis was performed to determine if a single factor could account for most of the observed variance. The results indicated that approximately 36.64% of the variance could be ascribed to a singular cause. Therefore, common method bias was not a major issue as the common method bias could be an issue if the value is above 50% (Podsakoff et al., 2003).

4.3 Reliability and validity

The findings presented in Table 2, all of the Cronbach's alpha (α) values are higher than 0.7, which is a value that is considered to be satisfactory for the reliability of internal consistency. In a similar vein, the values of composite reliability (CR) were observed to be 0.7 and above, which is also recommendable, given that the recommended values ought to be 0.7 and above (Hair et al., 2020). Furthermore, there is the achievement of convergent validity since all values of factor loadings were greater than 0.6 (Hair et al., 2009), and the average variance extracted (AVE) was utilised to guarantee convergent validity. It is generally accepted that AVE values that are more than or equal to 0.5 are acceptable (Ab Hamid et al., 2017).

Table 2. Reliability and validity

Variables/items	Factor loadings	α
Segregation of duties (SGA) (AVE= 0.709, MSV=0.367, CR=0.907)		0.736
• No interference with responsibilities in the project	0.897	
• Every team member of the project works independently	0.891	
• The team's responsibilities differ from other team members in the project.	0.868	
• Members of one team can perform the responsibilities of other teams.	0.867	
Stock control (STC) (AVE= 0.660, MSV=0.288, CR=0.885)		0.729
• We conduct a regular and accurate stock check	0.900	
• Materials are kept in a safe custody room	0.863	
• Materials are issued based on the requirements of the site	0.845	
• Inspection records for received materials are thorough and accurate	0.801	
Record keeping (REK) (AVE= 0.581, MSV=0.394, CR=0.847)		0.742
• We usually record each transaction in the project	0.876	
• All contracts/agreements with stakeholders are properly documented and stored	0.867	
• All receiving and issuing of materials are recorded properly	0.777	
• All invoices and receipts are systematically recorded and stored	0.760	
Authorisation process (AUT) (AVE= 0.538, MSV=0.367, CR=0.821)		0.710
• Authorisation of material performed by a responsible person	0.825	
• Authorisation procedures are conducted in an efficient manner	0.825	
• A different person does the initiation and approval of materials	0.739	
• Approving procedures are done without influencing each other	0.687	
Cost-effectiveness (COE) (AVE=0.507, MSV=0.394, CR=0.747)		0.702
• We consistently track project expenses against the budget.	0.687	
• We managed to reduce procurement costs in the projects	0.708	
• There is better measurement tracking and reporting incurred costs and realised benefits in the project	0.798	

Source: Table by the authors

According to Fornell and Larcker (1981), discriminant validity was attained since the square root of AVE in Table 3 was discovered to be greater than the intercorrelation value of the variables with one another. Also, the results in Table 2 shows that the maximum shared variance (MSV) for all constructs was lower than their corresponding AVE values, thereby confirming the presence of discriminant validity among the study constructs.

Table 3. Discriminant validity

Variables	SGA	STC	REC	AUT	COE
SGA	0.842				
STC	0.339	0.812			
REC	0.322	0.462	0.762		
AUT	0.606	0.488	0.335	0.733	
COE	0.476	0.537	0.628	0.563	0.712

Source: Table by the authors

4.4 Assessment of measurement model

Confirmatory factor analysis (CFA) was conducted in AMOS 21 software to assess the model's fit and the psychometric properties of the measurement model, as illustrated in Table 4. The goodness-of-fit statistics ($\chi^2/df = 1.945$, goodness of fit index (GFI) = 0.917, comparative fit index (CFI) = 0.958, Tucker-Lewis index (TLI) = 0.949, Incremental fit index (IFI) = 0.958, Adjusted goodness of fit index (AGFI) = 0.889, RMSEA = 0.055) demonstrated that the model accurately represented the observed data (Hair et al., 2009; Hooper et al., 2008). Convergent and discriminant validity, internal consistency, and reliability were evaluated to determine the psychometric properties of the latent variables and the measurement items.

Table 4. Fit statistics of CFA

Measure	Estimate	Threshold	Interpretation
χ^2/df	1.945	1 to 3	Excellent
RMSEA	0.055	< 0.06	Excellent
GFI	0.917	> 0.80	Acceptable
AGFI	0.889	> 0.80	Acceptable
RMR	0.032	< 0.05	Acceptable
CFI	0.958	> 0.95	Excellent
TLI	0.949	> 0.95	Excellent
IFI	0.958	> 0.95	Excellent

Source: Table by the authors

4.5 Relationships between study's variables in the structural model

The fit indices for the structural model, as presented in Table 5, fall within the recommended range as indicated by Hooper et al. (2008). This signifies that the findings substantiate and validate the postulated structural framework. Subsequently, we conducted a path analysis, as depicted in Figure 1, to examine the impact of variables such as segregation of duties, authorisation procedure, stock control, and record keeping on the cost-effectiveness in FA construction projects.

Table 5. Relationships between study's variables

Hypothesised relationship	Estimate	S. E	T-value	p-value	Decision
COE <--- SGA	0.094	0.056	1.668	0.095	Rejected
COE <--- STC	0.165	0.068	2.437	0.015	Accepted
COE <--- REC	0.355	0.060	5.957	0.000	Accepted
COE <--- AUT	0.233	0.074	3.145	0.002	Accepted

Note(s): Model fit indices: GFI= 0.909, NFI=0.908, IFI=0.949, TLI=0.938, CFI=0.948, AGFI=0.880, RMSEA=0.060 and $\chi^2/df = 2.150$

Source: Table by the authors

4.5.1 Segregation of duties and cost-effectiveness in FA construction projects

Based on the results presented in Table 5, it was found that there is no significant relationship between the segregation of duties and cost-effectiveness in FA construction projects ($p = 0.095$ and $\beta = 0.094$). Therefore, this finding does not support H1, suggesting that an increase in the segregation of duties does not have an impact on the cost-effectiveness in FA construction projects. The possible explanation for this finding could be attributed to the nature of operations in FA construction projects in primary schools, particularly regarding the separation of activities between different committees. There may be interference or overlapping of activities between committees. For example, in some cases, the activities that the procurement committee should carry out might be performed by the construction committee. This lack of clear separation and overlap of responsibilities could lead to inefficiencies and increased costs. Additionally, if

the procurement committee lacks independence and transparency, it may make biased or inefficient purchasing decisions, resulting in higher costs. Likewise, in the receiving and inspection committee when, receiving goods without thorough checks leads to the possibility of delays, rework and later increased project cost. Thus, segregation of duties in FA construction projects may not influence cost-effectiveness.

These findings are consistent with those of Ejoh and Ejom (2014). Their research found that the segregation of duties does not influence financial performance. However, the study contradicts previous research done by Ngari (2017), who established the relationship between the segregation of duties and financial performance. The study highlighted that, if the organisation is able to segregate the duties efficiently, there is a big chance of increasing performance of financial because individuals will strive best to ensure their activities are done efficiently. The discrepancy between this study and that of Ngari (2017) may be attributed to contextual differences in implementation environments. Ngari's study may have been conducted in a more structured or better resourced setting where segregation of duties is systematically enforced and monitored. In contrast, the current study focuses on FA construction projects in Tanzanian primary schools, where resource limitations, staffing constraints, or informality in committee operations might reduce the effectiveness of segregation of duties, even when formally in place. As a result, the expected benefits of segregation may not be fully realised, leading to the observed lack of significant influence on cost-effectiveness.

Additionally, the findings contradict the institutional theory, which suggests that adherence to rules, guidelines, and regulatory frameworks that are developed within the organisation's environment enhances organisational legitimacy and efficiency. As per this theory, the segregation of duties is an important component towards promoting transparency, accountability, and internal checks and balances. The organisation will be able to prevent fraud, errors, and conflicts of interest if the duties are segregated, hence improving the cost-effectiveness of construction projects and overall performance.

4.5.2 Stock control and cost-effectiveness in FA construction projects

The results, presented in Table 5, provide support for H2 ($p = 0.015$ and $\beta = 0.165$). The result implies that stock control is a positive and significant predictor of the cost-effectiveness in FA construction projects. In this regard, the study establishes that stock control influences the cost-effectiveness in FA construction projects. The most obvious explanation for this is that stock control allows organisations to determine the maximum and minimum level of stock required for construction. Running out of stock is a problem for construction projects because it leads to delays and idle time and consequently increases the cost of the project. Thus, through stock control, the organisation can improve activities of construction because the materials will be available when needed to be used in the project. Hence, cost-effectiveness will be achieved. Also, through proper tracking of stock levels and usage of materials, the organisation can be able to identify any shortage caused by theft or pilferage. Through this stock control, the organisation will be able to solve the issue of financial loss and promote transparency and accountability in FA construction projects. This control helps to prevent financial loss and encourages transparency and accountability in the construction process. Stock control in construction projects is also related to ensuring the quality of materials through inspection during the receiving of materials. The inspection committee will be able to inspect all the incoming materials in order to be sure of the intended quality for the sake of avoiding substandard materials, which may increase the cost of construction projects due to delays and rework of the project to rectify the problem.

These findings are consistent with those of Bajomo et al. (2022), who observed the relationship between stock control and cost-effectiveness. The study emphasises that ineffective material management is the primary reason for the project's delay and the loss of financial resources. The study recommends that the organisation should ensure there is proper management of materials by applying different techniques of controlling them in order to avoid the loss of financial resources because materials are key components in the organisation. Also, the study aligned with the institutional theory, which emphasises adhering to the rules and regulatory framework in the organisation. Hence, the project participant, through observing these principles of institution theory, will be shaped in their behaviour of increasing care to the organisation's assets; hence the stock control will be achieved in order to reduce the cost of construction projects. Additionally, the findings resonate with agency theory, which highlights the need for aligning the interests of stakeholders to ensure accountability and efficiency. By establishing effective stock control practices and adherence to institutional norms, organisations can mitigate conflicts of interest and ensure that resources are utilised effectively, ultimately improving cost-effectiveness in construction projects.

4.5.3 Record keeping and cost-effectiveness in FA construction projects

The hypothesis developed was accepted since the results in Table 5 indicated that H3 ($p < 0.001$ and $\beta = 0.355$). This implies that record keeping is an important factor in influencing the cost-effectiveness in FA construction projects. A clear explanation for this is that keeping procurement record is vital for promoting transparency and accountability. If

there are weaknesses in this aspect, it can affect how efficiently and effectively public procurement systems operate (Namukusa, 2017). The organisation needs to recognise the importance of maintaining records. According to Section 71 of the PPA 2023, the procuring entity must retain records of procurement or disposal activities for at least five years after fulfilling the contract. These essential records include bidding documents produced by the purchasing organisation, copies of tender documents submitted by the bidders, tender files, contract documents, and records of contract implementation, among others. These documents help the organisation to monitor and control costs throughout the project life cycle because all information concerning materials usage, labour hours, price of purchases and equipment usage will be accessible for tracking actual cost against the budgeted amount. The available information will enable project participants to identify potential cost overruns at an early stage and make it easy to take corrective measures to control expenses.

These results are aligned with Namukasa (2017) study, which also identified a significant relationship between record keeping and procurement performance. Similarly, Matto (2022) observed that record management attributes have a great impact on procurement performance in Tanzania. Further, the study highlighted that records management influences the efficiency and effectiveness of procurement operations. Also, this study aligned with institutional theory by emphasising the importance of adhering to organisational rules, guidelines and practices, such as record keeping, in shaping the behaviour and outcomes of people in achieving the cost-effectiveness in FA construction projects. Furthermore, from the perspective of agency theory, effective record keeping serves as a mechanism to align the interests of stakeholders. By ensuring transparency and accountability in procurement processes, organisations can reduce information asymmetry and enhance trust, ultimately improving overall performance and cost-effectiveness in construction projects.

4.5.4 Authorisation process and cost-effectiveness in FA construction projects

The focus was to determine whether there is a relationship between the authorisation process and cost-effectiveness, as hypothesised in the H4. Results establish that there is a link between the authorisation process and the cost-effectiveness in FA construction projects ($p < 0.001$ and $\beta = 0.233$). This implies that there is a significant relationship as the authorisation process acts as a protection against unauthorised expenditure, which may help to align project activities with the approved plan and budget. This is evident as no purchases can be made without approval by the designated personnel who review the purchase request, confirm the necessity of the purchase, comply with the budget and observe overall procurement procedures. Through the proper authorisation process, the procuring entity will be able to mitigate risks and financial control and improve the procurement operations. Also, the authorisation process may contribute to reducing the possibility of corruption and mismanagement of funds and later promote accountability, integrity and transparency in construction projects. Hence, achieving the cost-effectiveness in FA construction projects through the authorisation process is necessary.

The findings are consistent with the study done by Primanda and Harahap (2019), who establish the importance of the authorisation process in the organisation. The study indicated that, the authorisation process acts as a mechanism to check, verify and validity of transactions to ensure they comply with the relevant policies of the organisation. Furthermore, the findings align with institutional theory, which emphasises the role of establishing regulatory frameworks, norms and attitudes in shaping organisational behaviour. The theory suggests that through implementing a proper authorisation process, the organisation can be able to achieve the intended performance. This is because the authorisation process can increase accountability and transparency in construction projects, which is highly influenced by adhering to established laws, guidelines and norms as suggested by institutional theory. As a result, adhering to institutional theory principles in the authorisation process not only helps in achieving cost-effectiveness but also enhances the overall governance and ethical standards within the construction industry.

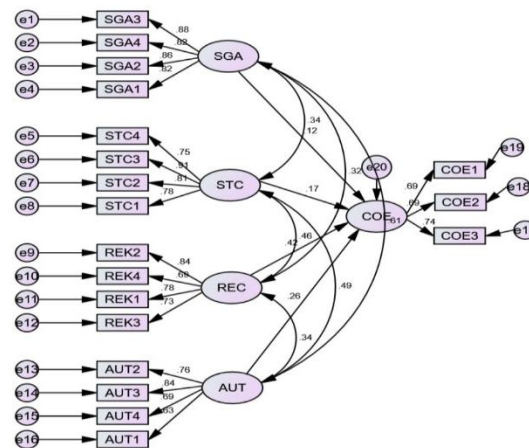


Figure 1. The structural model

Source: Figure by authors

5. Conclusion

This study examined the role of the procurement internal control systems on the cost-effectiveness in FA construction projects. The study concluded that record keeping is the main factor among the three that explains the relationship between the procurement internal control system and the cost-effectiveness in the FA construction projects, as the coefficient beta is high compared to all other variables. Furthermore, except for 'segregation of duties', all variables of the procurement internal control systems were found to have a positive and significant effect on cost-effectiveness in the FA construction project. In this regard, implementing effective procurement internal control systems will help the organisation to achieve the cost-effectiveness in the construction projects because all issues associated with fraud, improper materials management and inefficiency in the procurement process will be solved through proper procurement internal control systems. Also, the findings of this study indicate that procurement practitioners and FA committees have a greater chance of achieving cost-related objectives and reducing the expenses associated with public procurement if they do a good job of adhering to procurement internal control systems in construction projects.

6. Study's implications

6.1 Theoretical implications

Guided by institutional theory and agency theory, this study examined the influence of procurement internal control systems on cost-effectiveness in FA construction projects in Tanzania. The findings provide significant theoretical contributions to both institutional and agency theories and expand the current body of knowledge on cost-effectiveness in construction project implementation, especially within the Tanzanian context. From an institutional theory perspective, the study reinforces the notion that adherence to established rules and regulatory frameworks is critical in enhancing procurement internal control system. It highlights that when actors in FA construction projects comply with institutional frameworks such as procurement regulations are more likely to establish and implement internal control systems. These systems, in turn, lead to improved cost-effectiveness in FA projects. In addition, the study contributes to agency theory by addressing the principal-agent relationship within public construction projects. Agency theory emphasises the challenges of goal misalignment and information asymmetry between principals (procuring entities) and agents (FA committees). This study suggests that strong procurement internal control systems can serve as monitoring mechanisms to reduce opportunistic behaviours, ensure accountability, and align the interests of agents with those of the principals. By mitigating agency problems, procurement internal controls enhance transparency, minimise wastage, and improve cost-efficiency in FA projects.

6.2 Practical implications

The study provides reflections and practices that contribute to knowledge among procurement experts and force account implementation committees about establishing and adhering to proper procurement internal control systems.

Through the authorisation process, stock control, and record keeping, procurement experts and committees will be able to control cost, resource utilisation, and overall project performance. The findings of the study can help procure entities improve their procurement internal control systems to achieve the cost-effectiveness in FA construction projects. Also, the study contributes to the public and procurement policy on enhancing the procurement internal control system for achieving cost-effectiveness.

7. Limitations of the study

The limitations of this study stem from the environments under which it was conducted. The study focused on LGAs as public entities in Tanzania, which are managed and regulated by the country's legal procurement system. Thus, the findings should be interpreted with caution as legislative frameworks that oversees public procurement activities, including force account projects may differ among countries. In addition, other indicators of building performance can be included, as the current study focuses primarily on cost-effectiveness. The study recommends that future studies to be conducted on assessing the quality attainment of FA construction projects through procurement internal control systems as also observed to be the problem in public projects. Furthermore, the study based on the direct effects of procurement internal control systems on cost-effectiveness. Therefore, the need for developing and testing structural models that include potential mediators and moderators could be crucial for advancing the existing knowledge.

References

- Abiodun, O. S. (2020). Auditing and internal control mechanisms: an instrument of accountability in Ekiti state, Nigeria. *African Journal of Accounting and Financial Research*, 4(1), 1-13.
- Adi, Y.B, and Rohman, A. (2023). Determinants of Fraud Prevention of Procurement of Goods and Services in Government Agency. *JAK (Journal Akuntansi) Kajian Ilmiah Akuntansi* 10(2), 234-55. <https://doi.org/10.30656/jak.v10i2.5498>
- Alavipour, S. R., & Arditi, D. (2018). Optimizing financing cost in construction projects with fixed project duration. *Journal of Construction Engineering and Management*, 144(4), 04018012. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0001451](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001451)
- Albtoush, A. M. F, Doh, S. I., Abdul Rahman, A. R. B., & Albtoush, J. F. A. A. (2020). Factors affecting the cost management in construction projects. *International Journal of Civil Engineering and Technology*, 11(1), 105-111.
- Allred, S. B., & Ross-Davis, A. (2011). The drop-off and pick-up method: An approach to reduce nonresponse bias in natural resource surveys. *Small-Scale Forestry*, 10(3), 305-318. <https://doi.org/10.1007/s11842-010-9150-y>
- Aloyce, D., Monko, R. J., & Luvara, V. G. (2024). Critical audit indicators for assessing Construction Projects Performance (CPP) at pre-contract stage in Tanzania. *International Journal of Construction Management*, 24(5), 530-539. <https://doi.org/10.1080/15623599.2023.2179682>
- Ashika, M., & Monisha, V. (2019). Material management in construction projects using an inventory management system. *IRE Journals*, 3(5), 52-58.
- Azman, M. A., Chuweni, N. N., Muhamad Halil, F., Ku Azir, K. M. A., Lee, B. L., Juhari, F. N., & Skitmore, M. (2024). The impact of the change in institutional regulation on construction productivity: Firm-level evidence in a developing economy. *Construction Management and Economics*, 42(3), 199-214. <https://doi.org/10.1080/01446193.2023.2227286>
- Bajomo, M., Ogbeyemi, A., & Zhang, W. (2022). A systems dynamics approach to the management of material procurement for the Engineering, Procurement and Construction industry. *International Journal of Production Economics*, 244, 108390. <https://doi.org/10.1016/j.ijpe.2021.108390>
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Beste, T., & Klakegg, O. J. (2022). Strategic change towards cost-efficient public construction projects. *International Journal of Project Management*, 40(4), 372-384. <https://doi.org/10.1016/j.ijproman.2022.04.006>
- Bhagat, G., & Jha, K. N. (2023). Corruption risks in public construction. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 15(2), 04522062. <https://doi.org/10.1061/JLADAH.LADR-936>
- Brammer S, Jackson G, Matten D. 2012. Corporate social responsibility and institutional theory: new perspectives on private governance. *Socio-Economic Review*, 10, 3-28.
- Campbell JL. 2007. Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *Academy of Management Review*, 32(3), 946-967
- Cao, F., & Wang, C. (2023). Corruption, accountability, and discretion of procurement officials: An analysis of selection Preferences for Performance-based Evaluation Criteria (PBEC) in PPP procurement. *PLOS One*, 18(3), e0282542. <https://doi.org/10.1371/journal.pone.0282542>

- Chadee, A., Martin, H., Gallage, S., & Rathnayake, U. (2023). Reducing cost overrun in public housing projects: a simplified reference class forecast for small island developing states. *Buildings*, 13(4), 998. <https://doi.org/10.3390/buildings13040998>
- Changalima, I. A., Ismail, I. J., & Mchopa, A. D. (2024). Effects of supplier selection and supplier monitoring on public procurement efficiency in Tanzania: a cost-reduction perspective. *Vilakshan-XIMB Journal of Management*, 21(1), 55-65. <https://doi.org/10.1108/xjm-04-2022-0077>
- Changalima, I. A., Mushi, G. O., & Mwaiseje, S. S. (2021). Procurement planning as a strategic tool for public procurement effectiveness: Experience from selected public procuring entities in Dodoma city, Tanzania. *Journal of Public Procurement*, 21(1), 37-52. <https://doi.org/10.1108/JOPP-05-2020-0047>
- Chen, Q., Jin, Z., Xia, B., Wu, P., & Skitmore, M. (2016). Time and cost performance of design-build projects. *Journal of Construction Engineering and Management*, 142(2), 04015074. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0001056](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001056)
- Chiu, T., & Jans, M. (2019). Process mining of event logs: A case study evaluating internal control effectiveness. *Accounting Horizons*, 33(3), 141-156. <https://doi.org/10.2308/acch-52458>
- Dacin MT. 1997. Isomorphism in context: the power and prescription of institutional norms. *Academy of Management Journal*, 40, 46-81.
- Di Maggio PJ, Powell WW. (1983). The iron cage revisited: institutional isomorphism and collective rationality in organisational fields. *American Sociological Review*, 48(2), 147-160
- Dolnicar, S., Grün, B., & Leisch, F. (2016). Increasing sample size compensates for data problems in segmentation studies. *Journal of Business Research*, 69(2), 992-999. <https://doi.org/10.1016/j.jbusres.2015.09.004>
- Durdyev, S., & Hosseini, M. R. (2020). Causes of delays on construction projects: a comprehensive list. *International Journal of Managing Projects in Business*, 13(1), 20-46. <https://doi.org/10.1108/IJMPB-09-2018-0178>
- Ejoh, N., & Ejom, P. (2014). The impact of internal control activities on the financial performance of tertiary institutions in Nigeria. *Journal of Economics and Sustainable Development*, 5(16), 133-143.
- Engelbert, A., Kaltenborn, M., & Reit-Born, N. A. (2016). *Effective corruption control: Supplier remedies in public procurement in Kenya, Uganda and Tanzania-A comparative analysis of mechanisms and their implementation* (Vol. 68). Logos Verlag Berlin GmbH.
- Fazil, M. W., Lee, C. K., & Tamyaz, P. F. M. (2021). Cost estimation performance in the Construction Projects: A systematic review and Future Directions. *International Journal of Industrial Management*, 11, 217-234.
- Ferrer, P. S.S, Galvão, G. D. A., & de Carvalho, M. M. (2020). Tensions between compliance, internal controls and ethics in the domain of project governance. *International Journal of Managing Projects in Business*, 13(4), 845-865. <https://doi.org/10.1108/IJMPB-07-2019-0171>
- Firouzi, A., Yang, W., & Li, C. Q. (2016). Prediction of the total cost of a construction project with dependent cost items. *Journal of Construction Engineering and Management*, 142(12), 04016072. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0001194](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001194)
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Frontoni, E., Marinelli, F., Rosetti, R., & Zingaretti, P. (2020). Optimal stock control and procurement by reusing obsolescences in manufacturing. *Computers & Industrial Engineering*, 148, 106697. <https://doi.org/10.1016/j.cie.2020.106697>
- Frumkin P, Galaskiewicz J. 2004. Institutional isomorphism and public sector organisations. *Journal of Public Administration Research Theory*, 14(3), 283-307
- Gadisa, B., & Zhou, H. (2021). Exploring influential factors leading to the poor performance of public construction project in Ethiopia using structural equation modelling. *Engineering, Construction and Architectural Management*, 28(6), 1683-1712. <https://doi.org/10.1108/ECAM-12-2019-0689>
- Hair Jr, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, 109, 101-110. <https://doi.org/10.1016/j.jbusres.2019.11.069>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate data analysis* (7th ed.). Prentice-Hall.
- Hashem M. Mehany, M. S., Bashettyavar, G., Esmaeili, B., & Gad, G. (2018). Claims and project performance between traditional and alternative project delivery methods. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 10(3), 04518017. [https://doi.org/10.1061/\(ASCE\)LA.1943-4170.0000266](https://doi.org/10.1061/(ASCE)LA.1943-4170.0000266)
- Hooper D, Coughlan J, & Mullen M.R. (2008) Structural equation modelling: guidelines for determining model fit. *The Electronic Journal of Business Research Methods*, 6(1), 53-60.

- Israel, B. (2023). The impact of clients' procurement challenges on the substance goals of roads construction projects in Songwe, Tanzania. *International Journal of Construction Management*, 23(12), 2144-2150. <https://doi.org/10.1080/15623599.2022.2045861>
- Jensen, M.C. & Meckling, W.H. (1976). Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Kazungu, I., & Kubenea, H. (2023). Customer satisfaction as a mediator of service facility and word of mouth in higher learning institutions. *Journal of Applied Research in Higher Education*, 15(5), 1649-1663. <https://doi.org/10.1108/JARHE-04-2022-0128>
- Khanzadi, M., Sheikhhoshkar, M., & Banihashemi, S. (2020). BIM applications toward key performance indicators of construction projects in Iran. *International Journal of Construction Management*, 20(4), 305-320. <https://doi.org/10.1080/15623599.2018.1484852>
- Khoza, J. D., & Haupt, T. C. (2021). *Measuring health and safety performance of construction projects in South Africa*. In IOP Conference Series: Earth and Environmental Science (Vol. 654, No. 1, p. 012031). IOP Publishing
- Kusi-Sarpong, S., Mubarik, M. S., Khan, S. A., Brown, S., & Mubarak, M. F. (2022). Intellectual capital, blockchain-driven supply chain and sustainable production: Role of supply chain mapping. *Technological Forecasting and Social Change*, 175, 121331. <https://doi.org/10.1016/j.techfore.2021.121331>
- Lill, P. A., Wald, A., & Gleich, R. (2020). Agility and the role of project—Internal control systems for innovation project performance. *International Journal of Innovation Management*, 24(07), 2050064. <https://doi.org/10.1142/S1363919620500644>
- Lindhard, S., & Larsen, J. K. (2016). Identifying the key process factors affecting project performance. *Engineering, Construction and Architectural Management*, 23(5), 657-673. <https://doi.org/10.1108/ECAM-08-2015-0123>
- Makoye, M., Mlinga, R. S., & Ndanshau, M. O. (2023). Impact of macroeconomic factors on the performance of construction industry in Tanzania. *International Journal of Construction Management*, 23(15), 2625-2636. <https://doi.org/10.1080/15623599.2022.2084259>
- Matto, M. C. (2022). Records management and performance of procurement management units in Tanzania: a case study. *Records Management Journal*, 32(1), 75-95. <https://doi.org/10.1108/RMJ-05-2021-0018>
- Matto, M. C., Ame, A. M., & Nsimbila, P. M. (2021). Influence of contract management on value for money procurement in Tanzania. *International Journal of Procurement Management*, 14(6), 724-741.
- Mchopa, A. (2015). Integrating contract management practices to achieve value for money in Tanzanian public procurement: evidence from selected procuring organisations in Moshi municipality. *Journal of Public Procurement*, 15(2), 129-149.
- Mohamed, B. M., Rasheli, G. A., & Mwagike, L. R. (2018). Marginal effects of factors influencing procurement records management: A survey of selected procuring entities in Tanzania. *International Journal of Social and Administrative Sciences*, 3(1), 22-34.
- Muhwezi, M., Mutebi, H., Mayanja, S. S., Tukamuhabwa, B., Namagembe, S., & Kalema, R. (2023). Information integration, procurement internal controls, material and purchasing procedure standardisation and procurement performance in humanitarian organisations. *Journal of Humanitarian Logistics and Supply Chain Management*, 13(4), 410-432. <https://doi.org/10.1108/JHLSCM-11-2021-0115>
- Muntu, D., Setyawati, R., Riantini, L. S., & Ichsan, M. (2021). Effect of human resources management and advances to improve construction project performance. *Physics and Chemistry of the Earth, Parts A/B/C*, 122, 103000.
- Musarat, M. A., Alaloul, W. S., & Liew, M. S. (2021). Impact of inflation rate on construction projects budget: A review. *Ain Shams Engineering Journal*, 12(1), 407-414. <https://doi.org/10.1016/j.asej.2020.04.009>
- Mushi, G. O., Ismail, I. J., & Mchopa, A. D. (2024). The influence of procurement skills on the cross-functional coordination in public procurement: evidence from Tanzania. *Cogent Social Sciences*, 10(1), 2324972. <https://doi.org/10.1080/23311886.2024.2324972>
- Mwaiseje, S. S., Mchopa, A. D., Panga, F. P., & Nkuhi, M. S. (2024). Exploring the nexus between procurement contract administration and quality attainment of force account construction projects in Tanzania. *Cogent Engineering*, 11(1), 2432516. <https://doi.org/10.1080/23311916.2024.2432516>
- Namukasa, J. (2017). Records management and procurement performance: A case of NAADS program in the central region of Uganda. *Records Management Journal*, 27(3), 256-274.
- National Audit Office of Tanzania (NAOT) (2019). *The Annual General Report of the Controller and Auditor General on Audit of the Local Government Authorities for the Financial Year 2018/2019*. NAOT, Dodoma.
- National Audit Office of Tanzania (NAOT) (2021). *The Annual General Report of the Controller and Auditor General on Audit of the Local Government Authorities for the Financial Year 2020/2021*. NAOT, Dodoma.

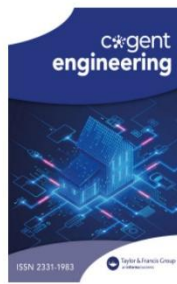
- Nawaz, A., & Guribie, F. L. (2024). Impacts of institutional isomorphism on the adoption of social procurement in the Chinese construction industry. *Construction Innovation*, 24(3), 846-862. <https://doi.org/10.1108/CI-02-2022-0035>
- Nduhura, T., Nakalanzi, B., Ssempebwa, B., Cristiana, T., Wilcky, B., & Muhairwe, B. (2022). Internal Control Systems and Procurement Effectiveness in Public Entities in Uganda: A case of Uganda Human Rights Commission. *International Journal of Academic Management Science Research (IJAMSR)*, 6(9), 173-189.
- Ngari, G. M. (2017). The effect of internal controls on the financial performance of microfinance institutions in Kenya. *International Academic Journal of Economics and Finance*, 2(3), 112-140.
- Nguyen, T. S., & Mohamed, S. (2021). Mediation Effect of Stakeholder Management between Stakeholder Characteristics and Project Performance. *Journal of Engineering, Project & Production Management*, 11(2), 102-117.
- Niazi, G. A., & Painting, N. (2017). Significant factors causing cost overruns in the construction industry in Afghanistan. *Procedia Engineering*, 182, 510-517. <https://doi.org/10.1016/j.proeng.2017.03.145>
- Njoka, B. K., & Gikonyo, N. (2023). Influence of approval processes on performance of capital projects in energy-based state corporations in Kenya. *International Academic Journal of Human Resource and Business Administration*, 4(3), 378-387. https://iajournals.org/articles/iajhrba_v4_i3_378_387.pdf
- Noor, S., Tajik, O., & Golzar, J. (2022). Simple random sampling. *International Journal of Education & Language Studies*, 1(2), 78-82. <https://doi.org/10.22034/ijels.2022.162982>
- Obi, L. I., Arif, M., Awuzie, B., Islam, R., Gupta, A. D., & Walton, R. (2021). Critical success factors for cost management in public-housing projects. *Construction Innovation*, 21(4), 625-647. <https://doi.org/10.1108/CI-10-2020-0166>
- Ochelle, C. A., Muturi, W., & Atambo, W. (2017). Effect of inventory control methods on the performance of procurement function in sugar manufacturing firm in western Kenya. *International Journal of Social Sciences and Information Technology*, 3(2), 13-27.
- Panda, B., & Leepsa, N. M. (2017). Agency theory: Review of theory and evidence on problems and perspectives. *Indian journal of corporate governance*, 10(1), 74-95. <https://doi.org/10.1177/0974686217701467>
- Paul, B., Tondihai, S., & Das, B. B. (2021). *Safety stock in inventory management and wastage analysis at construction sites*. In Recent Trends in Civil Engineering: Select Proceedings of TMSF 2019 (pp. 509-517). Springer Singapore.
- Podsakoff, P.M., Mac Kenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.
- PPRA. (2020). *Annual Performance Evaluation Report for the Financial Year 2019/20*. Public Procurement Regulatory Authority. Dodoma, Tanzania.
- PPRA. (2021). *Annual Performance Evaluation Report for the Financial Year 2020/21*. Public Procurement Regulatory Authority. Dodoma, Tanzania.
- PPRA. (2022). *Annual Performance Evaluation Report for the Financial Year 2021/22*. Public Procurement Regulatory Authority. Dodoma, Tanzania.
- Primanda, P. P., & Harahap, S. N. (2019). *Analysis of Internal Control of Procurement of Government (Case Study on at XYZ University)*. In Asia Pacific Business and Economics Conference (APBEC 2018) (pp. 87-93). Atlantis Press.
- Rattini, V. (2023). Worker autonomy and performance: Evidence from a real-effort experiment. *Journal of Economics & Management Strategy*, 32(2), 300-327. <https://doi.org/10.1111/jems.12511>
- Said, H., Badru, B. B., & Shahid, M. (2011). Confirmatory factor analysis (CFA) for testing validity and reliability instrument in the study of education. *Australian Journal of Basic and Applied Sciences*, 5(12), 1098-1103.
- Satheesh, S. A., Verweij, S., van Meerkerk, I., Busscher, T., & Arts, J. (2023). The impact of boundary spanning by public managers on collaboration and infrastructure project performance. *Public Performance & Management Review*, 46(2), 418-444. <https://doi.org/10.1080/15309576.2022.2137212>
- Sayed, M., Abdel-Hamid, M., & El-Dash, K. (2023). Improving cost estimation in construction projects. *International Journal of Construction Management*, 23(1), 135-143.
- Scott, W. R. (2004). Institutional theory: Contributing to a theoretical research program. In K. G. Smith & M. A. Hitt (Eds.), *Great minds in management: The process of theory development* (pp. 460-484). Oxford University Press.
- Setia, M. S. (2016). Methodology series module 3: Cross-sectional studies. *Indian Journal of Dermatology*, 61(3), 261-264.
- Sinesilassie, E. G., Tripathi, K. K., Tabish, S. Z. S., & Jha, K. N. (2019). Modeling success factors for public construction projects with the SEM approach: Engineer's perspective. *Engineering, Construction and Architectural Management*, 26(10), 2410-2431. <https://doi.org/10.1108/ECAM-04-2018-0162>
- Tembo, C. K., Muleya, F., & Kanyemba, A. (2024). An appraisal of cost management techniques used in the construction industry. *International Journal of Construction Management*, 24(1), 10-18. <https://doi.org/10.1080/15623599.2022.2132355>

- Tumuhairwe, R., & Ahimbisibwe, A. (2016). Procurement records compliance, effective risk management and records management performance: evidence from Ugandan public procuring and disposing entities. *Records Management Journal*, 26(1), 83-101.
- United Republic of Tanzania (2021). *Revenue and Expenditure Estimates Report for the Financial Year 2022/2023*. President's Office – Regional Administration and Local Government, Government Printers.
- United Republic of Tanzania (2022). *Revenue and Expenditure Estimates Report for the Financial Year 2022/2023*. President's Office – Regional Administration and Local Government, Government Printers.
- United Republic of Tanzania (2023). *Public Procurement Act of 2023*. Government Printers.
- Winata, L. E., & Gultom, Y. M. (2024). The effects of governance on performance: the case of Public-Private Partnership (PPP) toll roads in Indonesia. *International Journal of Construction Management*, 24(13), 1398-1406.
- Winge, S., Albrechtsen, E., & Arnesen, J. (2019). A comparative analysis of safety management and safety performance in twelve construction projects. *Journal of Safety Research*, 71, 139-152. <https://doi.org/10.1016/j.jsr.2019.09.015>
- Yamane, T. (1967), *Statistics: An Introductory Analysis*, 2nd Edition. Harper and Row, New York.
- Zaman, U., Florez-Perez, L., Khwaja, M. G., Abbasi, S., & Qureshi, M. G. (2021). Exploring the critical nexus between authoritarian leadership, project team member's silence and multi-dimensional success in a state-owned mega construction project. *International Journal of Project Management*, 39(8), 873-886. <https://doi.org/10.1016/j.iiproman.2021.10.007>

CHAPTER FOUR
PUBLISHED PAPER THREE
EXPLORING THE NEXUS BETWEEN PROCUREMENT CONTRACT
ADMINISTRATION AND QUALITY ATTAINMENT OF FORCE ACCOUNT
CONSTRUCTION PROJECTS IN TANZANIA.

4.1 An overview

This chapter presents a published paper that addresses the third objective of this study. The paper, published in the Cogent Engineering volume 11, issue 1, accessible to <https://doi.org/10.1080/23311916.2024.2432516> by Taylor & Francis Publisher. The study Exploring the nexus between procurement contract administration and quality attainment of force account construction projects in Tanzania. The attached paper provides a detailed and comprehensive presentation of the research findings, offering valuable understandings into how effective procurement contract administration enhances quality attainment of force account construction projects in Tanzania.



Exploring the nexus between procurement contract administration and quality attainment of force account construction projects in Tanzania

Shadrack Samwel Mwaiseje, Alban Dismas Mchopa, Faustine Peter Panga & Mathias Sylvester Nkuhi

To cite this article: Shadrack Samwel Mwaiseje, Alban Dismas Mchopa, Faustine Peter Panga & Mathias Sylvester Nkuhi (2024) Exploring the nexus between procurement contract administration and quality attainment of force account construction projects in Tanzania, Cogent Engineering, 11:1, 2432516, DOI: [10.1080/23311916.2024.2432516](https://doi.org/10.1080/23311916.2024.2432516)

To link to this article: <https://doi.org/10.1080/23311916.2024.2432516>



© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 25 Nov 2024.



Submit your article to this journal [↗](#)



Article views: 268



View related articles [↗](#)



View Crossmark data [↗](#)

Exploring the nexus between procurement contract administration and quality attainment of force account construction projects in Tanzania

Shadrack Samwel Mwaiseje^a , Alban Dismas Mchopa^b , Faustine Peter Panga^b  and Mathias Sylvester Nkuhi^c

^aDepartment of Procurement and Supply Management, College of Business Education–Dodoma Campus, Dodoma, Tanzania;

^bDepartment of Procurement and Supply Chain Management, Moshi Co-operative University, Moshi, Tanzania; ^cDepartment of Law, Moshi Co-operative University, Moshi, Tanzania

ABSTRACT

Currently, there is an increasing focus on procurement contract administration as among of the key variables in explaining the performance of construction projects. Despite such observations, their relationship with quality attainment of the Force Account (FA) construction projects is not well postulated to cement the observed causal relationship. Therefore, this study assesses the role of procurement contract administration in the quality attainment of FA construction projects in Local Government Authorities (LGAs) in Tanzania. The study employed a cross-sectional research design, and data was collected by using structured questionnaires from primary schools in Dodoma, Tanzania. The study used 318 respondents to analyse data by using Partial least square structural equation modelling (PLS-SEM). The findings of the study reveal that risk management, relationship management, dispute management, and monitoring and control are positive and significant factors in explaining the quality attainment of FA construction projects. Notably, risk management is the strongest predictor of quality attainment of FA construction projects. It was concluded that the quality attainment of FA construction projects is highly influenced by procurement contract administration. These findings have practical implications, as procurement practitioners and FA committees can use them to make decisions concerning the quality attainment of the projects through the implementation of procurement contract administration practices.

ARTICLE HISTORY

Received 24 June 2024
Revised 23 October 2024
Accepted 15 November 2024

KEYWORDS

Construction projects; contract management; Force account; procurement contract management; and quality attainment

SUBJECTS

African Studies; Building and Construction; Dispute Resolution

Introduction

Globally, quality achievement in construction projects is a problem in the construction industry. This is normally because there are frequent occurrences of issues, ranging from poor workmanship and sub-standard materials to inadequate project management (De Silva et al., 2023). In Africa, quality problems in construction projects are caused by inadequate infrastructure, regulatory problems, and inadequate technology for assessing the performance of construction projects (Gadisa and Zhou, 2021; Santoso and Gallage, 2019). This case was also prevalent in Tanzania, where quality problems were observed owing to resource constraints, failure of suppliers to supply quality materials and poor contract management (Mtana et al., 2023). Recently,

Tanzania has increased the adoption of force accounts (FA) in construction projects, an approach where procuring entities (PEs) use internal labor or hire labor and procure materials for construction projects, bypassing traditional contracting procedures (Macharia et al., 2023). The motive behind implementing construction projects through FA is to reduce costs, but regularly, the projects suffered from a lack of skilled labor, poor oversight, inadequate use of procurement procedures, and limited accountability, which in turn confounded the success of quality standards. Worldwide, poor-quality construction projects are frequently reported because of ineffective project management of projects (Jraisat et al., 2016). Furthermore, Wawak et al. (2020) stated that in construction projects, achieving quality satisfaction is challenging, which is considered a severe

CONTACT Shadrack Samwel Mwaiseje  mwaiseje@gmail.com  Department of Procurement and Supply Management, College of Business Education–Dodoma Campus, Dodoma, Tanzania

© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

issue. Hence, most countries have struggled to achieve the intended quality standards for construction projects (Koo et al., 2024). As a result, it is important to assess the quality of a construction project can achieved through procurement contract administration.

Procurement contract administration is considered important in construction projects, as it involves ensuring adherence to the terms and conditions of the contract and managing and supervising the implementation of the contract (Matto et al., 2021). It also enhances the monitoring and handling of disputes that may arise during the project's lifecycle (Alwee et al., 2023). For instance, PEs in Tanzania are required to manage and implement all procurement proceedings of goods, works, and services to comply with the terms and conditions of the contract (United Republic of Tanzania, 2013). Studies on contract management have highlighted the significance of procurement contract administration in achieving successful project outcomes (Kongsong & Pooworakulchai, 2018; Matto et al., 2021; Park & Kim, 2018). These studies emphasize that effective contract administration practices can mitigate risks, enhance performance, ensure compliance, and facilitate clear communication among all stakeholders involved in the project. For instance, proper contract administration can prevent cost overruns, avoid delays, and ensure that the quality of work meets or exceeds project specifications (Alwee et al., 2023; Gunduz & Elsherbeny, 2020). However, despite the recognized importance of procurement contract administration, there is a notable gap in the literature concerning its application and impact on FA construction projects. FA projects, where construction activities are performed by internal labour rather than by a traditional contractor, have unique challenges that require effective procurement contract administration. These challenges include but are not limited to, poor planning of contracts, inadequate follow of guidelines in purchasing materials, and a lack of skilled personnel (Matto, 2023).

Quality attainment is an indicator of the performance of a construction project. Other studies, such as Ali et al. (2022) and Maqsoom et al. (2021), used timely completion and cost-effectiveness as measures of construction project performance; however, this study focuses on the quality attainment of FA construction projects. Achieving acceptable quality standards in the construction sector has long been problematic (Kamal et al., 2022). Each year, significant amounts of time, money, and material resources, both human and material, are wasted because

of ineffective or missing quality-management methods (Kazar et al., 2022). In recent years, the construction sector has faced significant criticism regarding its productivity and performance about other industries. The issue of inadequate quality of construction projects is globally predominant (Maqsoom et al., 2021). Ensuring customer satisfaction and success in construction projects requires effective quality management. Many countries have realized the importance of establishing quality standards to improve the overall quality of building works despite the difficulties in obtaining appropriate quality levels in projects (Khadim et al., 2023). Increased knowledge and training among construction stakeholders are necessary to improve the efficiency and performance of construction projects (Alencastro et al., 2024). Hence, obtaining the intended quality outcomes during the construction project execution phase depends on quality management. Thus, research on quality attainment for the success of overall construction projects is required.

Furthermore, recent audit findings on Tanzanian public procurement show significant noncompliance issues with quality attainment. For example, the value-for-money audit report carried out by the PPRA for three years in a row reveals significant deficiencies across several dimensions, critically undermining construction project performance. Key issues include inadequate planning and site selection, leading to frequent delays, quality problems, and cost overruns (PPRA 2020, 2021, 2022). Additionally, the audit report on FA construction projects in Tanzania underscores severe quality-related flaws that significantly impair project performance and sustainability. A predominant issue is the widespread use of sub-standard materials, which compromises the structural integrity and longevity of construction (National Audit Office [NAOT], 2022; PPRA, 2021). The report also identifies poor workmanship, often attributed to inadequate training and lack of skilled labour in the workforce, resulting in constructions that fail to meet the required standards (NAOT, 2022). Additionally, the absence of uniform quality control measures impairs these problems, as low-standard work frequently goes unchecked and uncorrected (NAOT, 2021). Additionally, non-compliance with established construction standards and regulations is rampant, further degrading the project quality (Zhong et al., 2022). Collectively, these flaws indicate critical issues in project execution and oversight that must be addressed to ensure the quality of the FA construction projects in Tanzania. The current study believes that procurement contract

administration would be the solution to achieve the quality attainment of FA construction projects.

However, to the best of our knowledge, few studies have addressed the role of procurement contract administration on the quality attainment of FA construction projects in Tanzania. It has been highlighted that a related paper by (Mchopa, 2015) examines how contract management techniques help achieve VfM, Matto et al. (2021) assess how value for money can be achieved through contract management, and Obadia and Chole (2024) addresses how procurement contract management can be achieved through employee proficiency. The aforementioned studies did not find a link between quality attainment and procurement contract administration in FA construction projects. Therefore, this study intends to fill this gap by assessing the role of procurement contract administration in the quality attainment of FA construction projects in Local Government Authorities (LGAs) in Tanzania.

2. Theoretical underpinning and hypotheses

2.1. Transaction cost theory

The Transaction Cost Theory (TCT) highlights that companies can increase their economic efficiency by reducing transaction costs (Williamson, 1993). The transaction costs incurred by a company in finding a buyer or seller, negotiating agreements, keeping an eye on, and upholding contracts are referred to as transaction costs (Rokkan & Haugland, 2022). The costs associated with risk management, relationship management, dispute management, and monitoring and control of contracts are referred to as transaction costs in this study. As a result, transaction costs are examined from the client's perspective at every level of the public procurement contract. Pre-contract or pre-award (i.e. information search costs), award (negotiating costs), and post-award (monitoring expenses) are stages.

The TCT is useful in construction projects because uncertainty is constant when estimating project costs (Mwaiseje et al., 2024). There will be ambiguity over the nature of the task to be performed, the working conditions throughout the project's implementation, and other issues. The project is at risk owing to these unknowns, as they could lead to unanticipated costs and compromise the project's overall budget. Transaction costs are another term for these additional charges (Abdel-Galil et al., 2022). Since multiple parties are engaged in project contracting, design, and implementation, construction

projects usually involve some degree of uncertainty (Ikuabe et al., 2020). Many uncertainties are involved in these projects. These uncertainties affect a project's cost and performance. These include estimate-related uncertainties (such as inadequate estimation, specifications, knowledge, etc.), contracting party uncertainties (such as work quality and dependability, performance, and motivation), and project cycle uncertainties (such as incomplete design and implementation).

In addition, in the TCT, the relationship between procurement contract administration and transaction costs is established. For example, Rasheli (2016) conducted a study on procurement contract management using the TCT. When there is an increase in transaction costs during the execution of a project, quality attainment will be a problem (Li et al., 2012), and overall performance will suffer (Munir et al., 2020). This implies that the poor performance of project teams in procurement contract administration for projects is likely due to high transaction costs. If procurement contract administration is ignored, the transaction costs will be high. As a result, it is better to apply effective procurement contract administration through risk management, relationship management, dispute management, and monitoring and control to reduce transaction costs, which can hinder the quality attainment of construction projects. If these are ignored, the transaction cost of each element involved in the project will increase, leading to deterioration in the quality of the project.

2.2. Procurement contract administration and quality attainment

2.2.1. Risk management

Risk management is regarded as necessary for managing construction projects because of the relationship between risk and the three essential components of construction projects: time, cost, and quality (Bissah & Nkrumah, 2021). These risks and uncertainties are brought on by worker performance, the quality of the materials and components, delays in obtaining vital supplies to the job site, project budget, cost management, and the difficulty of the procurement processes, all of which could threaten the project objectives (Khalef et al., 2021). The performance of project management in a situation where there are complex phenomena and competition is becoming more severe and contract risk management is considered important (Khalef et al., 2021). In addition, to achieve project performance,

contract risk can be identified at the initial stage of implementation of the project to detect all risks that can impact the success of projects (Tumuhairwe & Ahimbisibwe, 2016). Studies indicated that Some projects have been completed with delays, cost overruns, and unsatisfactory quality owing to poor risk management (Iyer et al., 2020; Khattak et al., 2019; Myeza et al., 2021). Studies have revealed contradictory findings regarding the use of certain risk management strategies and project success to enhance the performance of the construction sector. For instance, Myeza et al. (2021) and Szymański (2017) pointed out that improving one's understanding of risk management and putting it into practice may assist the construction industry in enhancing project performance. Khan et al. (2019) found no major impact on risk management and project success. However, studies have not clarified the mechanisms by which risk management influences the quality of FA construction projects. Subsequently, we propose the following hypothesis:

H1: Risk management influences the quality attainment of FA construction projects

2.2.2 Relationship management

Relationship management is a crucial component of construction project management because it involves managing complex interactions among various stakeholders, including clients, contractors, sub-contractors, suppliers, and regulatory bodies (Meng, 2012). The effectiveness of relationship management depends on its ability to nurture trust, improve communication, and promote collaboration among project participants, resulting in superior project outcomes. Significant research conducted by Kim and Nguyen (2018) and Koolwijk et al. (2018) emphasizes the essentiality of cultivating long-lasting relationships and skillfully handling disagreements to enhance project performance. Quality achievement is a fundamental aspect of building projects, encompassing various dimensions such as the strength of the structure, its ability to last, safety, and aesthetic appeal. Ensuring high quality requires careful planning, strict attention to quality control processes, compliance with regulatory standards, and constant vigilance during the project duration. Studies by Hoque and Hasan (2022) and Salvi and Kerkar (2020) emphasize the importance of incorporating strong quality management principles into construction processes to meet client requirements and ensure successful project completion. Hence, the current study assesses the impact associated with

relationship management, as elaborated in existing studies, to explain its effect on the quality of FA construction projects. For this reason, it is important for buying organisations to maximize relationship management at the maximum level to achieve the intended performance of the projects (Daboun et al., 2023). Thus, well-established environments for relationship management are relevant for attaining quality in construction projects. In this respect, relationship management is a vital tool for increasing the chances of meeting the performance requirements of construction projects that are willing to procure entities. Based on these discussions, we propose the following hypothesis:

H2: Relationship management influences the quality attainment of FA construction projects.

2.2.3. Dispute management

Disputes commonly arise in construction projects because of their complicated structure, the involvement of various stakeholders, and the substantial financial investments involved. Disputes are sometimes known as conflicts or claims (Safinia, 2014). When there is a misunderstanding between parties involved in a project, the relationship between parties cannot be good at the same time. For the successful completion of projects, it is important to have effective dispute management strategies to minimize cost overruns and delays. Studies have identified several issues that can cause misunderstandings in construction projects (Tabish & Jha, 2023). These issues include, but are not limited to, communication problems, misinterpretation of terms and conditions of contract, incomplete agreement, and absence of good and clear contract documentation. Employing dispute management strategies, such as preventive measures, will enable the organization to intervene early and get faster for successful projects (Vo et al., 2020). Preventive measures such as good contract drafting, risk allocation, and employing a collaborative environment in the project can help mitigate disputes before they arise. In addition, regular project audits and proactive issue resolution meetings have been considered and shown to be good mechanisms to reduce the cost and time of disputes, thus helping ensure project quality is achieved without forgone delays and cost overruns. The literature establishes a link between dispute management and construction performance (Do et al., 2023; Francis et al., 2022; Wang et al., 2023). They emphasize the use of dispute management strategies, such as negotiation, in solving the

misunderstandings that occur in construction projects. Despite studies on dispute management in construction project performance, the issue of quality attainment in FA construction projects through dispute management was uncovered, which is why this study proposes the following hypothesis:

H3: Dispute management influences the quality attainment of FA construction projects

2.2.4. Monitoring and control

Successful construction of projects depends on good monitoring and control of contracts. The contract management team is required to ensure that the contract is well-supervised to achieve the intended goal. Studies have indicated that the performance of construction projects is determined by proper monitoring of the contract through regular supervision or supervision of the contract by exception (Obondi, 2022). The monitoring and control of contracts include checking and verifying the implementation of the contracts to ensure quality achievement, cost-effectiveness, and timely completion of projects (Kissi et al., 2019). Hence, this study examines the outcome of monitoring and controlling the quality attainment of FA construction projects. For this reason, the organization needs to maintain the quality of construction projects through monitoring and control (Callistus et al., 2018). Thus, the commitment of the contract management team to monitoring and control is relevant in improving the quality of construction projects. In this regard, monitoring and control are vital tools for increasing the chances of meeting construction project outcomes that favor procuring entities' expectations. According to Obondi (2022), organizations can employ monitoring reports to take all necessary measures to enhance the performance of construction projects. Thus, in a

situation where the monitoring and control reports reveal that the execution of the projects is below the agreed standards, immediate action must be taken to alleviate the crisis. Monitoring and control are important instruments to enhance public procurement projects in Tanzania. Nevertheless, its contribution to explaining FA construction projects' quality attainment remains unknown. Therefore, it makes sense to develop this study's first hypothesis.

H4: Monitoring and control influences the quality attainment of FA construction projects

2.2.5. Conceptual framework. Using the literature as a foundation, this study aims to empirically investigate the model presented in Figure 1. According to the model, procurement contract administration that is, those that concentrate on risk management, relationship management, dispute management, monitoring, and control—affects the quality of FA construction projects. The decision to limit the framework to these four constructs is based on their proven relevance in the existing literature and their direct influence on procurement contract administration in construction projects, particularly in the context of FA projects. Each construct represents a critical aspect of procurement contract administration that has been consistently identified as pivotal to the success and quality attainment of construction projects. The underlying theory for these proposed relationships stems from the current corpus of literature, which primarily links procurement contract management and project performance, with a scant focus on their influence on the quality attainment of FA construction projects. Essentially, the conceptual model of this study fills this research gap by carefully examining four main hypotheses that assess the relationship between procurement contract

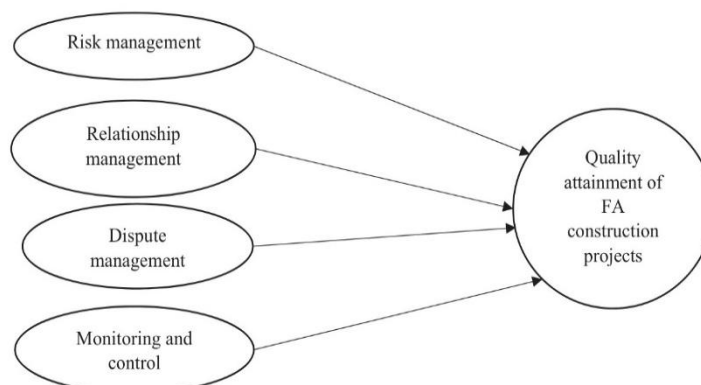


Figure 1. The conceptual framework.

administration and the quality attainment of FA construction projects.

3. Methodology

3.1. Research design and study area

The study employed a cross-sectional research design because it enabled the deployment of a sufficiently large number of people who were not geographically limited at a certain moment in time to identify the patterns and associations between variables (Changalima et al., 2021; Creswell & Creswell, 2018; Mushi et al., 2024). Furthermore, the design works well in this study because the main goal is to obtain a broad picture of the relationship between the variables rather than to record data on changes over time. This study was conducted in LGAs in Tanzania, specifically at primary schools in the Dodoma region. Primary schools were chosen because they have the most FA construction projects relative to other sectors (United Republic of Tanzania, 2022). For example, in Fiscal Year (FY) 2021/2022, a budget of TZS 2.71 billion was set up to build 237 primary school classrooms in the Dodoma region. Similarly, a budget of TZS 2.79 billion was allocated for classrooms and teacher houses construction in FY 2022/2023 in the Dodoma region (United Republic of Tanzania, 2022, 2023).

3.2. Sample and data collection

The study's target population consisted of 1800 respondents from 120 primary schools in eight LGAs in the Dodoma region and 15 members of the FA committee. The sample size was 327 respondents calculated using the Yamane formula as used in previous studies (Kazungu & Kubenea, 2023; Mwaiseje et al., 2024), considering a 95% confidence interval. However, the sample size of the study was 360 to increase the number of response rates, as suggested by Dolnicar et al. (2016), who reported that increasing the sample size can enhance the statistical power of the study. However, during the data collection process, only 318 individuals (88.3% of the total respondents) were able to provide their responses. In each selected primary school, simple random sampling was used to select 3 members of the FA committees from each selected primary school. This method was selected because it ensures that every member of the population (primary schools) has a fair chance of being chosen. By randomly selecting three members from each school, we created a

representative sample that correctly reflects the characteristics and variety of the primary school population. This reduces the bias and increases the generalizability of the findings (Noor et al., 2022). Members of the procurement committee, receiving and inspection committee, and construction committee were selected based on the fact that all FA construction activities are supervised and controlled by them. Hence, data were collected from the members of the FA committee formed by primary school teachers and representatives from the village committee.

The data collection phase was started after getting ethical research approval from Moshi Cooperative University with a letter of reference number MoCU/UGS/3/41 dated 24 February 2023. Furthermore, during the respondent's engagement in data collection, the survey uses an introduction letter that describes the intention of the researcher to collect data from the respondents for academic purposes only. All respondents were able to read and write. Hence, written consent was obtained from them by freely signing the informed consent form presented by the researcher. Therefore, the respondents were free to provide their opinions on the provided questionnaire without being forced. Data were collected using a questionnaire. This method allowed for quick collection of a large number of responses from the respondents (Creswell and Cresswell, 2018). Before the main study, the questionnaire was pretested to assess its content validity with professional experts. A pilot study was conducted to ensure the clarity and comprehensiveness of the questionnaire. Twenty-five experts with at least five years of experience in FA projects were considered in a pilot study due to the fact that most individuals with relevant experience in managing FA construction projects have accumulated this expertise within the past five years. Feedback was obtained, and the questionnaire was improved for distribution in the main study.

3.3. Variable measurements

Risk management, relationship management, dispute management, monitoring, and quality control were included as independent and dependent variables. The design of the questionnaire was determined by the measurement items derived from earlier research, with minor modifications, following the scope of this research. Specifically, the variable risk management was evaluated using items adopted from Amoah and Pretorius (2019) and Serpell et al. (2017). Relationship management was evaluated using the measurement items developed by

Demirkesen and Ozorhon (2017). Dispute management was measured using the items adopted from Francis et al. (2022) and Elziny et al. (2016). Monitoring and control were determined using items derived from Kissi et al. (2019) and (2017). Furthermore, quality attainment items were obtained from Hoque and Hasan (2022).

3.4. Data analysis

Partial least squares structural equation modelling (PLS-SEM) was the main data analysis technique employed in this study. Thus, SmartPLS 4 was employed to analyze the quantitative data based on the primary goal of the investigation and the type of data collected. PLS-SEM is a second-generation technique that is frequently used to examine proposed relationships (Hair et al., 2019). This variance-based SEM technique is particularly useful when analyzing correlations between several constructs that contain both latent and observable variables. The growing need for more reliable quantitative approaches has been clearly expressed in the application of PLS-SEM in business research (Guenther et al., 2023). PLS-SEM is, therefore, highly appropriate because it is in line with the main area of investigation. Two distinct steps were performed during the analysis. First, the validity and reliability of the measurement model are evaluated. In the second step, the structural model was evaluated to determine the study's hypotheses and predictive usefulness. It is imperative to stress that the findings of this study provide a thorough presentation of the outcomes of both stages.

3.5. Common bias method (CMB)

Self-administered questionnaires were used in this study, from which a single respondent provided information regarding all items in the survey. This

methodology may have created bias, which is why Harman's single-factor test was conducted (Harman, 1967). This was done to determine if there was a dominating factor that accounted for most of the variance in all collected data. If this occurs, CMB are likely to arise. According to the analysis, there is no substantial CMB issue because only 34.61% of the explained total variance is associated with a single factor (Podsakoff et al., 2003). This result is because no single factor accounted for more than 50% of the variance. To detect bias, the study also closely examined the variance inflation factor (VIF) for the primary constructs. Since these VIF values were less than 3.3, there was no discernible bias introduced throughout the data-gathering process (Kock, 2015)

4. Findings

4.1. Respondents profile

The results in Table 1 indicate that the majority of participants in this study were members of Force Account (FA) committees involved in primary school construction projects. Most of the respondents were between 28 and 37 years old (44.7%, 142 individuals), followed by those aged 38–47 years (36.2%, 115 individuals), 18–27 years (11.9%, 38 individuals), and 48–57 years (7.2%, 23 individuals). The findings also reveal that the majority were male (70.1%, 223 respondents), with females making up 29.9% (95 respondents). In terms of education, 45.3% (144 respondents) held diplomas, 29.6% (94 respondents) had certificates, 23.5% (75 respondents) had bachelor's degrees, and 1.6% (5 respondents) had master's degrees. Additionally, 51.3% (163 respondents) had 4 to 6 years of experience in FA construction projects, while 48.7% (155 respondents) had between 1 to 3 years of experience. The data also show that 38.1% (121 respondents) were members of the

Table 1. Respondent's profile.

Demographics	Groupings	Frequency	Percentage (%)
Sex	Male	223	70.1
	Female	95	29.9
Education	Certificate	94	29.6
	Diploma	144	45.3
	Bachelor degree	75	23.6
	Master's degree	5	1.6
Age	18–27	38	11.9
	28–37	142	44.7
	38–47	115	36.2
	48–57	23	7.2
Experience in FA	1–3	155	48.7
	4–6	163	51.3
Type of FA committee	Receiving and inspection committee	111	34.9
	Construction committee	96	30.2
	Procurement committee	111	34.9

4.2. Measurement model

Three different approaches were used to further assess discriminant validity, and the results are shown in [Tables 3](#) and [4](#). The heterotrait-monomethod (HTMT) matrix values in [Table 3](#) were consistently less than 0.85, indicating that discriminant validity was established. [Table 3](#) presents the Fornell–Larcker criterion to further validate the discriminant validity. [Table 4](#) presents the cross loadings. The bold italicised values indicate that the corresponding components show a larger loading on their assigned constructs than on any other construct. Generally, the measurement model results show that the validity and reliability of the study are unaffected.

	DSL	MOC	QAL	RIM	RTM
HTMT matrix					
DSL					
MOC	0.332				
QAL	0.485	0.531			
RIM	0.322	0.493	0.658		
RTM	0.623	0.510	0.565	0.357	
Fornell-Larcker criterion					
DSL	0.883				
MOC	0.302	0.866			
QAL	0.403	0.435	0.814		
RIM	0.283	0.428	0.521	0.819	
RTM	0.531	0.436	0.452	0.299	0.804

Construct/items	Outer loading	Cronbach Alfa	CR	AVE
Monitoring and control (MOC)		<u>0.888</u>	<u>0.923</u>	<u>0.749</u>
Our committee regularly monitors the progress of the construction project to ensure it stays on schedule (MOC1)	0.822			
Any deviations from the project plan are promptly addressed through corrective actions (MOC2)	0.873			
Regular inspections are conducted to ensure that the construction work adheres to the required specifications and standards (MOC3)	0.918			
Our committee reviews project milestones at each stage to ensure that we are on track to achieve our goals (MOC4)	0.847			
Risk management (RIM)		<u>0.837</u>	<u>0.891</u>	<u>0.671</u>
Our committee identifies potential risks at the beginning of the construction project (RIM1)	0.822			
We have clear strategies in place to manage and mitigate risks in construction projects (RIM2)	0.852			
Risk assessment is regularly conducted throughout the project lifecycle to ensure issues are addressed promptly (RIM3)	0.812			
We actively monitor the construction project to identify emerging risks and take corrective action when necessary (RIM4)	0.789			
Relationship Management (RTM)		<u>0.817</u>	<u>0.879</u>	<u>0.646</u>
The communication between our committee and key stakeholders is effective all the time (RTM 1)	0.757			
There is Collaboration and trust among team members of the project (RTM2)	0.828			
When problems occur in projects we manage them collaboratively (RTM3)	0.881			
RTM4	0.742			
Dispute management (DSL)		<u>0.906</u>	<u>0.934</u>	<u>0.780</u>
We have a dispute resolution mechanism plan in the project (DSL1)	0.873			
When a dispute occurred is solved immediately to avoid the risks(DSL2)	0.901			
All committees are responsible for managing disputes in the projects (DSL3)	0.902			
All members of the project understand the dispute resolution mechanism (DSL4)	0.858			
Quality attainment		<u>0.745</u>	<u>0.855</u>	<u>0.662</u>
We are delighted with most materials supplied (QAL1)	0.812			
We have a quality plan in place when managing projects (QAL2)	0.794			
All project teams are satisfied with the quality of work (QAL3)	0.835			

Table 4. Cross-loadings.

	DSL	MOC	QAL	RIM	RTM
DSL1	0.873	0.237	0.375	0.289	0.457
DSL2	0.901	0.299	0.393	0.251	0.48
DSL3	0.902	0.273	0.344	0.252	0.485
DSL4	0.858	0.256	0.300	0.201	0.454
MOC1	0.282	0.822	0.352	0.355	0.346
MOC2	0.272	0.873	0.398	0.373	0.354
MOC3	0.296	0.918	0.42	0.415	0.409
MOC4	0.185	0.847	0.328	0.331	0.404
QAL1	0.373	0.367	0.812	0.412	0.402
QAL2	0.331	0.333	0.794	0.426	0.32
QAL3	0.278	0.361	0.835	0.434	0.378
RIM1	0.293	0.334	0.427	0.822	0.251
RIM2	0.204	0.36	0.459	0.852	0.26
RIM3	0.248	0.393	0.433	0.812	0.215
RIM4	0.182	0.311	0.383	0.789	0.256
RTM1	0.370	0.355	0.363	0.253	0.757
RTM2	0.412	0.356	0.345	0.232	0.828
RTM3	0.464	0.385	0.443	0.274	0.881
RTM4	0.480	0.297	0.270	0.187	0.742

4.2 Structural model

This section presents the structural model results. These results are important for clarifying the proposed links (Figure 1). First, collinearity tests were performed to ensure that our analysis was efficient (Ringle et al., 2023). With values of 1.406 for monitoring and control, 1.270 for risk management, 1.583 for relationship management, and 1.429 for dispute management within the postulated relationships, the variance inflation factor (VIF) in the inner model revealed negligible collinearity. Since all values are substantially below the optimally recognized criterion of 3, these data confirm that collinearity is not a serious concern (Hair et al., 2019). To evaluate the strength and significance of the route coefficients following bootstrapping processes, this study employed the values of p and β (Ringle et al., 2023). Additionally, using the R^2 and f^2 values, the contributions of the predictive factors and the effect size of the route model were evaluated.

Four major hypotheses were tested in this study to validate the created model. Table 5 presents the structural model results along with the path coefficients and significance. All the hypotheses were confirmed by these results, which showed that risk management was strongly and highly correlated with the quality attainment of FA construction projects ($\beta = 0.354$, $t = 6.203$, $p < 0.001$), with an f^2 value of 0.165. This result supports the first hypothesis (H1). Moreover, the second hypothesis (H2), with an f^2 value of 0.042, was confirmed by the significant positive correlation between relationship management and quality attainment ($\beta = 0.200$, $t = 3.454$, $p = 0.001$). Determining the third hypothesis (H3), with an f^2 value of 0.026, dispute management is likewise positively significant for the quality

Table 5. Results of the structural model.

Relationships	β	t	p	Confidence interval		f^2	Decision
				Lower C.I	Upper C.I		
RIM -> QAL	0.354	6.203	0.001	0.243	0.466	0.165	Accepted
RTM -> QAL	0.200	3.454	0.000	0.086	0.317	0.042	Accepted
DSL -> QAL	0.151	2.544	0.011	0.036	0.266	0.026	Accepted
MOC -> QAL	0.151	2.418	0.016	0.026	0.270	0.027	Accepted

attainment of FA construction projects ($\beta = 0.151$, $t = 2.544$, $p = 0.011$). Finally, the quality attainment of FA construction projects is positive and significantly correlated with monitoring and control ($\beta = 0.151$, $t = 2.418$, $p = 0.016$), with an f^2 value of 0.027, thus supporting the fourth hypothesis (H4). Thus, only the effect of risk management on the quality attainment of FA construction projects had a medium effect (greater than 0.15) as the recommended range of f^2 , while the effects of dispute management, relationship management, and monitoring and control on the quality attainment of FA construction projects showed small effects (higher than 0.02) of f^2 values (Cohen, 1988).

Figure 2 displays the R^2 value for the dependent variable, which was 0.401. This indicates that approximately 40.1% of the variation in the quality attainment of FA construction projects can be attributed to the contract administration variables included in the study. The value in question is deemed sufficient in its ability to account for the extent of variation in quality attainment linked to procurement contract administration, as stated by Hair et al. (2021). The predictive accuracy of the PLS-SEM model was assessed using the Q^2 value. A resulting value of 0.376 indicates that the model achieves medium predictive relevance (Hair et al., 2019). Please refer to Figure 2 for the partial least squares path model.

5. Discussion

The objective of this study is to assess the role of procurement contract administration in enhancing the quality of FA construction projects. The main findings reveal that procurement contract administration is an important factor in achieving quality in LGAs in Tanzania. Risk management positively influences the quality of FA construction projects. A possible explanation is based on the fact that, through proper ways of identifying, assessing, and mitigating potential risks across the project lifecycle, construction teams were able to prevent and address issues that could compromise quality to ensure that the execution of the project was conducted efficiently.

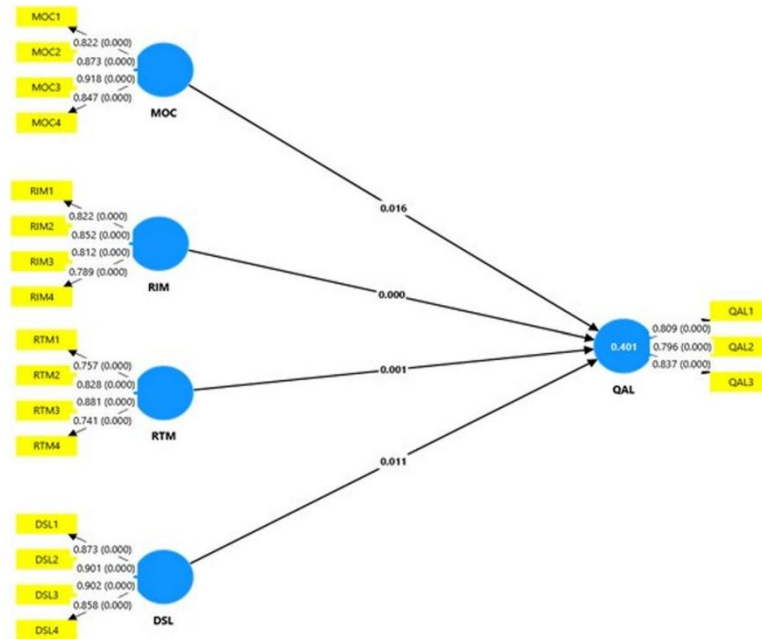


Figure 2. The structural model.

Furthermore, the implementation of effective risk management strategies fosters greater accountability and transparency among project stakeholders, facilitating clearer communication channels and collaboration. This proactive approach not only minimized the occurrence of costly errors and delays but also enhanced the overall efficiency and effectiveness of force-account construction projects. Suppose that the project teams were able to manage risk early during the execution of the project. In that case, there is the possibility of the project being completed on time, within the desired budget, and with quality achievement (Amoah & Pretorius, 2019). This study emphasizes the critical role of risk management in enhancing project quality standards and pinpoints its crucial contribution towards successful project delivery in the construction industry.

This result aligns with studies that emphasize the importance of risk management strategies in construction projects (Darko et al., 2020; Serpell et al., 2017). Although the study's results are consistent with the previously cited literature, they add important new information about the function of risk management, particularly within the framework of FA construction projects in public procurement, particularly in LGAs.

Moreover, relationship management and the quality attainment of FA construction projects in LGAs are related. The findings reveal that relationship management, as a mechanism of ensuring open and clear communication, increasing trust among project

participants, and promoting collaboration among team members (Safapour et al., 2021), positively and significantly affects the quality of FA construction projects. The relationship is significant because the procuring entity can identify and mitigate risks in projects through relationship management as participants in the project collaborate and provide feedback on risk occurrence and mitigation strategies (Demirkesen & Ozorhon, 2017; Martin & Benson, 2021). Thus, relationship management is a means of improving the quality of construction projects and ensuring that they are completed according to the intended objectives. In FA construction projects, if the project participants collaborate and work together as a team, quality attainment can be achieved because all issues that hinder achievement can be solved collaboratively at a time.

The results of Daboun et al. (2023) align with the current findings. Studies have revealed that there is indeed a significant connection between relationship management and the performance of construction projects. Specifically, this research highlights that Relationship Management positively influences construction project success by fostering collaboration, strengthening relationships, and ultimately enhancing project performance. Numerous studies have demonstrated that organizations experience a higher level of performance in building projects if there is a good collaboration environment with contractors and all stakeholders involved in construction projects (Ling & Khoo, 2016; Meng & Boyd, 2017; Yang et al.,

2023). Therefore, incorporating relationship management as a part of procurement contract administration remains important for increasing the quality of FA construction.

The findings indicate that dispute management and quality attainment of FA construction projects are positively related. Thus, dispute management is a relevant means of improving the quality of FA construction. This relationship can be explained by the fact that effective dispute management enhances collaboration and transparency in the working environment, which is very important for ensuring the quality standards of projects. When the project management team is able to manage disputes efficiently, it is possible to minimise disruptions and delays, ensuring that the project timeline remains on track and that resources are utilised effectively (Tabish & Jha, 2023; Wang et al., 2023). Furthermore, proactive dispute resolution usually includes clear documentation and communication, which improves general project supervision and responsibility (Wang et al., 2023). This careful attention to dispute-solving makes it possible to identify and resolve possible quality problems. A proper dispute resolution procedure also increases confidence among the parties involved, which promotes a team's dedication to the project goals and quality standards. Project teams may concentrate on following quality standards and best practices by quickly and equitably resolving disputes, which eventually results in better project outcomes.

Thus, dispute management, as among procurement contract administration practices, is crucial as it enhances collaboration and communication and hence reduces disruptions in the implementation of construction projects. This is relevant to the strong relationship observed between dispute management and the quality attainment of FA construction projects.

Existing literature supports the importance of dispute management in influencing the quality of FA construction projects. Elziny et al. (2016) explored how dispute resolution affects the performance of construction projects. Moreover, dispute management practices may result in timely project completion and quality achievement (Tabish & Jha, 2023). Therefore, an emphasis on dispute management in FA construction projects can enhance quality.

Finally, the findings indicate a positive and significant relationship between monitoring and control with the quality attainment of FA construction projects. This relationship is based on the fact that effective monitoring ensures that the project adheres

to its planned schedule, budget, and specifications, identifying and addressing potential issues promptly before escalating. Control mechanisms, such as regular inspections, compliance checks, and progress reviews, provide a structured approach to managing resources and workflows, thereby reducing errors and rework (Unegbu et al., 2022). This systematic oversight enhances communication among stakeholders, facilitates better decision-making, and ensures that quality standards are consistently met throughout the project's lifecycle. Consequently, rigorous implementation of monitoring and control practices leads to higher quality outcomes in FA construction projects. Additionally, these practices enable better resource management, ensuring that materials and labor are used efficiently and effectively, which contributes to the overall quality of FA construction projects. By maintaining tight control over the project schedule and budget, the FA management team can allocate resources where they are most required to uphold quality standards.

Numerous studies highlight the importance of constructing projects for effective monitoring and control procedures (Kissi et al., 2019; Obondi, 2022). In building projects, achieving quality and project success requires the effective application of monitoring and control techniques (Callistus & Clinton, 2018). Moreover, poor quality, delays, price overruns, and project discontent can result from neglect of monitoring and control technologies in building projects. Thus, as shown in the literature, incorporating strong monitoring and control is essential for improving the quality of FA construction projects.

6. Conclusion

The construction industry is highly criticized for its poor performance, as projects are completed with cost overruns, delays, and quality problems. Hence, more awareness of performance achievements needs to be created among people involved in construction activities because the primary goal of the construction project is to achieve project success. This study used quality attainment as part of the performance metrics of construction projects. Hence, this study proposes four hypotheses for procurement contract administration to measure the quality attainment of FA construction projects. Data were gathered using a questionnaire survey. PLS-SEM was used to validate the model and test the hypotheses. The study's findings revealed that all measurements of procurement contract administration, such as risk management, relationship management, dispute

management, and monitoring and control, are positive and significant relative to the quality attainment of FA construction projects. Hence, the study concluded that procurement contract administration is important for achieving the quality attainment of FA construction projects. The construction management team should invest time, effort, and resources to implement and strengthen procurement contract administration practices to achieve the intended quality of the projects. The challenges of cost overruns, delays, and quality issues are common worldwide, and the study's findings can be applied universally. By adopting and integrating strong procurement contract administration practices, construction teams and stakeholders around the world can enhance project quality and performance. Therefore, FA construction project stakeholders including FA committee members, procurement practitioners, and organizational management are encouraged to implement these practices not only to achieve quality attainment but also to ensure the overall success of construction projects global.

7. Implication of the study

The findings of this study have significant implications for the construction industry, particularly in the context of FA construction projects. By explaining the positive and significant impact of procurement contract administration, encompassing risk management, relationship management, dispute management, and the monitoring and control of quality attainment, this study emphasises the critical need to enhance procurement contract administration practices. Consequently, construction management teams must use their efforts, time, and resources to enhance the quality of FA construction projects through proper procurement contract administration. This focus is important for mitigating common quality deficiencies, as all issues that affect quality are determined early. Moreover, the study's findings provide practical insights for FA project stakeholders, including FA committee members, procurement practitioners, and organizational management, to prioritize and refine their efforts towards achieving good project performance. By adopting and integrating these procurement contract administration practices, stakeholders can not only enhance quality attainment but also improve the overall success of their FA construction projects, thus addressing the prevalent performance challenges within the construction sector. While the study is highly relevant to the local context, it has broader global implications.

The emphasis on improving procurement contract administration for better project performance can be applied to construction sectors in other regions where similar challenges may exist. Therefore, this study's contributions extend beyond its immediate setting, providing valuable insights for global construction industries striving to enhance project quality and performance.

8. Limitations and future scope of study

This study focuses on FA construction projects within LGAs in the Dodoma region of Tanzania, which limits the generalizability of the findings to other types of construction projects or geographical locations that use different laws and regulations to govern FA construction projects. This study measures the direct relationship between the variables; future studies should consider the mediating or moderating variables. Similarly, future research should consider other types of construction projects to measure the impact of procurement contract administration on quality. In addition, the study considered only quality attainment as a project performance measure, which was limited to other measures of project performance, such as stakeholder satisfaction, cost, and time dimensions, which future studies should consider. Furthermore, incorporating longitudinal data could provide deeper insights into the long-term impact of procurement contract administration practices on project quality.

Ethical approval

The research obtained ethical approval from the Moshi Cooperative University through its ethical committee with the reference number MoCU/UGS/3/41.

Authors' contribution

Shadrack Mwaiseje was involved in conceptualisation, data collection, methodology, data analysis and writing the draft of the research paper. Alban Mchopa, Faustine Panga, and Mathias Nkuhi were involved in supervision, reviewing and editing. All authors have read and approved the final version of Manuscript

Disclosure statement

No potential conflict of interest was reported by the authors

Funding

The corresponding author receives funds from the College of Business Education through an internal scholarship program to pursue doctoral studies.

About the authors

Shadrack S. Mwaiseje is an Assistant Lecturer at College of Business Education, Tanzania working in the Department Procurement and Supply Management. He is a certified procurement and supplies professional holding a Master of science in Procurement and Supply Chain Management and Bachelor of Arts in Procurement and Supply Management. Current is pursuing PhD studies at Moshi cooperative University. His areas of interest and expertise include public procurement; contract management; strategic procurement; supply chain management; procurement auditing and logistics management

Alban D. Mchopa is a Senior Lecturer at Moshi o-operative University, Tanzania working in the Department Procurement and Supply Chain Management. He is a certified procurement and supplies professional holding a PhD, Master of Science in Procurement and Supply Chain Management, and Bachelor Degree in Procurement and Supply Management. is areas of interest and expertise in research include public procurement; procurement reforms; electronic procurement; procurement and supply audit; and donor funded procurement.

Faustine P. Panga is a Senior Lecturer at Moshi o-operative University, Tanzania working in the Department Procurement and Supply Chain Management. He is a certified procurement and supplies professional holding a PhD, Master of Science in Procurement and Supply Chain Management, and Bachelor Degree in Procurement and Supply Management. is areas of interest and expertise in research include sustainable procurement; public procurement; procurement reforms; electronic procurement; procurement and supply audit; and donor funded procurement.

Mathias S. Nkuhi is a senior academic at the Department of Law, Moshi Co-operative University (MoCU). He is also a researcher and consultant. He holds the Doctor of Philosophy (Ph.D) in Law Degree of the University of Mysore, India. He is also a holder of the degrees Master of Laws (LL.M.) and Bachelor of Laws (LL.B.) from University of Dar es Salaam, and Mzumbe University respectively. Dr. Nkuhi is also a holder of Postgraduate Diploma in Legal Practice (Law School of Tanzania). He is an advocate of the High Court and Courts subordinate thereto. He has been in service since 2010. He has been involved in teaching, research, consultancy and legal practice in diverse facets. Dr. Nkuhi has participated as a team member and successfully executed several consultancy undertakings, nationally and internationally.

ORCID

Shadrack Samwel Mwaiseje  <http://orcid.org/0000-0002-8713-5877>

Alban Dismas Mchopa  <http://orcid.org/0000-0001-8547-6267>

Faustine Peter Panga  <http://orcid.org/0000-0002-3626-5241>

Data availability statement

The data used in this will be made available upon reasonable request from the corresponding author Shadrack Samwel Mwaiseje with the email  mwaiseje@gmail.com

References

- Abdel-Galil, E., Ibrahim, A. H., & Alborkan, A. (2022). Assessment of transaction costs for construction projects. *International Journal of Construction Management*, 22(9), 1618–1631. <https://doi.org/10.1080/15623599.2020.1738204>
- Alencastro, J., Fuertes, A., & De Wilde, P. (2024). Investigating the influence of quality management on building thermal performance. *Engineering, Construction and Architectural Management*, 31(8), 3356–3376. <https://doi.org/10.1108/ECAM-11-2021-1061>
- Ali, A. H., Abdalla, T. A., Al Haqq, A. W. W. A. L., Umar, A. D. A. M., Mouhoumed, I. H., & Mohamed, I. A. R. (2022). Cost and time control in construction projects: A case study of Khartoum state. *Jilin Daxue Xuebao (Gongxueban)/Journal of Jilin University (Engineering and Technology Edition)*, 41, 11–2022.
- Alwee, S. N. A. S., Zolkafli, U. K., & Salleh, H. (2023). Contract administration practices on building information modelling (BIM)-based construction project—an exploratory study. *Facilities*, 41(11/12), 742–766. <https://doi.org/10.1108/F-10-2021-0094>
- Amoah, C., & Pretorius, L. (2019). Evaluation of the impact of risk management on project performance in small construction firms in South Africa: the case study of construction systems. *Journal of Engineering, Design and Technology*, 18(3), 611–634. <https://doi.org/10.1108/JEDT-06-2018-0098>
- Bissah, Z. B., & Nkrumah, V. (2021). Project risk management practices in the construction industry in Ghana: A case study of two construction companies in Sekondi Takoradi Metropolis. *International Journal of Innovative Science and Research Technology*, 6(5), 759–768.
- Callistus, T., & Clinton, A. (2018, January 7–9). *The role of monitoring and evaluation in construction project management* [Paper presentation]. In Intelligent Human Systems Integration: Proceedings of the 1st International Conference on Intelligent Human Systems Integration (IHSI 2018): Integrating People and Intelligent Systems, Dubai, United Arab Emirates. (pp. 571–582). Springer International Publishing. https://doi.org/10.1007/978-3-319-73888-8_89
- Changalima, I. A., Mushi, G. O., & Mwaiseje, S. S. (2021). Procurement planning as a strategic tool for public procurement effectiveness: experience from selected public procuring entities in Dodoma City, Tanzania. *Journal of Public Procurement*, 21(1), 37–52. <https://doi.org/10.1108/JOPP-05-2020-0047>

- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. (2nd ed.). Routledge, UK: Lawrence Erlbaum Associates.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. (5th ed.). United Kingdom: Sage Publications, Inc.
- Daboun, O., Md Yusof, A., & Khoso, A. R. (2023). Relationship management in construction projects: Systematic literature review. *Engineering Management Journal*, 35(2), 120–143. <https://doi.org/10.1080/10429247.2022.2041962>
- Darko, A., Chan, A. P., Yang, Y., & Tetteh, M. O. (2020). Building information modeling (BIM)-based modular integrated construction risk management—Critical survey and future needs. *Computers in Industry*, 123, 103327. <https://doi.org/10.1016/j.compind.2020.103327>
- De Silva, S. H., Ranadewa, K. A. T. O., & Rathnasinghe, A. P. (2023). Barriers and strategies for implementing lean six sigma in small-and medium sized enterprises (SMEs) in construction industry: a fuzzy TOPSIS analysis. *Construction Innovation*. <https://doi.org/10.1108/CI-09-2022-0225>
- Demirkesen, S., & Ozorhon, B. (2017). Impact of integration management on construction project management performance. *International Journal of Project Management*, 35(8), 1639–1654. <https://doi.org/10.1016/j.ijproman.2017.09.008>
- Do, S. T., Nguyen, V. T., & Nguyen, N. H. (2023). Relationship networks between variation orders and claims/disputes causes on construction project performance and stakeholder performance. *Engineering, Construction and Architectural Management*, 30(9), 3817–3839. <https://doi.org/10.1108/ECAM-01-2022-0066>
- Dolnicar, S., Grün, B., & Leisch, F. (2016). Increasing sample size compensates for data problems in segmentation studies. *Journal of Business Research*, 69(2), 992–999. <https://doi.org/10.1016/j.jbusres.2015.09.004>
- Elziny, A. A., Mohamadien, M. A., Ibrahim, H. M., & Fattah, M. A. (2016). An expert system to manage dispute resolutions in construction projects in Egypt. *Ain Shams Engineering Journal*, 7(1), 57–71. <https://doi.org/10.1016/j.asej.2015.05.002>
- Francis, M., Ramachandra, T., & Perera, S. (2022). Disputes in construction projects: A perspective of project characteristics. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 14(2), 04522007. [https://doi.org/10.1061/\(ASCE\)LA.1943-4170.0000535](https://doi.org/10.1061/(ASCE)LA.1943-4170.0000535)
- Gadisa, B., & Zhou, H. (2021). Exploring influential factors leading to the poor performance of public construction project in Ethiopia using structural equation modelling. *Engineering, Construction and Architectural Management*, 28(6), 1683–1712. [10.1108/ECAM-12-2019-0689](https://doi.org/10.1108/ECAM-12-2019-0689)
- Guenther, P., Guenther, M., Ringle, C. M., Zaefarian, G., & Cartwright, S. (2023). Improving PLS-SEM use for business marketing research. *Industrial Marketing Management*, 111, 127–142. <https://doi.org/10.1016/j.indmarman.2023.03.010>
- Gunduz, M., & Elsherbeny, H. A. (2020). Operational framework for managing construction-contract administration practitioners' perspective through modified Delphi method. *Journal of Construction Engineering and Management*, 146(3), 04019110. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0001768](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001768)
- Hair, J. F., Jr, Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial least squares structural equation modeling (PLS-SEM) using R: A workbook*. (p. 197). Cham, Switzerland: Springer Nature.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Harman, H. H. (1967). *Modern factor analysis*. USA: The University of Chicago Press.
- Hoque, M. I., & Hasan, M. (2022). Factors affecting the construction quality in Bangladesh. *International Journal of Building Pathology and Adaptation*. <https://doi.org/10.1108/IJBPA-03-2022-0037>
- Ikuabe, M., Oke, A. E., & Aigbavboa, C. (2020). Impact of contractors' opportunism on construction project transaction costs: Construction professionals' perception. *Journal of Financial Management of Property and Construction*, 25(1), 125–141. <https://doi.org/10.1108/JFMPC-04-2019-0040>
- Iyer, K. C., Kumar, R., & Singh, S. P. (2020). Understanding the role of contractor capability in risk management: A comparative case study of two similar projects. *Construction Management and Economics*, 38(3), 223–238. <https://doi.org/10.1080/01446193.2019.1590614>
- Jraisat, L., Jreisat, L., & Hattar, C. (2016). Quality in construction management: An exploratory study. *International Journal of Quality & Reliability Management*, 33(7), 920–941. <https://doi.org/10.1108/IJQRM-07-2014-0099>
- Kamal, A., Abas, M., Khan, D., & Azfar, R. W. (2022). Risk factors influencing the building projects in Pakistan: from perspective of contractors, clients and consultants. *International Journal of Construction Management*, 22(6), 1141–1157. [10.1080/15623599.2019.1683693](https://doi.org/10.1080/15623599.2019.1683693)
- Kazar, G., Doğan, N. B., Ayhan, B. U., & Tokdemir, O. B. (2022). Quality failures-based critical cost impact factors: Logistic regression analysis. *Journal of Construction Engineering and Management*, 148(12), 04022138. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0002412](https://doi.org/10.1061/(ASCE)CO.1943-7862.0002412)
- Kazungu, I., & Kubenea, H. (2023). Customer satisfaction as a mediator of service facility and word of mouth in higher learning institutions. *Journal of Applied Research in Higher Education*, 15(5), 1649–1663. <https://doi.org/10.1108/JARHE-04-2022-0128>
- Khadim, N., Thaheem, M. J., Ullah, F., & Mahmood, M. N. (2023). Quantifying the cost of quality in construction projects: An insight into the base of the iceberg. *Quality & Quantity*, 57(6), 5403–5429. <https://doi.org/10.1007/s11135-022-01574-8>
- Khalef, R., El-Adaway, I. H., Assaad, R., & Kieta, N. (2021). Contract risk management: A comparative study of risk allocation in exculpatory clauses and their legal treatment. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 13(1), 1–19. [https://doi.org/10.1061/\(ASCE\)LA.1943-4170.0000430](https://doi.org/10.1061/(ASCE)LA.1943-4170.0000430)
- Khan, M. W., Ali, Y., De Felice, F., & Petrillo, A. (2019). Occupational health and safety in construction industry in Pakistan using modified-SIRA method. *Safety Science*,

- 118(2019), 109–118. <https://doi.org/10.1016/j.ssci.2019.05.001>
- Khattak, A. A. J., Akhtar, R., Abas, M., Khalid, Q. S., Noor, S., Babar, A., & Azim, S. (2019). Risk management in construction projects: Perspective of contractors and owners. *WALIA Journal*, 35(1), 7789.
- Kim, S. Y., & Nguyen, V. T. (2018). A Structural model for the impact of supply chain relationship traits on project performance in construction. *Production Planning & Control*, 29(2), 170–183. <https://doi.org/10.1080/09537287.2017.1398846>
- Kissi, E., Agyekum, K., Baiden, B. K., Tannor, R. A., Asamoah, G. E., & Andam, E. T. (2019). Impact of project monitoring and evaluation practices on construction project success criteria in Ghana. *Built Environment Project and Asset Management*, 9(3), 364–382. <https://doi.org/10.1108/BEPAM-11-2018-0135>
- Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration*, 11(4), 1–10. <https://doi.org/10.4018/ijec.2015100101>
- Kongsong, W., & Pooworakulchai, C. (2018). Improving for construction contract management of government construction projects. *International Journal of Civil Engineering and Technology*, 9(7), 253–260.
- Koo, H. J., O'Connor, J., & Sprouse, R. (2024). Analyzing the characteristics of design defect leading indicators on building construction projects. *International Journal of Construction Management*, 24(8), 834–842. <https://doi.org/10.1080/15623599.2023.2216111>
- Koolwijk, J. S. J., van Oel, C. J., Wamelink, J. W. F., & Vrijhoef, R. (2018). Collaboration and integration in project-based supply chains in the construction industry. *Journal of Management in Engineering*, 34(3), 04018001. [https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000592](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000592)
- Li, H., Arditi, D., & Wang, Z. (2012). Transaction-related issues and construction project performance. *Construction Management and Economics*, 30(2), 151–164. <https://doi.org/10.1080/01446193.2012.655254>
- Ling, F. Y., & Khoo, W. W. (2016). Improving relationships in project teams in Malaysia. *Built Environment Project and Asset Management*, 6(3), 284–301. <https://doi.org/10.1108/BEPAM-04-2015-0014>
- Macharia, T. E., Banzi, A. L., & Chagalima, I. A. (2023). Effectiveness of the force account approach in Tanzanian Local Government authorities: Do management support and staff competence matter? *Management & Economics Research Journal*, 5(1), 66–82. <https://doi.org/10.48100/merj.2023.301>
- Maqsoom, A., Choudhry, R. M., Umer, M., & Mehmood, T. (2021). Influencing factors indicating time delay in construction projects: Impact of firm size and experience. *International Journal of Construction Management*, 21(12), 1251–1262. <https://doi.org/10.1080/15623599.2019.1613206>
- Martin, L., & Benson, L. (2021). Relationship quality in construction projects: A subcontractor perspective of principal contractor relationships. *International Journal of Project Management*, 39(6), 633–645. <https://doi.org/10.1016/j.ijproman.2021.05.002>
- Matto, M. C. (2023). Identifying the latent shortcomings of force account projects in Tanzania: The case of construction projects in the education sector. *Engineering, Construction and Architectural Management*, 30(2), 787–804. <https://doi.org/10.1108/ECAM-06-2021-0525>
- Matto, M. C., Ame, A. M., & Nsimbila, P. M. (2021). Influence of contract management on value for money procurement in Tanzania. *International Journal of Procurement Management*, 14(6), 724–741. <https://doi.org/10.1504/IJPM.2021.117889>
- Mchopa, A. (2015). Integrating contract management practices into the achievement of value for money in Tanzania public procurement: Evidence from selected procuring entities in Moshi Municipality. *Journal of Public Procurement*, 15(2), 129–149. <https://doi.org/10.1108/JOPP-15-02-2015-B001>
- Meng, X. (2012). The effect of relationship management on project performance in construction. *International Journal of Project Management*, 30(2), 188–198. <https://doi.org/10.1016/j.ijproman.2011.04.002>
- Meng, X., & Boyd, P. (2017). The role of the project manager in relationship management. *International Journal of Project Management*, 35(5), 717–728. <https://doi.org/10.1016/j.ijproman.2017.03.001>
- Mtana, M., Mwaluko, G., & Matindana, J. (2023). Current and future trends of construction project performance models: A review. *Tanzania Journal of Engineering and Technology*, 42(1), 58–71. <https://doi.org/10.52339/tjet.v42i1.888>
- Munir, M., Jajja, M. S. S., Chatha, K. A., & Farooq, S. (2020). Supply chain risk management and operational performance: The enabler role of supply chain integration. *International Journal of Production Economics*, 227, 107667. <https://doi.org/10.1016/j.ijpe.2020.107667>
- Mushi, G. O., Ismail, I. J., & Mchopa, A. D. (2024). The influence of procurement skills on the cross-functional coordination in public procurement: Evidence from Tanzania. *Cogent Social Sciences*, 10(1), 2324972. <https://doi.org/10.1080/23311886.2024.2324972>
- Mwaiseje, S. S., Mchopa, A. D., & Panga, F. P. (2024). Supply risk management and timely completion of force account construction projects among local government authorities in Dodoma, Tanzania. *International Journal of Building Pathology and Adaptation*. <https://doi.org/10.1108/IJBPA-12-2023-0192>
- Myeza, L., Nkhi, N., & Maroun, W. (2021). Risk management factors contributing to transgressions in the procurement practices in South African SOEs. *Journal of Accounting in Emerging Economies*, 11(5), 735–751. <https://doi.org/10.1108/JAEE-03-2021-0073>
- National Audit Office of Tanzania (NAOT). (2019). *The Annual General Report of the Controller and Auditor General on Audit of the Local Government Authorities for the Financial Year 2018/2019*. Tanzania: NAOT.
- National Audit Office of Tanzania (NAOT). (2020). *The Annual General Report of the Controller and Auditor General on Audit of the Local Government Authorities for the Financial Year 2019/2020*. Tanzania: NAOT.
- Noor, S., Tajik, O., & Golzar, J. (2022). Simple random sampling. *International Journal of Education & Language Studies*, 1(2), 78–82. <https://doi.org/10.22034/ijels.2022.162982>

- Obadia, S., & Chole, G. (2024). The impact of employee proficiency on Tanzanian procurement contract management; Evidence from higher learning institutions. *Journal of Economics, Management and Trade*, 30(4), 1–12. <https://doi.org/10.9734/jemt/2024/v30i41200>
- Obondi, K. (2022). The utilization of project risk monitoring and control practices and their relationship with project success in construction projects. *Journal of Project Management*, 7(1), 35–52. <https://doi.org/10.5267/j.jpm.2021.7.002>
- Park, S. H., & Kim, Y. S. (2018). An assessment of contract management capabilities for overseas construction projects. *KSCCE Journal of Civil Engineering*, 22(7), 2147–2158. <https://doi.org/10.1007/s12205-017-1056-1>
- Podsakoff, P. M., Mac Kenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *The Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Rasheli, G. A. (2016). Procurement contract management in the local government authorities (LGAs) in Tanzania: A transaction cost approach. *International Journal of Public Sector Management*, 29(6), 545–564. <https://doi.org/10.1108/IJPSM-10-2015-0173>
- Ringle, C. M., Sarstedt, M., Sinkovics, N., & Sinkovics, R. R. (2023). A perspective on using partial least squares structural equation modelling in data articles. *Data in Brief*, 48, 109074. <https://doi.org/10.1016/j.dib.2023.109074>
- Rokkan, A. I., & Haugland, S. A. (2022). A transaction cost approach for public procurement. *Journal of Business & Industrial Marketing*, 37(2), 341–352. <https://doi.org/10.1108/JBIM-09-2019-0393>
- Safapour, E., Kermanshachi, S., & Kamalirad, S. (2021). Analysis of effective project-based communication components within primary stakeholders in construction industry. *Built Environment Project and Asset Management*, 11(2), 157–173. <https://doi.org/10.1108/BEPAM-02-2020-0026>
- Safinia, S. (2014). A review on dispute resolution methods in UK construction industry. *International Journal of Construction Engineering and Management*, 3(4), 105–108.
- Salvi, S. S., & Kerkar, S. S. (2020). Quality assurance and quality control for project effectiveness in construction and management. *International Journal of Engineering Research & Technology (IJERT)*, 9(2), 26–29.
- Santoso, D. S., & Gallage, P. G. M. P. (2019). Critical factors affecting the performance of large construction projects in developing countries. *Journal of Engineering, Design and Technology*, 18(3), 531–556. <https://doi.org/10.1108/JEDT-05-2019-0130>
- Serpell, A., Ferrada, X., & Rubio, N. L. (2017). Fostering the effective usage of risk management in construction. *Journal of Civil Engineering and Management*, 23(7), 858–867. <https://doi.org/10.3846/13923730.2017.1321578>
- Szymański, P. (2017). Risk management in construction Poland projects paweł in risk management construction projects. *Procedia Engineering*, 208, 174–182. <https://doi.org/10.1016/j.proeng.2017.11.036>
- Tabish, S. Z. S., & Jha, K. N. (2023). Dispute avoidance in public construction projects. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 15(1), 04522033. [https://doi.org/10.1061/\(ASCE\)LA.1943-4170.0000577](https://doi.org/10.1061/(ASCE)LA.1943-4170.0000577)
- Tumuhairwe, R., & Ahimbisibwe, A. (2016). Procurement records compliance, effective risk management and records management performance: evidence from Ugandan public procuring and disposing entities. *Records Management Journal*, 26(1), 83–101. <https://doi.org/10.1108/RMJ-06-2015-0024>
- Unegbu, H. C. O., Yawas, D. S., & Dan-Asabe, B. (2022). An investigation of the relationship between project performance measures and project management practices of construction projects for the construction industry in Nigeria. *Journal of King Saud University - Engineering Sciences*, 34(4), 240–249. <https://doi.org/10.1016/j.jksues.2020.10.001>
- United Republic of Tanzania. (2011). *Public Procurement Act Number of 2011*. Tanzania: Ministry of Finance and Planning, Government Printers.
- United Republic of Tanzania. (2013). *Public Procurement Regulations of 2013*. Tanzania: Ministry of Finance and Planning, Government Printers.
- United Republic of Tanzania. (2021). Ripoti Makadirio ya Mapato na Matumizi kwa mwaka fedha 2022/2023. Ofisi ya Rais - Tawala za Mikoa na Serikali za Mitaa, Government Printers
- United Republic of Tanzania. (2022). Ripoti Makadirio ya Mapato na Matumizi kwa mwaka fedha 2021/2022. Ofisi ya Rais - Tawala za Mikoa na Serikali za Mitaa, Government Printers
- Vo, K. D., Nguyen, P. T., & Nguyen, Q. L. H. T. T., (2020). Disputes in managing projects: A case study of construction industry in Vietnam. *The Journal of Asian Finance, Economics and Business*, 7(8), 635–644. <https://doi.org/10.13106/jafeb.2020.vol7.no8.635>
- Wang, J., Zhang, S., Fenn, P., Luo, X., Liu, Y., & Zhao, L. (2023). Adopting BIM to facilitate dispute management in the construction industry: A conceptual framework development. *Journal of Construction Engineering and Management*, 149(1), 03122010. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0002419](https://doi.org/10.1061/(ASCE)CO.1943-7862.0002419)
- Wawak, S., Ljevo, Ž., & Vukomanović, M. (2020). Understanding the key quality factors in construction projects—A systematic literature review. *Sustainability*, 12(24), 10376. <https://doi.org/10.3390/su122410376>
- Williamson, O. E. (1993). Transaction cost economics meets posnerian law and economics. *Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift Für Die Gesamte Staatswissenschaft*, 149(1), 99–118.
- Yamane, T. (1967). *Statistics: An introductory analysis*. (2nd ed.). USA: Harper and Row.
- Yang, Y., Wei, Z., & Zhang, Z. (2023). Stakeholder relationship in construction projects: A mixed methods review. *Buildings*, 13(12), 3122. <https://doi.org/10.3390/buildings13123122>
- Zhong, B., Wu, H., Xiang, R., & Guo, J. (2022). Automatic information extraction from construction quality inspection regulations: A knowledge pattern-based ontological method. *Journal of Construction Engineering and Management*, 148(3), 04021207. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0002240](https://doi.org/10.1061/(ASCE)CO.1943-7862.0002240)

CHAPTER FIVE

PUBLISHED PAPER FOUR

Procurement Contract Risk Management and the Performance of the Force Account Construction Project in Tanzania: Does the Regulatory Framework Matter?

5.1 An overview

This chapter presents a published paper that addresses the fourth objective of this study. The paper, published in the SAM Advanced Management Journal, Volume 89, issue 3, accessible to <https://doi.org/10.1108/SAMAMJ-07-2024-0036> by Emerald publisher limited. The attached paper provides a detailed and comprehensive presentation of the research findings, offering valuable understandings into how effective procurement contract risks management enhances performance of force account construction projects in Tanzania as moderated by regulatory framework.

Procurement contract risks management and the performance of force account construction projects in Tanzania: does the regulatory framework matter?

SAM Advanced
Management
Journal

Received 17 July 2024
Revised 19 September 2024
Accepted 27 September 2024

Shadrack Samwel Mwaiseje

*Department of Procurement and Supply Management,
College of Business Education, Dodoma Campus, Dodoma, Tanzania*

Faustine Peter Panga and Alban Dismas Mchopa

*Department of Procurement and Supply Chain Management,
Moshi Co-operative University, Moshi, United Republic of Tanzania, and*

Mathias Sylvester Nkuhi

*Department of Law, Moshi Co-operative University,
Moshi, United Republic of Tanzania*

Abstract

Purpose – The construction sector plays a vital role in the economic progress of every nation, including Tanzania. Notwithstanding its significance, the industry experiences poor performance. This study aims to assess the impact of procurement contract risk management on the performance of force account (FA) construction projects, using a regulatory framework as a moderator.

Design/methodology/approach – The cross-sectional research design was used, and data was collected by using a structured questionnaire. The study employed a sample size of 318 respondents to analyse data by using partial least square structural modelling (PLS-SEM).

Findings – The findings revealed that supply risk management, procurement internal control system and procurement contract administration influence the performance of FA construction projects. Additionally, the study confirms that the regulatory framework strengthens the relationship between the procurement internal control system and procurement contract administration with the performance of FA construction projects. Therefore, procurement contract risk management, as moderated by the regulatory framework, plays a significant role towards the performance of FA construction projects.

Practical implications – These findings have significant implications for practitioners and policymakers involved in FA construction projects in the public sector, as they highlight the importance of procurement contract risk management in achieving the successful performance of FA construction projects.

Originality/value – This study contributes to the ongoing discussion about the performance of construction projects, especially those under the FA procurement. It also contributes to the literature on public construction projects in developing countries.

Keywords Contract risk, Contract risk management, Force account, Performance, Procurement

Paper type Research paper



SAM Advanced Management
Journal
© Emerald Publishing Limited
2996-6078
DOI: 10.1108/SAMAJ-07-2024-0056

1. Introduction

The construction sector is one of the most significant economic aspects in every country. The industry contributes significantly to a country's Gross Domestic Product (GDP), making it one of the areas that have captivated the attention of policymakers and other stakeholders worldwide (Boateng *et al.*, 2022). However, the performance of construction projects was not attractive worldwide due to the presence of delays, cost overruns, and quality problems (Ingle *et al.*, 2021; Mellado *et al.*, 2020; Mahamid, 2016). The problem is more severe in developing countries where achieving the performance of construction projects is challenging (Sayyed *et al.*, 2023; Mwelu *et al.*, 2021). This poor performance is caused by several factors, including a lack of skilled personnel, inadequate technology, corruption and failure to adhere to required standards in construction projects (Ingle *et al.*, 2021; Mwelu *et al.*, 2021). In Tanzania, like other developing countries, the construction industry faces significant challenges that hinder project performance (Abdallah *et al.*, 2023). The challenges are common due to the prevalence of delays in the completion of projects, which are caused by inadequate project management, procurement issues and logistical difficulties (Kikwasi and Sospeter, 2022). These delays resulted in increased costs because the extension of time required additional financial resources to be injected to complete the construction projects (Chamuwange and Ning, 2022). Furthermore, achieving the quality of construction projects in Tanzania is challenging because the procuring entities failed to adhere to established standards and regulations (Aloyce *et al.*, 2024). The use of substandard materials and inadequate supervision indicates a lack of compliance (Aloyce *et al.*, 2024). Thus, procurement contract risk management is considered important in construction projects.

Procurement contract risk management is important in the construction sector as it enables ensuring project continuity and mitigating potential disruptions (Khalef *et al.*, 2021). This assurance is important for the success of construction projects. Supply risk management, a key aspect of procurement contract risk management, focuses on ensuring suppliers deliver quality materials at reasonable costs and in a timely manner (Sayyed *et al.*, 2023). Likewise, the procurement internal control system plays a significant role in enabling the organisation to minimise and detect fraud and misconduct (Koutoupis and Malisiovas, 2023). This system ensures that procurement proceedings are conducted in line with the goals of projects and regulatory requirements, thereby maintaining the integrity of the process (Bhagat and Jha, 2023). Furthermore, procurement contract administration is important in ensuring the project achieves its intended performance as it involves monitoring compliance with contractual terms, managing changes, and resolving disputes (Matto *et al.*, 2021; Gunduz and Elsherbey, 2020). Procurement contract risk management is an important component for the achievement of the construction project as managing projects gets more complex and competition increases (Khalef *et al.*, 2021). Any procurement contract risk which affects the project can be identified and managed immediately so as to achieve project performance (Tumuhairwe and Ahimbisibwe, 2016). Thus, procurement contract risk management is important in construction projects.

In Asia and Africa, the implementation of FA procurement in the public sector was extensively employed (Engelbert *et al.*, 2016). For example, in Ethiopia, FA procurement is used when the construction projects are small and conducted in a remote area where the possibility of bidders being attracted is very low (Gadisa and Zhou, 2020). In Uganda, the Public Procurement and Disposal of Public Assets (PPDA) Act of 2003 indicated that FA procurement is advantageous in terms of lower costs in larger volume work because it utilises the existing resources which are already available internally. In Tanzania, the usage of FA procurement has recently increased significantly in public institutions, particularly in LGAs where the majority of construction projects were implemented under FA procurement;

for instance, the Public Procurement Regulatory Authority (PPRA) audit in 2021 indicated that the audit covered 492 projects implemented under FA, out of which 455 belonged to LGAs and the total value of the projects was TZS 63 billion (PPRA, 2021). FA is incorporated in the Public Procurement Act (PPA), 2023, where the Procuring Entity (PE) uses its resources or collaborates with other public or private agencies to execute construction works (URT, 2023). However, the construction projects implemented under the FA approach were reported to be poor due to the delay in the completion of projects, quality problems and cost increases (PPRA, 2021; PPRA, 2022).

Procurement contract risk management concepts and approaches have been used in the Tanzanian construction sector. Nevertheless, most of the players in this industry are still hesitant regarding risk management principles despite appreciating the process's advantages (Kavishe, 2018). Consequently, some of the construction projects under the FA approach performed below expectations [PPRA, 2022, National Audit Office (NAOT, 2021)]. Because the organisation failed to manage supply risks and find suitable ways of prioritising the risks based on their importance (Safayet *et al.*, 2018). Regulatory authorities created rules and regulations to regulate the risks that arise on construction projects. As a result, the laws and regulations must be followed in the building business (Mwelu *et al.*, 2021). Rules and regulations aimed at the construction sector favourably impact both construction projects and sector performance (Ndumia, 2015). Appropriate rules and regulations are the most excellent way to limit risks on construction projects when there is intense customer focus, stakeholder pressure, and top management loyalties (Adeleke *et al.*, 2016). Although procurement contract risk management offers different advantages to construction projects, several strategies and tactics must be employed to enhance the performance of projects in a dynamic, changing environment. This means that employing procurement contract risk management is not enough to guarantee the success of the projects. The contract management team must also have the capabilities and willingness to accept laws and regulations from regulatory authorities. Organisations sticking with the laws and regulations of regulatory authorities in building projects have higher expectations for their future performance than an organisation that tries to avoid it (Mrope *et al.*, 2017).

Based on the explanations above, this study has several contributions to the body of literature. First, limited studies conducted in developing countries, specifically in Tanzania, have linked procurement contract risk management with the performance of construction projects under the FA procurement. For example, a study by Mikapagaro *et al.* (2018) on the implementation of risk management strategies in joint venture building projects has concentrated on risk management strategies in joint venture construction projects. Second, little is known about how the regulatory framework can moderate the relationship between procurement contract risk management and the performance of construction projects under the FA approach in Tanzania.

2. Literature review

2.1 Theoretical underpinning

This study is guided by transaction cost theory (TCT), which describes that there are always some transaction costs involved when running a business. Because of the nature of interactions, the concept derives from the ideas of Coase (1937) and is widely used in management and business research. Transaction costs are the costs associated with contracting both ex-ante, such as negotiating, and ex-post, such as contract execution and resolving disputes (Williamson, 1979). Therefore, the theory provides important insights that are applicable in the context of procurement and supply chain operations. For instance, transaction costs can include the costs involved in placing orders, progressing orders, delivery arrangements, handling enquiries and

SAMAMJ

all other activities that occur when organisations do business with one another. The theory establishes a sound framework for public officials engaged in contract management (Rasheli, 2016). Based on transaction cost economics, a connection between procurement contract risk management and the performance of construction projects was established.

Public procurement management puts a focus on the effective management of contracts between the public procuring entities and suppliers, as ineffective contract management can result in cost increases and the inability to implement various projects due to associated costs and effort (Rasheli, 2016). The majority of contract management issues occur during the development and implementation phases of the contract. Contract management costs and the increased risk of contract failure may outweigh the potential benefits of these contracts. Thus, managing contract risk from contract preparation up to the closing of the contract requires considerable expense and effort. According to the transaction cost theory, the difficulty of contract management is a representation of the costs and effort incurred by organisations linked to the management of formal contracts with their suppliers (Williamson, 1993; Haaskjold *et al.*, 2020). Therefore, in managing procurement contract risks, transaction costs related to the costs of searching best contractors and suppliers, the cost of supervision of the contract and the costs of enhancing the internal control system are considered. These costs, if ignored, will increase the cost of all projects. Hence, the crucial thing that should be considered in the management of contract risks in construction projects is the trade-off between the amount of transaction costs incurred when contract risks are not well managed and the proper management of contract risks. This is because high risks of contracts increase transaction costs of managing contracts and hence condense the performance of projects.

2.2 Procurement contract risk management

This study's procurement contract risk management comprises supply risk management, procurement internal control system and procurement contract administration, which are considered important factors in explaining procurement contract risk management.

2.2.1 Supply risk management. Supply risk management is a critical aspect of construction project management, as the success of a construction project heavily relies on the timely and efficient procurement of materials, equipment, and services. Effective supply risk management ensures that potential disruptions are identified, assessed, and mitigated to prevent delays, cost overruns and compromised quality (Boateng *et al.*, 2022). This study sticks to the angle that supply risk management influences the performance of FA construction projects. Sometimes, risks and uncertainties in construction projects are brought on by worker performance, the quality of the materials and components, delays in getting vital supplies to the job site, project budget and cost management or the difficulty of the procurement processes, all of which could threaten project objectives (Khalef *et al.*, 2021). Studies indicated that some projects were completed with delays, cost overruns and unsatisfactory quality because of poor risk management (Myeza *et al.*, 2021; Iyer *et al.*, 2020). Studies revealed contradicting findings between the adherence to risk management strategies and the performance of construction projects. The study of Myeza *et al.* (2021) and Szymański (2017) found that enhancing risk management in construction projects will improve the performance of projects, while (Khan *et al.*, 2019) found no major impact on risk management and the success of the project. However, studies do not indicate how supply risk management influences the performance of FA construction projects. Then, we propose the following hypothesis:

H1. Supply risk management influences the performance of FA construction projects.

2.2.2 Procurement internal control system. In construction projects, it is believed that procurement activities are a critical component that directly impacts the project's success in terms of time, cost and quality (Bolomope *et al.*, 2022). To ensure compliance with regulations, manage risk, and achieve project objectives, an effective procurement internal control system is considered important (Muhwezi *et al.*, 2023). This system includes procedures, policies and mechanisms designed to protect assets, cost-effectiveness and overall operational efficiency (Koutoupis and Malisiovas, 2023). In this study procurement internal control system is the risk management procedures which comprise segregation of duties, authorisation process, stock control and records keeping for the sake of achieving project objectives. Previous studies have demonstrated the link between internal control and the performance of the organisation through financial performance (Hamed, 2023), business performance and link to risk reduction, profitability and compliance (Koutoupis and Malisiovas, 2023). Other studies found that the internal control system helps in achieving the performance of SMEs (Alfartoosi *et al.*, 2021). However, existing studies primarily focus on the relationship between internal control on financial performance and risk reduction in organisations, leaving a gap in understanding the specific impacts of procurement internal controls of FA construction projects, which involve in-house resources and direct labour. Therefore, this study fills that gap by specifically assessing the role of procurement internal control systems on the performance of FA construction projects, aiming to provide insights into how these controls can be tailored and effectively implemented in such unique construction project environments to achieve better results. We propose the following hypothesis:

H2. Procurement internal control system influences the performance of FA construction projects.

2.2.3 Procurement contract administration. Procurement contract administration is considered important in construction project management. It comprises the organised procedures of managing contracts from when they are created through to their conclusion, ensuring that all parties fulfil their contractual obligations (Gunduz and Elsherbeny, 2020). Effective procurement contract administration in construction projects is essential for the successful delivery of projects, as it helps manage risks, controls costs, and ensures that project objectives are met (Msawil *et al.*, 2022). In this study, procurement contract administration is the process of effectively managing a contract from when a contract is prepared up to the closing of the contract through relationship management, risk management, dispute management, and monitoring and control. Existing studies link contract management with value-for-money achievement (Mchopa, 2015) and contract administration with the performance of construction projects (Gunduz and Elsherbeny, 2020). However, Matto *et al.* (2021) found that contract administration did not influence value-for-money achievement in the public sector. These reviewed studies focus on how effective contract management and contract administration can achieve the performance of construction projects in terms of quality, cost and time in public procurement by managing the project by using external contractors. However, the studies did not link the procurement contract administration and the performance of FA construction projects, which are managed and implemented by in-house personnel. Hence, the current study intends to bridge this gap by assessing the role of procurement contract administration in the performance of FA construction projects. Then, the study proposes the following hypothesis:

H3. Procurement contract administration influences the quality attainment of FA construction projects.

SAMAMJ

2.2.4 The moderating role of the regulatory framework. The moderating role of the regulatory framework, which encompasses laws, policies, and regulations, plays a crucial moderating role in various sectors by establishing clear guidelines and standards (Rehman and Ishak, 2023). This framework emphasises ensuring that businesses, organisations and even individuals comply with the defined laws and regulations to promote fairness, transparency and accountability (Kabara *et al.*, 2023). Also, the regulatory framework helps in mitigating risk, protecting the public interest and maintaining effective operations of the organisation through setting and enforcing rules and policies (Kabara *et al.*, 2023)

As hypothesised earlier, supply risk management, procurement internal control system and procurement contract administration may be relevant in explaining the performance of FA construction projects. In the context of FA, projects are regulated by the Public Procurement Act (PPA) of 2011 and the Public Procurement Regulations (PPR) of 2013. In this regard, the role of predictors variable on the performance of FA construction projects may explained with the condition of the presence of a regulatory framework. Specifically, the moderating role of regulatory frameworks has been studied in different contexts, illustrating how regulatory frameworks can impact the relationship between certain project management practices and overall project outcomes. For instance, regulatory frameworks have been shown to moderate the relationship between project management framework and the sustainability of emerging contractors in construction projects (Ebekozen *et al.*, 2023), as well as between economic factors and risk management in construction projects (Rehman and Ishak, 2023). Also, other studies link directly to the relationship between regulatory framework and project performance (Ndumia, 2015). However, the specific role of predictor variables within FA projects remains an area that has yet to be thoroughly explored. In this regard, it was hypothesised that:

- H4.* Regulatory framework significantly moderates the relationship between supply risk management and the performance of FA construction projects.
- H5.* Regulatory framework significantly moderates the relationship between procurement internal control system and performance of FA construction projects.
- H6.* Regulatory framework significantly moderates the relationship between procurement contract administration and the performance of FA construction projects.

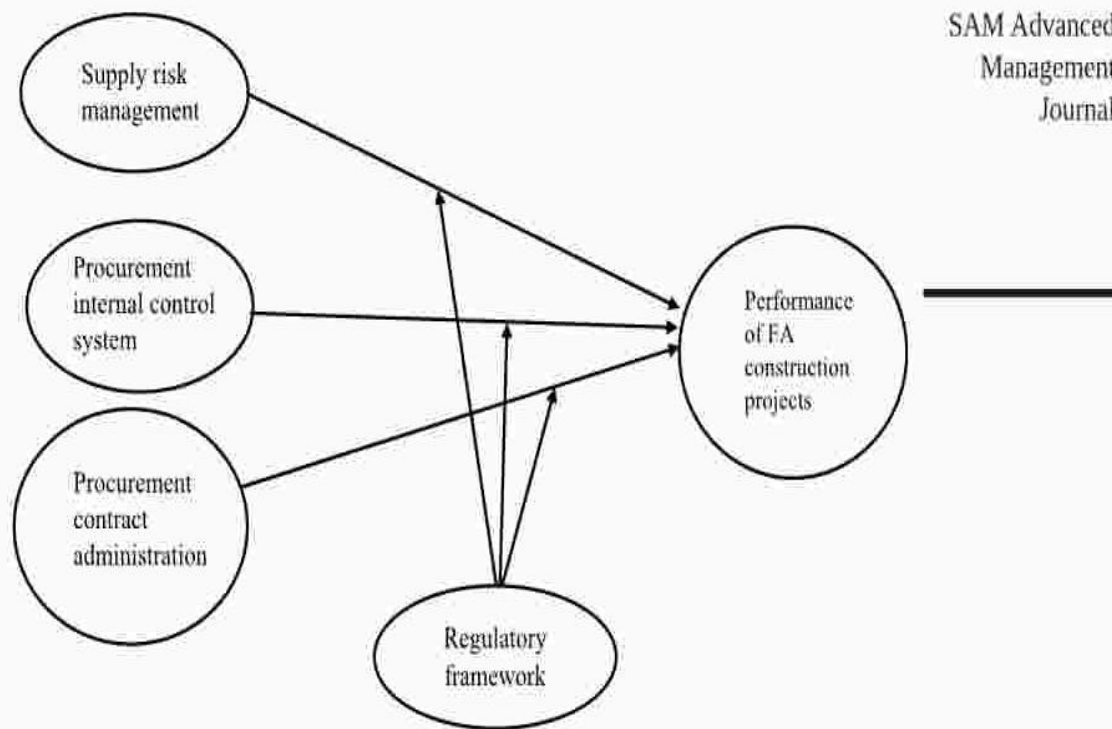
2.3 Conceptual framework

The designed conceptual framework in this study establishes the link between independent variables and dependent variables. The assumption is performance of the construction project under FA is determined by procurement contract risk management. The performance was measured in terms of quality achievement, timely completion and cost-effectiveness. The performance of construction projects under FA is influenced by Supply risk management, procurement internal control system and procurement contract administration. But regulatory framework stands as a moderating variable which affects the relationship between procurement contract risk management and performance of construction projects under FA as indicated in Figure 1.

3. Methodology

3.1 Areas of the study and research design

Cross-sectional research was adopted, which entails gathering data at a specific point in time. This design is suitable because it is capable and efficient of gathering a large amount of data



Source: Figure by authors

Figure 1. Conceptual framework

in a very short period, easy to minimise cost and appropriate for the study, which intends to analyse the causal relationship of the variables (Setia, 2016; Changalima *et al.*, 2021). Also, the design is useful in this study because the study objectives were not to capture information on changes over time but to get a general snapshot of the relationship between variables of the study. The study was conducted in Tanzanian LGAs, specifically in a primary school in the Dodoma region. LGAs were chosen because they contribute to a large number of Tanzanian procuring entities and have a higher number of FA projects than other areas. For example, the PPRA audit in 2021 revealed that it covered 492 projects undertaken under FA, of which 455 belonged to LGAs, 25 to Parastatal Organisations, and 12 to Agencies, with a total value of TZS 63 billion. The Dodoma region was chosen as the study area to collect information on FA construction projects in primary schools since it has a large number of such projects. For example, in the Financial Year (FY) 2021 / 2022, a budget of 2.71 billion was set up for the construction of 237 primary school classrooms. Similarly, a budget of 2.79 billion was set out for classroom and teacher housing building in FY 2022 / 2023 (URT, 2022 and 2023). Primary schools were specifically chosen based on the availability of FA projects in the Dodoma region (URT, 2022).

3.2 Population and sample

The study's targeted population consisted of 1800 respondents who were obtained from 120 primary schools in selected LGAs in the Dodoma region and 15 members of the FA committee. The sample size was 327 respondents calculated by means of the Yamane formula as used by previous studies (Changalima *et al.*, 2023; Kazungu and Kubenea, 2023), taking into account a 95% confidence interval. However, the sample size of the study was

SAMAMJ

360 to increase the number of response rates, as suggested by [Changalima and Mwagike \(2024\)](#) and [Dolnicar et al. \(2016\)](#), who said that increasing the sample size can enhance the statistical power of the study. In each selected primary school, simple random sampling was used to select 3 members of the FA committees. The method was selected because it ensures that every member of the population (primary schools) has a fair chance of being chosen. By randomly selecting three members from each school, we can create a representative sample that correctly reflects the characteristics and variety of the primary school population. This reduces bias and increases the generalisability of the findings ([Noor et al., 2022](#)). Members from the procurement committee, receiving and inspection committee and construction committee were selected based on the fact that all FA construction activities are supervised and controlled by them. Hence, the data were collected from the members of the FA committee actually formed by the primary school teachers and representatives from the village committee.

3.3 Sampling and data collection

The questionnaire was used as a tool for collecting data in this study, and it was chosen for its effectiveness in gathering a large number of responses within a reasonable timeframe. The questionnaire was carefully structured to align with the study's variables. Professional experts were used to pre-test the questionnaire to ensure the content validity. A pilot study was conducted in the Morogoro region, a location not included in the main data collection, to verify the clarity and comprehensiveness of the questionnaire. This preliminary testing involved 25 experts who each had a minimum of five years of experience in FA construction projects. Their feedback was instrumental in refining the final version of the questionnaire to incorporate their suggestions and recommendations. Data collection for the study took place over an extended period, from March to December 2023. To maximise the response rate, the survey was distributed using the drop-and-pick method, as recommended by [Allred and Ross-Davis \(2011\)](#). This approach involved physically delivering the questionnaires to respondents and arranging for their collection at a later date. This method provided respondents with ample time to complete the questionnaire thoughtfully, thereby increasing the likelihood of obtaining a substantial number of completed responses.

3.4 Variable measurements

The dependent variable of the study performance of FA construction projects was measured by three (3) indicators, which are quality attainment, timely completion, and cost-effectiveness, which were adopted from previous studies such as [Maqsoom et al. \(2021\)](#), [Mwaiseje et al. \(2024\)](#), [Hoque and Hasan \(2022\)](#) and ([Faten Albtouch et al., 2020](#)). The independent variables of procurement contract risk management were measured by three variables: supply risk management, procurement internal control system, and procurement contract administration. Supply risk management was measured by four (4) constructs, which were adopted from previous studies such as ([Mwaiseje et al., 2024](#); [Changalima et al., 2024](#); [Chintapalli, 2021](#); [Kimario, 2021](#) and [Vörösmarty and Dobos, 2020](#)). The procurement internal control system was measured by four constructs, which were adopted from [Scoleze Ferrer et al. \(2020\)](#), [Frontoni et al. \(2020\)](#) and [Namukasa \(2017\)](#) and modified based on the scope of the study. Procurement contract administration was measured by four constructs, which were adopted and modified from previous studies such as [Francis et al. \(2022\)](#), [Kissi et al. \(2019\)](#) and [Demirkesen and Ozorhon \(2017\)](#). Finally, the moderating variable regulatory framework was measured by three constructs, which are laws, guidelines and regulations, which were adopted from previous studies of [Rehman and Ishak \(2023\)](#) and [Nduhia \(2015\)](#). A five-point Likert scale running from 1 strongly disagree up to 5 strongly

agree was used as the measurement scale of independent variables, moderating variables and dependent variables. The measures were selected based on their scientific validation in accurately assessing the constructs (Yağcı, 2019).

3.5 Data analysis

The primary data analysis method used in the study was partial least square structural equation modelling (PLS-SEM). As a result, SmartPLS 4 was used to analyse quantitative data in accordance with the study's main objective and the kinds of data that were gathered. A common second-generation method for analysing suggested correlations is PLS-SEM (Hair *et al.*, 2019). When evaluating correlations between many constructs that incorporate both latent and observable variables, this variance-based SEM technique is especially helpful. The use of PLS-SEM in business research is a significant indication of the growing need for more trustworthy quantitative techniques (Guenther *et al.*, 2023). Therefore, because PLS-SEM aligns with the primary field of inquiry, it is extremely suited. The analytic process involved two separate steps. First, the measurement model's validity and reliability were assessed. In the second step, the structural model was assessed to ascertain the study's hypotheses and predictive usefulness. It is crucial to emphasise that the findings part of this article provides a thorough presentation of the outcomes from both stages.

3.6 Common method bias

The self-administered questionnaires were employed in this study, from which a single respondent provided information regarding all items in the survey. There is a chance that this methodology may create bias, which is why Harman's single-factor test was conducted (Harman, 1967). This was done to determine if there is a dominating factor that accounts for most of the variance in all of the collected data. In the event that this takes place, common method bias (CMB) is likely to arise. According to the analysis, there is no substantial CMB issue because only 23.7% of the explained total variance is associated with a single factor (Podsakoff *et al.*, 2003). This result is due to the fact that no single factor was found to account for more than 50% of the variance. To detect bias existence, the study also involved closely examining the variance inflation factor (VIF) for the primary constructs. Since these VIF values were less than 3, there was no discernible bias introduced throughout the data gathering process (Kock, 2015).

4. Findings

4.1 Measurement model

The results of the measurement model are presented in Tables 1–3. These findings provide a basis for evaluating the validity and reliability of the measures (Hair *et al.*, 2019). Table 1 clearly shows that the measures demonstrate adequate reliability. Specifically, the composite reliability and Cronbach's alpha values for all variables exceed 0.7, confirming their reliability. Moreover, each outer loading value, as indicated in Table 1, is above the acceptable value of 0.7, establishing indicator reliability. Convergent validity was assessed using the average variance extracted (AVE), and the values in Table 1 surpass the recommended cutoff of 0.5.

Two different approaches were used to establish discriminant validity, and the results are shown in Tables 2 and 3. The Heterotrait-Monotrait (HTMT) matrix values in Table 2 are consistently less than 0.85, indicating that discriminant validity is established. To further validate the achievement of discriminant validity, Table 3 presents cross-loadings. Bold italicised values indicate that the corresponding components show a larger loading on their

Table 1. Measurement model assessment (loadings, AVE and reliability)

Constructs/items	Outer loading	Cronbach alpha	Composite reliability	AVE
<i>Supply risk management (SRM)</i>		0.845	0.891	0.673
SRM1	0.851			
SRM2	0.706			
SRM3	0.895			
SRM4	0.817			
<i>Procurement internal control system (PIC)</i>		0.864	0.908	0.712
PIC1	0.746			
PIC2	0.865			
PIC3	0.876			
PIC4	0.882			
<i>Procurement contract administration (PCA)</i>		0.788	0.861	0.608
PCA1	0.817			
PCA2	0.8			
PCA3	0.787			
PCA4	0.711			
<i>Performance (PFA)</i>		0.787	0.875	0.7
PFA1	0.856			
PFA2	0.868			
PFA3	0.783			
<i>Regulatory framework (RFR)</i>		0.815	0.889	0.728
RFR1	0.874			
RFR2	0.837			
RFR3	0.847			

Source: Table by authors

Table 2. HTMT matrix

Constructs	PCA	PFA	PIC	RFR	SRM	RFR x SRM	RFR x PIC	RFR x PCA
PCA								
PFA	0.423							
PIC	0.216	0.467						
RFR	0.066	0.163	0.058					
SRM	0.13	0.273	0.135	0.046				
RFR x SRM	0.062	0.054	0.021	0.084	0.057			
RFR x PIC	0.066	0.138	0.084	0.135	0.04	0.161		
RFR x PCA	0.044	0.219	0.031	0.182	0.034	0.138	0.172	

Source: Table by authors

assigned constructs than on any other construct. Generally, the measurement model results show that the study's validity and reliability are unaffected.

4.2 Structural model

The structural model's results are presented in this section. These results are important for clarifying the proposed links (see [Figure 1](#)). First, collinearity tests were performed to make

Table 3. Cross-loadings

Constructs	PCA	PFA	PIC	RFR	SRM
PCA1	0.817	0.229	0.105	0.028	0.056
PCA2	0.800	0.340	0.197	-0.005	0.130
PCA3	0.787	0.262	0.185	0.002	0.103
PCA4	0.711	0.220	0.076	-0.007	0.046
PFA1	0.345	0.856	0.372	-0.145	0.210
PFA2	0.246	0.868	0.339	-0.088	0.243
PFA3	0.272	0.783	0.257	-0.098	0.167
PIC1	0.110	0.303	0.746	-0.081	0.028
PIC2	0.159	0.313	0.865	0.022	0.115
PIC3	0.196	0.358	0.876	-0.016	0.109
PIC4	0.170	0.341	0.882	-0.022	0.135
RFR1	0.042	-0.130	-0.058	0.874	0.035
RFR2	0.027	-0.097	-0.034	0.837	-0.019
RFR3	-0.060	-0.113	0.025	0.847	-0.047
SRM1	0.101	0.223	0.128	-0.024	0.851
SRM2	0.067	0.081	0.086	0.003	0.706
SRM3	0.033	0.193	0.079	-0.008	0.895
SRM4	0.149	0.248	0.088	0.005	0.817

Source: Table by authors

sure our analysis was efficient (Ringle *et al.*, 2023). With VIF values of 1.406 for supply risk management, 1.270 for procurement internal control system, 1.583 for procurement contract administration and 1.429 for regulatory framework within the postulated relationships, the VIF in the inner model revealed negligible collinearity. Similarly, with the interaction of regulatory framework, the VIF Values of 1.050 for supply risk management, 1.092 for procurement internal control system and 1.086 for procurement contract administration were observed within the established relationship. Since all values are substantially below the optimally recognised criterion of 3, these data confirm that collinearity is not a serious concern (Hair *et al.*, 2019). To evaluate the strength and significance of the route coefficients following bootstrapping processes, the study employed values of p and β (Ringle *et al.*, 2023). Additionally, using R^2 and f^2 values, respectively, the contribution of the predictive factors and the route model's effect size were evaluated.

The study's statistical analysis of the relationships between the constructs and their impact on the performance of the FA construction projects are clearly outlined and observed. Supply risk management shows a positive and significant effect on the performance of FA construction projects with a coefficient of 0.175, a T statistic of 3.088, and a p -value of 0.002, indicating that improved supply risk management strongly correlates with higher performance of FA construction projects. Procurement internal control system also has a positive and highly significant impact on the performance of FA construction projects, evidenced by a coefficient of 0.314, a T statistic of 6.151, and a p -value of 0.000, suggesting that an enhanced procurement internal control system substantially boosts the performance of FA construction projects. Similarly, procurement contract administration positively influences the performance of FA construction projects with a coefficient of 0.265, a T statistic of 4.703, and a p -value of 0.000, showing that better procurement contract administration significantly enhances the performance of FA construction projects. Conversely, the regulatory framework has a negative impact on the performance of FA construction projects, with a coefficient of -0.115, a T statistic of 2.706, and a p -value of

SAMAMJ

0.007, indicating that increased regulatory framework such as laws, policies and regulations can negatively affect the performance of FA construction projects.

In terms of moderation effects, the interaction of regulatory framework and procurement internal control system positively and significantly affects the performance of FA construction projects with a coefficient of 0.099, a T statistic of 2.279 and a *p*-value of 0.023, highlighting a significant relationship effect. Additionally, the interaction between regulatory framework and procurement contract administration also positively impacts the performance of FA construction projects, with a coefficient of 0.166, a T statistic of 3.298, and a *p*-value of 0.001, indicating another significant positive interaction effect. However, the interaction between regulatory framework and supply risk management does not significantly affect the performance of FA construction projects, as shown by a coefficient of -0.046, a T statistic of 0.821 and a *p*-value of 0.412, suggesting no meaningful interaction between these variables. Hence, the findings demonstrate that while supply risk management, procurement internal control system, and procurement contract administration individually enhance the performance of FA construction projects, and certain interactions (RFR x PIC and RFR x PCA) further enhance PFA, RFR on its own has a negative effect (Table 4).

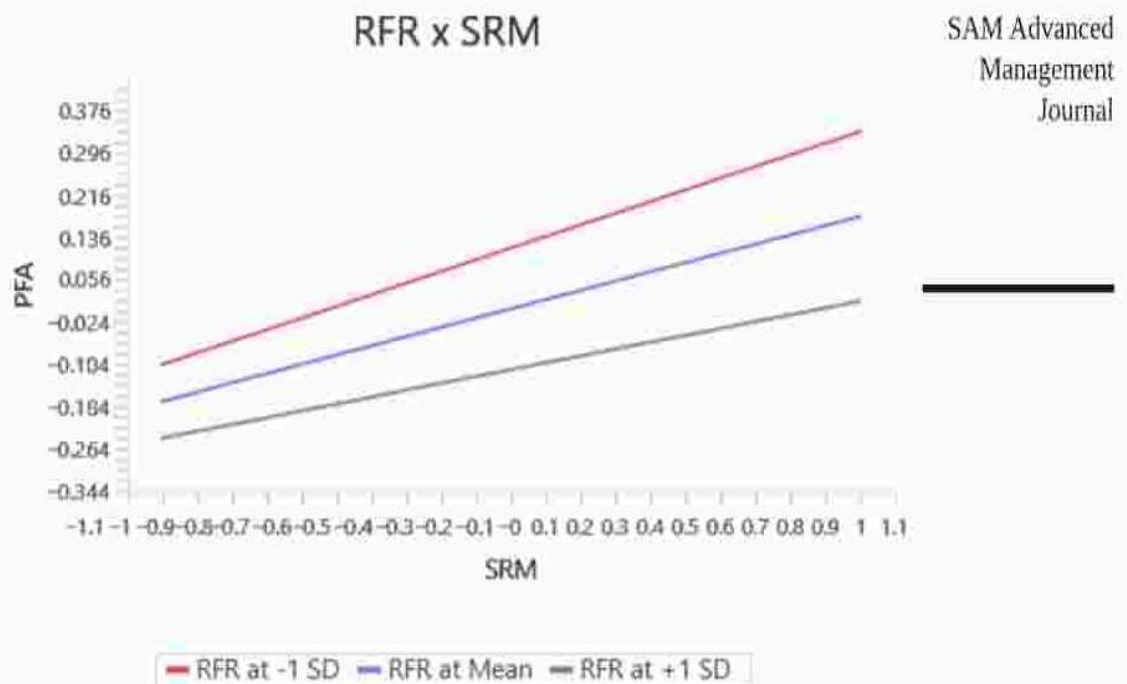
The findings depicted in Figures 2–3 demonstrate the slope plotting, revealing the regulatory framework's moderating effect on the relationship between supply risk management, procurement internal control system, procurement contract administration and the performance of FA construction projects. The findings reveal that the red line is a lower level, the green line is a higher level and the blue line is the mean level of the regulatory framework, indicating the moderating effect of the regulatory framework on the relationship between variables. It should be noted that the moderating effect of regulatory compliance on SRM and PFA was found to be insignificant. Additionally, the moderating effect was found to be significant for the relationship between PIC and PFA. As presented in Figure 3, the effect of PIC on PFA is amplified with an increase in regulatory compliance. The same was observed in the relationship between PCA and PFA, where the effect of PCA on PFA becomes stronger with an increase in the levels of regulatory compliance, as presented in Figure 4.

Additionally, Figure 5 illustrates the R^2 value for the dependent variable, which stands at 0.317. This implies that around 31.7% of the variation in the performance of FA construction projects can be attributed to the procurement contract risk variables considered in the study. According to Hair *et al.* (2021), this value is deemed sufficient to explain the extent of variation in the performance of FA construction projects associated with procurement

Table 4. Results of the structural model

Relationships	Original sample (O)	Sample mean (M)	SD (STDEV)	T statistics (O/STDEV)	0.025	0.975	<i>p</i> values
SRM → PFA	0.175	0.181	0.057	3.088	0.075	0.294	0.002
PIC → PFA	0.314	0.312	0.051	6.151	0.209	0.41	0.000
PCA → PFA	0.265	0.269	0.056	4.703	0.159	0.378	0.000
RFR → PFA	-0.115	-0.123	0.042	2.706	-0.202	-0.043	0.007
RFR x SRM → PFA	-0.046	-0.049	0.055	0.821	-0.156	0.061	0.412
RFR x PIC → PFA	0.099	0.1	0.043	2.279	0.016	0.186	0.023
RFR x PCA → PFA	0.166	0.164	0.05	3.298	0.068	0.262	0.001

Source: Table by authors



Source: Figure by authors

Figure 2. Slope plotting of moderating effect between RFR with SRM and PFA

contract risk management. The predictive accuracy of the PLS-SEM model was evaluated using the Q^2 value. The resulting value of 0.274 signifies that the model possesses medium predictive relevance (Hair *et al.*, 2019). Please refer to Figure 5 for the PLS-path model.

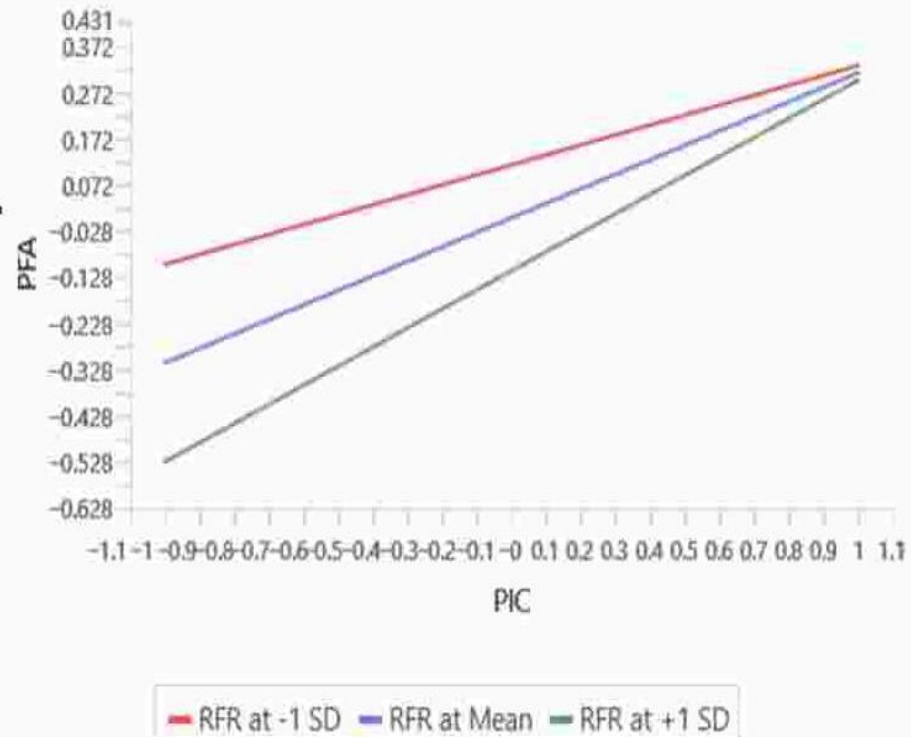
5. Discussion

The study's objective was to assess the regulatory framework's moderating role in determining the relationship between procurement contract risk management and the performance of FA construction projects. Supply risk management positively influences the performance of FA construction projects. The reason behind this significant relationship is due to the fact supply risk management reduces the risk of supply disruptions in construction projects. For instance, if the construction project team be able to apply supply risk management strategies, there is a greater chance of minimising the risks which suppliers can cause. For example, having multiple suppliers to deal with avoids the risk of depending on one supplier, which can avoid the risk of supplier failure to supply materials to the construction site. Also, effective supplier selection reduces the risk of selecting an incapable supplier who can fail to meet the intended objective of the organisation. TCT emphasises that managing supply risks effectively can reduce transaction costs by minimising uncertainties and potential disruptions in the supply chain. The positive impact of supply risk management on the performance of FA construction projects underscores the importance of reducing information asymmetry and mitigating opportunistic behaviour by suppliers.

This result aligns with studies emphasising the importance of risk management strategies in construction projects (Mwaiseje *et al.*, 2024; Darko *et al.*, 2020; Serpell *et al.*, 2017). Although the study's results are consistent with the previously cited literature, they add important new information about the function of supply risk management, in particular

SAMAMJ

RFR x PIC

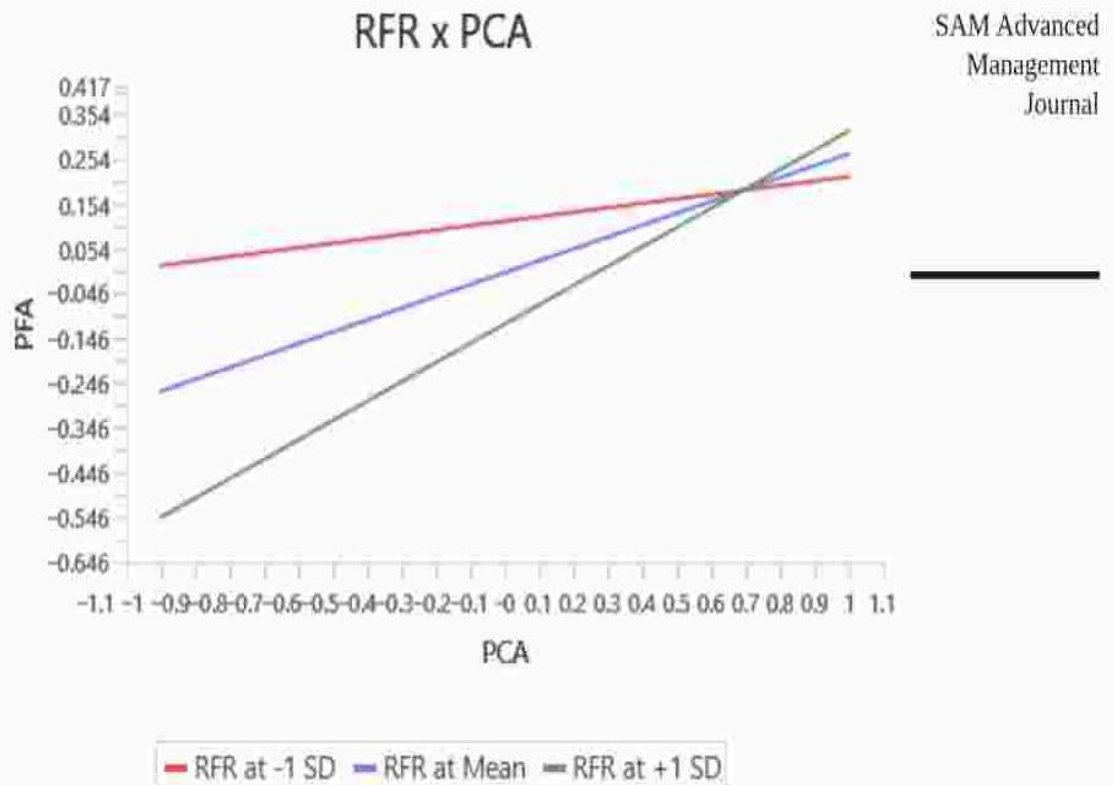


Source: Figure by authors

Figure 3. Slope plotting of moderating effect between RFR with PIC and PFA

within the framework of FA construction projects in public procurement, especially in LGAs.

The study firmly establishes that the procurement internal control system is the most significant predictor of the performance of FA construction projects. Based on the results in H2, the study underscores the pivotal role of the procurement internal control system in achieving the performance of FA construction projects. The study's findings imply that among the vital determinants of the performance of FA construction projects is the procurement internal control system, which signifies the adherence to the authorisation process, segregation of duties, stock control and record keeping among members of the project team are involved in the management of construction projects under FA. A study conducted by (Hamed, 2023) supports the study's findings by emphasising that observing control measures which are stipulated in the internal control system will help the organisation achieve the intended performance. Hence, consideration of an internal control system in construction projects helps to avoid the risk concerning stock, payment and quality, which hinder the achievement of the project objectives (Muhwezi *et al.*, 2023; Alfartoosi *et al.*, 2021). Also, Eftekhari and Zahra, 2022, Tang *et al.*, 2020 and Rendon and Rendon, 2015 suggest that internal control mechanisms in project management are necessary for enhancing project success and performance, and there are different mechanisms of internal control systems relating to project management that is needed by project teams to be adhered with. Therefore, these studies imply and offer support to our study that the procurement internal control system in FA construction projects is necessary for enhancing the performance of projects.

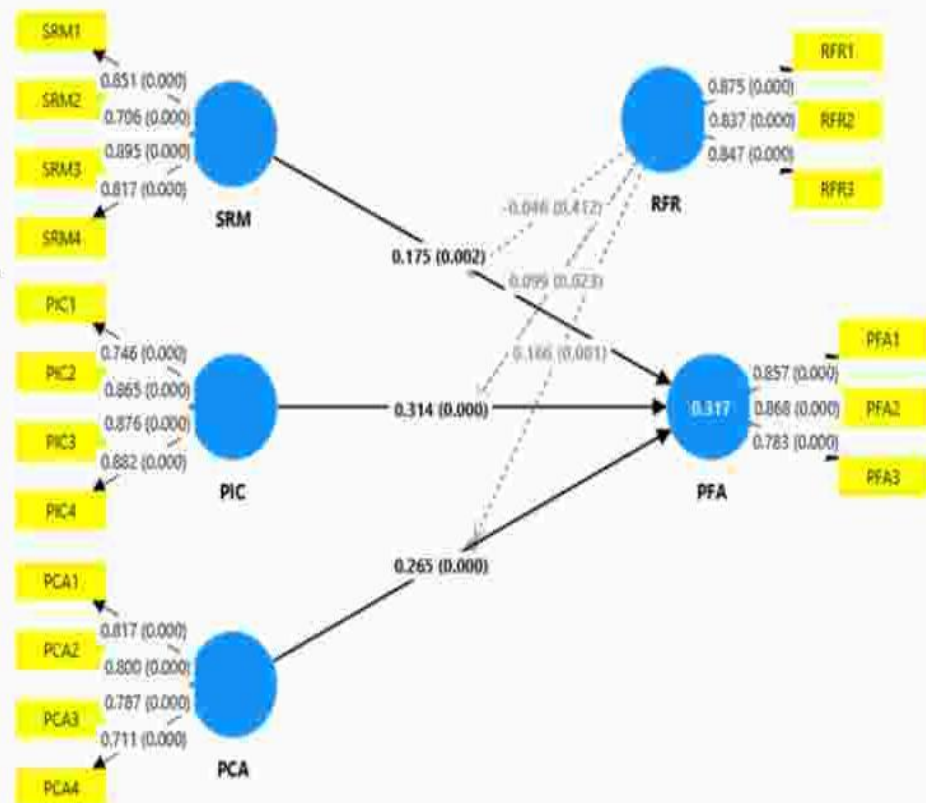


Source: Figure by authors

Figure 4. Slope plotting of moderating effect between RFR with PCA and PFA

The findings indicate that procurement contract administration and the performance of FA construction projects are positively and significantly related. Thus, procurement contract administration is a relevant means for improving the performance of FA construction. The plausible explanation is based on the fact that procurement contract administration enhances adherence to the terms and conditions stipulated in the contract, which is important in achieving the performance of construction projects. The project management team involved in FA projects they are required to supervise the execution of the projects through proper risk management, dispute management (Wang *et al.*, 2023), relationship management and monitoring and control (Unegbu *et al.*, 2022) to achieve the performance of projects. Thus, procurement contract administration is crucial as it enhances collaboration and communication and, hence, reduces disruptions in the implementation of construction projects. This is relevant to the strong relationship that has been observed between procurement contract administration and the performance of FA construction projects. Existing literature supports the importance of procurement contract administration in influencing the performance of projects. For instance, Gunduz and Elsherbeny (2020) explored how contract administration affects the performance of construction projects. Moreover, contract administration is essential for the successful delivery of projects, as it helps manage risks, controls costs, and ensures that project objectives are met (Msawil *et al.*, 2022). Therefore, emphasis on procurement contract administration in FA construction projects can enhance the performance.

SAMAMJ



Source: Figure by authors

Figure 5. Structural model

Finally, this study highlights the moderating role of a regulatory framework in the relationship between procurement contract risk management and the performance of FA construction projects. The positive interaction between the regulatory framework and procurement internal control system suggests that when the regulatory framework and internal procurement controls work together, they strengthen the performance of FA construction projects beyond what each factor could achieve individually. Similarly, the positive interaction between regulatory framework and procurement contract administration indicates that the interaction of these two variables enhances the performance of FA construction projects. Conversely, the non-significant interaction between the Regulatory framework and supply risk management suggests that the regulatory framework does not significantly affect the relationship between supply risk management and the performance of FA construction projects. This indicates that while supply risk management independently contributes to the performance of FA construction projects, its effectiveness is not notably influenced by regulatory framework conditions. Hence, the findings highlight the importance of integrating a regulatory framework into procurement contract risk management to enhance project performance.

6. Conclusion

This study examined the impact of procurement contract risk management on the performance of FA construction projects in Tanzania, with the regulatory framework as a

moderator. The findings revealed that procurement contract risk management has a significant positive influence on the performance of force account construction projects. Furthermore, the study found that the regulatory framework positively moderates the relationship between procurement contract risk management and project performance. This implies that adherence to the relevant rules and regulations governing construction projects can enhance the effectiveness of procurement contract risk management in improving the performance of FA construction projects.

7. Theoretical implication

The study relies on the TCT to assess the role of regulatory framework on the relationship between procurement contract risk management in enhancing the performance of FA construction projects. The study contributes to the TCT on the importance of analysing transaction cost when managing contract risks because there is transaction cost which an organisation will incur when managing contract risks to achieve the intended performance. Also, the study contributes to the existing literature on construction project management by empirically demonstrating the importance of procurement contract risk management and the moderating role of the regulatory framework in the context of FA construction projects. By evaluating the interaction between procurement contract risk management and the regulatory framework on the performance of FA construction projects, the findings enhance knowledge and understanding for researchers studying construction projects in developing countries and globally.

8. Practical implication

The findings of this study can benefit the construction industry, project participants, and policymakers, as they provide valuable insights concerning procurement risk management in construction projects. Practitioners should prioritise the implementation of effective procurement contract risk management strategies to enhance the performance of FA construction projects. Furthermore, regulatory authorities should ensure that the existing regulatory framework is comprehensive, understood, well-enforced, and supports the implementation of proper procurement contract risk management practices in FA construction projects.

9. Limitations and future scope of study

The study focuses on FA construction projects within LGAs in the Dodoma region of Tanzania, which limits the generalisability of the findings to other types of construction projects or different geographical locations that use different laws and regulations to govern FA construction projects. Future studies should consider other types of construction projects to measure the impact of procurement risk management on performance. Furthermore, the study used cross-sectional data; future studies should consider incorporating longitudinal data to provide deeper insights into the long-term impacts of procurement contract risk management on project performance.

References

- Adeleke, A.Q., Bahaudin, A.Y. and Kamaruddeen, A.M. (2016), "Preliminary analysis on organisational factors influencing effective construction risk management: a case study of Nigerian construction companies", *Sains Humanika*, Vol. 8 No. 2, pp. 1-7, doi: [10.11113/sh.v8n2.876](https://doi.org/10.11113/sh.v8n2.876).
- Alfartoosi, A., Jusoh, M.A., Mohsin, H.J. and Yas, H. (2021), "The effect of e-accounting and mediated by internal control system on the performance of SME in Iraq", *American Journal of Business and Operations Research*, Vol. 3 No. 1, pp. 5-38.

SAMAMJ

- Allred, S.B. and Ross-Davis, A. (2011), "The drop-off and pick-up method: an approach to reduce nonresponse bias in natural resource surveys", *Small-Scale Forestry*, Vol. 10 No. 3, pp. 305-318, doi: [10.1007/s11842-010-9150-y](https://doi.org/10.1007/s11842-010-9150-y).
- Aloyce, D., Monko, R.J. and Luvara, V.G. (2024), "Critical audit indicators for assessing construction projects performance (CPP) at pre-contract stage in Tanzania", *International Journal of Construction Management*, Vol. 24 No. 5, pp. 530-539, doi: [10.1080/15623599.2023.2179682](https://doi.org/10.1080/15623599.2023.2179682).
- Bhagat, G. and Jha, K.N. (2023), "Corruption risks in public construction", *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, Vol. 15 No. 2, p. 4522062, doi: [10.1061/JLADAH.LADR-936](https://doi.org/10.1061/JLADAH.LADR-936).
- Boateng, A., Ameyaw, C. and Mensah, S. (2022), "Assessment of systematic risk management practices on building construction projects in Ghana", *International Journal of Construction Management*, Vol. 22 No. 16, pp. 3128-3136, doi: [10.1080/15623599.2020.1842962](https://doi.org/10.1080/15623599.2020.1842962).
- Bolomope, M., Amidu, A.R., Ajayi, S. and Javed, A. (2022), "Decision-making framework for construction clients in selecting appropriate procurement route", *Buildings*, Vol. 12 No. 12, p. 2192, doi: [10.3390/buildings12122192](https://doi.org/10.3390/buildings12122192).
- Chamuwange, S.K. and Ning, Y. (2022), "Identifying the factors affecting the cost management of road construction projects in Tanzania", *Journal of Civil, Construction and Environmental Engineering*, Vol. 7 No. 3, pp. 35-39, doi: [10.11648/j.jccee.20220703.13](https://doi.org/10.11648/j.jccee.20220703.13).
- Changalima, I.A. and Mwangike, L.R. (2024), "The moderating role of staff competency on communication and the effectiveness of force account approach: an empirical study from tanzania", *Cogent Social Sciences*, Vol. 10 No. 1, p. 2363600, doi: [10.1080/23311886.2024.2363600](https://doi.org/10.1080/23311886.2024.2363600).
- Changalima, I.A., Ismail, I.J. and Mchopa, A.D. (2024), "Effects of supplier selection and supplier monitoring on public procurement efficiency in Tanzania: a cost-reduction perspective", *Vilakshan - XIMB Journal of Management*, Vol. 21 No. 1, pp. 55-65.
- Changalima, I.A., Mushi, G.O. and Mwaiseje, S.S. (2021), "Procurement planning as a strategic tool for public procurement effectiveness: experience from selected public procuring entities in Dodoma city, Tanzania", *Journal of Public Procurement*, Vol. 21 No. 1, pp. 37-52, doi: [10.1108/JOPP-05-2020-0047](https://doi.org/10.1108/JOPP-05-2020-0047).
- Changalima, I.A., Israel, B., Amani, D., Panga, F.P., Mwaiseje, S.S., Mchopa, A.D., Kazungu, I. and Ismail, I.J. (2023), "Do internet marketing capabilities interact with the effect of procedural capabilities for public procurement participation on SMEs' sales performance?", *Journal of Public Procurement*, Vol. 23 Nos 3/4, pp. 416-433, doi: [10.1108/JOPP-01-2023-0001](https://doi.org/10.1108/JOPP-01-2023-0001).
- Chintapalli, P. (2021), "Multi-sourcing under supply uncertainty and buyer's risk aversion", *EURO Journal on Computational Optimization*, Vol. 9, p. 100009, doi: [10.1016/j.ejco.2021.100009](https://doi.org/10.1016/j.ejco.2021.100009).
- Coase, R.H. (1937), "Some notes on monopoly price", *The Review of Economic Studies*, Vol. 5 No. 1, pp. 17-31.
- Darko, A., Chan, A.P., Yang, Y. and Tetteh, M.O. (2020), "Building information modeling (BIM)-based modular integrated construction risk management—critical survey and future needs", *Computers in Industry*, Vol. 123, p. 103327, doi: [10.1016/j.compind.2020.103327](https://doi.org/10.1016/j.compind.2020.103327).
- Demirkesen, S. and Ozorhon, B. (2017), "Impact of integration management on construction project management performance", *International Journal of Project Management*, Vol. 35 No. 8, pp. 1639-1654, doi: [10.1016/j.ijproman.2017.09.008](https://doi.org/10.1016/j.ijproman.2017.09.008).
- Dolnicar, S., Grün, B. and Leisch, F. (2016), "Increasing sample size compensates for data problems in segmentation studies", *Journal of Business Research*, Vol. 69 No. 2, pp. 992-999, doi: [10.1016/j.jbusres.2015.09.004](https://doi.org/10.1016/j.jbusres.2015.09.004).
- Ebekozien, A., Aigbavboa, C., Samsurijan, M.S., Amadi, G.C. and Duru, O.D.S. (2023), "Moderating effect of Nigerian government policy support on the relationship between project management framework and emerging construction contractors' sustainability", *International Journal of*

- Building Pathology and Adaptation*, Vol. 41 No. 6, pp. 269-289, doi: [10.1108/IJBPA-01-2023-0007](https://doi.org/10.1108/IJBPA-01-2023-0007).
- Eftekhari, S. and Zahra, P. (2022), "A model for internal audit functions in iran's public sector", *Police Organizational Development*, Vol. 19 No. 82, pp. 147-184.
- Engelbert, A., Kaltenborn, M. and Reil-Born, N.A. (2016), "Effective corruption control: Supplier remedies in public procurement in Kenya, Uganda and Tanzania-A comparative analysis of mechanisms and their implementation", *Published by Logos Verlag*, Berlin, p. 37.
- Faten Albroush, A.M., Doh, S.I., Abdul Rahman, A.R.B. and Albroush, J.F.A.A. (2020), "Factors effecting the cost management in construction projects", *International Journal of Civil Engineering and Technology*, Vol. 11 No. 1, pp. 105-111.
- Francis, M., Ramachandra, T. and Perera, S. (2022), "Disputes in construction projects: a perspective of project characteristics", *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, Vol. 14 No. 2, p. 4522007, doi: [10.1061/\(ASCE\)LA.1943-4170.0000535](https://doi.org/10.1061/(ASCE)LA.1943-4170.0000535).
- Frontoni, E., Marinelli, F., Rosetti, R. and Zingaretti, P. (2020), "Optimal stock control and procurement by reusing obsolescences in manufacturing", *Computers and Industrial Engineering*, Vol. 148, p. 106697, doi: [10.1016/j.cie.2020.106697](https://doi.org/10.1016/j.cie.2020.106697).
- Gadisa, B. and Zhou, H. (2020), "Exploring influential factors leading to the poor performance of public construction projects in Ethiopia using structural equation modelling", *Engineering, Construction and Architectural Management*, Vol. 28 No. 6, pp. 1683-1712, doi: [10.1108/ECAM-12-2019-0689](https://doi.org/10.1108/ECAM-12-2019-0689).
- Guenther, P., Guenther, M., Ringle, C.M., Zaefarian, G. and Cartwright, S. (2023), "Improving PLS-SEM use for business marketing research", *Industrial Marketing Management*, Vol. 111, pp. 127-142, doi: [10.1016/j.indmarman.2023.03.010](https://doi.org/10.1016/j.indmarman.2023.03.010).
- Gunduz, M. and Elsherbeny, H.A. (2020), "Construction contract administration performance assessment tool by using a fuzzy structural equation model", *Sustainability*, Vol. 12 No. 2, p. 523, doi: [10.3390/su12020523](https://doi.org/10.3390/su12020523).
- Haaskjold, H., Andersen, B., Lædre, O. and Aarseth, W. (2020) "Factors affecting transaction costs and collaboration in projects", *International Journal of Managing Projects in Business*, Vol. 13 No. 1, pp. 197-230, doi: [10.1108/IJMPB-09-2018-0197](https://doi.org/10.1108/IJMPB-09-2018-0197).
- Hair, J.F., Jr, Hult, G.T.M., Ringle, C.M., Sarstedt, M., Danks, N.P. and Ray, S. (2021), *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook*, Springer Nature, p. 197, doi: [10.1007/978-3-030-80519-7](https://doi.org/10.1007/978-3-030-80519-7).
- Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M. (2019), "When to use and how to report the results of PLS-SEM", *European Business Review*, Vol. 31 No. 1, pp. 2-24, doi: [10.1108/EBR-11-2018-0203](https://doi.org/10.1108/EBR-11-2018-0203).
- Hamed, R. (2023), "The role of internal control systems in ensuring financial performance sustainability", *Sustainability*, Vol. 15 No. 13, p. 10206, doi: [10.3390/su151310206](https://doi.org/10.3390/su151310206).
- Hoque, M.I. and Hasan, M. (2022), "Factors affecting the construction quality in Bangladesh", *International Journal of Building Pathology and Adaptation*, (Ahead-of-Print), doi: [10.1108/IJBPA-03-2022-0037](https://doi.org/10.1108/IJBPA-03-2022-0037).
- Ingle, P.V., Mahesh, G. and Md, D. (2021), "Identifying the performance areas affecting the project performance for Indian construction projects", *Journal of Engineering, Design and Technology*, Vol. 19 No. 1, pp. 1-20, doi: [10.1108/JEDT-01-2020-0027](https://doi.org/10.1108/JEDT-01-2020-0027).
- Iyer, K.C., Kumar, R. and Singh, S.P. (2020), "Understanding the role of contractor capability in risk management: a comparative case study of two similar projects", *Construction Management and Economics*, Vol. 38 No. 3, pp. 223-238, doi: [10.1080/01446193.2019.1590614](https://doi.org/10.1080/01446193.2019.1590614).
- Kabara, A.S., Abdullah, D.F., Khatib, S.F., Bazhair, A.H. and Al Amosh, H. (2023), "Moderating role of governance regulatory compliance on board diversity and voluntary disclosure of non-financial firms in a developing country", *Sustainability*, Vol. 15 No. 5, p. 4527, doi: [10.3390/su15054527](https://doi.org/10.3390/su15054527).

SAMAMJ

- Kavishe, N. (2018), "Risks associated with public-private partnership (PPP) housing projects delivery in Tanzania", *International Journal of Construction Engineering and Management*, Vol. 7 No. 2, pp. 81-87.
- Kazungu, I. and Kubenea, H. (2023), "Customer satisfaction as a mediator of service facility and word of mouth in higher learning institutions", *Journal of Applied Research in Higher Education*, Vol. 15 No. 5, pp. 1649-1663, doi: [10.1108/JARHE-04-2022-0128](https://doi.org/10.1108/JARHE-04-2022-0128).
- Khalef, R., El-Adaway, I.H., Assaad, R. and Kieta, N. (2021), "Contract risk management: a comparative study of risk allocation in exculpatory clauses and their legal treatment", *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, Vol. 13 No. 1, pp. 1-19, doi: [10.1061/\(ASCE\)LA.1943-4170.0000430](https://doi.org/10.1061/(ASCE)LA.1943-4170.0000430).
- Khan, S.N., Ali, E.I.E., Anjum, K. and Noman, M. (2019), "Enterprise risk management and firm performance in Pakistan: interaction effect of intellectual capita", *International Journal of Multidisciplinary and Current Research*, Vol. 7, pp. 19-24.
- Kikwasi, G.J. and Sospeter, N.G. (2022), "Challenges facing supply chain management on time delivery of construction projects in Tanzania", *Construction in 5D: Deconstruction, Digitalization, Disruption, Disaster, Development: Proceedings of the 15th Built Environment Conference* Springer International Publishing Cham, pp. 257-267, doi: [10.1007/978-3-030-97748-1_21](https://doi.org/10.1007/978-3-030-97748-1_21)
- Kimario, H.F. (2021), "The impact of communication in buyer-supplier integration on the procurement performance of large manufacturing enterprises in Tanzania".
- Kissi, E., Agyekum, K., Baiden, B.K., Tannor, R.A., Asamoah, G.E. and Andam, E.T. (2019), "Impact of project monitoring and evaluation practices on construction project success criteria in Ghana", *Built Environment Project and Asset Management*, Vol. 9 No. 3, pp. 364-382, doi: [10.1108/BEPAM-11-2018-0135](https://doi.org/10.1108/BEPAM-11-2018-0135).
- Kock, N. (2015), "Common method bias in PLS-SEM: a full collinearity assessment approach", *International Journal of e-Collaboration*, Vol. 11 No. 4, pp. 1-10, doi: [10.4018/ijec.2015100101](https://doi.org/10.4018/ijec.2015100101).
- Koutoupis, A.G. and Malisiovas, T. (2023), "The effects of the internal control system on the risk, profitability, and compliance of the US banking sector: a quantitative approach", *International Journal of Finance and Economics*, Vol. 28 No. 2, pp. 1638-1652, doi: [10.1002/ijfe.2498](https://doi.org/10.1002/ijfe.2498).
- Mahamid, I. (2016), "Factors contributing to poor performance in construction projects: studies of Saudi Arabia", *Australian Journal of Multi-Disciplinary Engineering*, Vol. 12 No. 1, pp. 27-38, doi: [10.1080/14488388.2016.1243034](https://doi.org/10.1080/14488388.2016.1243034).
- Maqsoom, A., Choudhry, R.M., Umer, M. and Mehmood, T. (2021), "Influencing factors indicating time delay in construction projects: Impact of firm size and experience", *International Journal of Construction Management*, Vol. 21 No. 12, pp. 1251-1262, doi: [10.1080/15623599.2019.1613206](https://doi.org/10.1080/15623599.2019.1613206).
- Matto, M.C., Ame, A.M. and Nsimbila, P.M. (2021), "Influence of contract management on value for money procurement in Tanzania", *International Journal of Procurement Management*, Vol. 14 No. 6, pp. 724-741, doi: [10.1504/IJPM.2021.117889](https://doi.org/10.1504/IJPM.2021.117889).
- Mchopa, A. (2015), "Integrating contract management practices into the achievement of value for money in Tanzania public procurement: evidence from selected procuring entities in moshi municipality", *Journal of Public Procurement*, Vol. 15 No. 2, pp. 129-149, doi: [10.1108/JOPP-15-02-2015-B001](https://doi.org/10.1108/JOPP-15-02-2015-B001).
- Mellado, F., Lou, E.C. and Becerra, C.L.C. (2020), "Synthesising performance in the construction industry: an analysis of performance indicators to promote project improvement", *Engineering, Construction and Architectural Management*, Vol. 27 No. 2, pp. 579-608, doi: [10.1108/ECAM-01-2022-0066](https://doi.org/10.1108/ECAM-01-2022-0066).
- Mikapagaro, N.A., Tesha, D., Maro, G.C. and Edson, B.K. (2018), "The implementation of risk management strategies in joint venture building projects in Dar-Es-Salaam, Tanzania", *International Journal of Engineering Trends and Technology*, Vol. 66 No. 3, pp. 133-153, doi: [10.14445/22315381/ijett-v66p223](https://doi.org/10.14445/22315381/ijett-v66p223).

- Mrope, N.P., Namusonge, G.S. and Iravo, M.A. (2017), "Does compliance with rules ensure better performance? An assessment of the effect of compliance with procurement legal and regulatory framework on performance of public procurement in Tanzania", *European Journal of Logistics, Purchasing and Supply Chain Management*, Vol. 5 No. 1, pp. 40-50.
- Msawil, M., Greenwood, D. and Kassem, M. (2022), "A systematic evaluation of blockchain-enabled contract administration in construction projects", *Automation in Construction*, Vol. 143, p. 104553, doi: [10.1016/j.autcon.2022.104553](https://doi.org/10.1016/j.autcon.2022.104553).
- Muhwezi, M., Mutebi, H., Mayanja, S.S., Tukamuhabwa, B., Namagembe, S. and Kalema, R. (2023), "Information integration, procurement internal controls, material and purchasing procedure standardization and procurement performance in humanitarian organizations", *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 13 No. 4, pp. 410-432, doi: [10.1108/JHLSCM-11-2021-0115](https://doi.org/10.1108/JHLSCM-11-2021-0115).
- Mwaiseje, S.S., Mchopa, A.D. and Panga, F.P. (2024), "Supply risk management and timely completion of force account construction projects among local government authorities in Dodoma, Tanzania", *International Journal of Building Pathology and Adaptation*, doi: [10.1108/IJBPA-12-2023-0192](https://doi.org/10.1108/IJBPA-12-2023-0192).
- Mwelu, N., Davis, P.R., Ke, Y., Watundu, S. and Jefferies, M. (2021), "Success factors for implementing Uganda's public road construction projects", *International Journal of Construction Management*, Vol. 21 No. 6, pp. 598-614, doi: [10.1080/15623599.2019.1573481](https://doi.org/10.1080/15623599.2019.1573481).
- Myeza, L., Nkhi, N. and Maroun, W. (2021), "Risk management factors contributing to transgressions in the procurement practices in South African SOEs", *Journal of Accounting in Emerging Economies*, Vol. 11 No. 5, pp. 735-751, doi: [10.1108/JAEE-03-2021-0073](https://doi.org/10.1108/JAEE-03-2021-0073).
- Namukasa, J. (2017), "Records management and procurement performance: a case of NAADS program in the Central region of Uganda", *Records Management Journal*, Vol. 27 No. 3, pp. 256-274.
- NAOT (2021), *The Annual General Report of the Controller and Auditor General on Audit of the Local Government Authorities for the Financial Year 2020/2021*, NAOT DODOMA.
- Ndumia, S.N. (2015), "Influence of regulatory framework on performance of building construction projects in Nairobi county, Kenya", Doctoral dissertation, University of Nairobi.
- Noor, S., Tajik, O. and Golzar, J. (2022), "Simple random sampling", *International Journal of Education and Language Studies*, Vol. 1 No. 2, pp. 78-82, doi: [10.22034/ijels.2022.162982](https://doi.org/10.22034/ijels.2022.162982).
- Podsakoff, P.M., Mac Kenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.
- PPRA (2021), *Annual Performance Evaluation Report for Fiscal Year 2020/2021*, Tanzania's Public Procurement Regulatory Authority.
- PPRA (2022), *Annual Performance Evaluation Report for Fiscal Year 2021/2022*, Public Procurement Regulatory Authority of Tanzania.
- Rasheli, G.A. (2016), "Procurement contract management in the local government authorities (LGAs) in Tanzania: a transaction cost approach", *International Journal of Public Sector Management*, Vol. 29 No. 6, pp. 545-564, doi: [10.1108/IJPSM-10-2015-0173](https://doi.org/10.1108/IJPSM-10-2015-0173).
- Rehman, M. and Ishak, M. (2023), "Moderation role of government acts, laws and policies between economic factors and risk management: a case study of Saudi Arabia contractors", *Journal of Project Management*, Vol. 8 No. 4, pp. 213-226.
- Rendon, R.G. and Rendon, J.M. (2015), "Auditability in public procurement: an analysis of internal controls and fraud vulnerability", *International Journal of Procurement Management*, Vol. 8 No. 6, pp. 710, doi: [10.1504/IJPM.2015.072388.730](https://doi.org/10.1504/IJPM.2015.072388.730).
- Ringle, C.M., Sarstedt, M., Sinkovics, N. and Sinkovics, R.R. (2023), "A perspective on using partial least squares structural equation modelling in data articles", *Data in Brief*, Vol. 48, p. 109074, doi: [10.1016/j.dib.2023.109074](https://doi.org/10.1016/j.dib.2023.109074).

Matto, M.C. (2021), "Identifying the latent shortcomings of force account projects in Tanzania: the case of construction projects in the education sector", *Engineering, Construction and Architectural Management*, doi: [10.1108/ECAM-06-2021-0525](https://doi.org/10.1108/ECAM-06-2021-0525).

PRRA (2021), *Annual Performance Evaluation Report for the Financial Year 2020/21*, Public Procurement Regulatory Authority, Tanzania.

Qureshi, M.A., Sohu, S. and Keerio, M.A. (2020), "The impacts of operational risks in the supply chain of construction projects in Malaysia", *Tehnički Vjesnik*, Vol. 27 No. 6, pp. 1887-1893, doi: [10.17559/TV-20190727192125](https://doi.org/10.17559/TV-20190727192125).

URT (2021), *Ripoti Makadirio ya Mapato na Matumizi Kwa Mwaka Fedha 2022/2023. Ofisi ya Rais – Tawala za Mikoa na Serikali za Mitaa*, Government Printers.

Corresponding author

Shadrack Samwel Mwaiseje can be contacted at: mwaiseje@gmail.com

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgroupublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com

CHAPTER SIX

SUMMARY, CONCLUSIONS, RECOMMENDATIONS, IMPLICATIONS, AND AREAS FOR FURTHER RESEARCH

6.1 Introduction

The study was conducted in LGAs in the Dodoma region, specifically in primary schools. The main objective of this study was to determine the influence of procurement contract risk management on the performance of FA construction projects. The study had four specific objectives: determine the influence of supply risk management on the timely completion of FA construction projects; analyse the effects of the procurement internal control system on the cost-effectiveness of FA construction projects; examine the influence of procurement contract administration and quality achievement of FA construction projects; and determine the moderating role of regulatory framework in relationship between contract risk management and the performance of FA construction projects. These specific objectives provided a basis for developing the four manuscripts for the chapters presented in this study. The chapters then draw the conclusions based on the major findings and interpretations. Finally, the chapter offers recommendations, outlines implications, and provides directions for future studies.

6.2 Summary of the findings

6.2.1 Supply Risk Management and Timely Completion of FA Construction Projects

Chapter one of this study addressed the first specific objective by assessing the role of supply risk management in ensuring the timely completion of FA construction projects in LGAs in Tanzania, particularly in the Dodoma region. Grounded in Transaction Cost Theory, the research examines key factors, including multi-sourcing, effective supplier selection, post-qualification, and effective communication with suppliers. The data were analysed using Covariance-Based Structural Equation Modeling (CB-SEM) to test relationships between variables. The results confirmed that all four risk management strategies positively influence timely project completion, with effective supplier selection being the most significant contributor. The study highlights the importance of managing supplier-related risks to reduce delays and improve efficiency. It offers practical guidance to procurement officials and FA committee members on applying proactive supply risk management strategies to enhance public project outcomes.

6.2.2 Procurement Internal Control Systems and Cost-effectiveness in FA Construction Projects

This research investigates how procurement internal control systems contribute to cost-effectiveness in FA construction projects in LGAs' FA construction projects in Tanzania. The study focuses on four key controls: segregation of duties, authorisation process, stock control, and record keeping. Drawing on Institutional Theory, the study emphasises how compliance with institutional norms and practices enhances procurement performance and reduces unnecessary costs. The findings revealed that stock control, record keeping, and the authorisation process had a statistically significant, positive effect on cost-effectiveness, whereas segregation of duties did not. These insights suggest that organisations should prioritise inventory management, accurate record-keeping, and effective approval processes to ensure efficient use of resources. The study provides practical recommendations to enhance procurement systems in public-sector construction and calls for greater adherence to internal control frameworks.

6.2.3 Procurement Contract Administration and Quality Attainment of FA Construction Projects

This chapter examines how procurement contract administration influences the quality attainment of FA construction projects in LGAs in Tanzania. The study focused on key components, including risk management, relationship management, dispute management, and monitoring and control. Using Transaction Cost Theory as its underpinning, the study employed a cross-sectional research design. A structured questionnaire was used, and data were analysed using PLS-SEM. The findings reveal that all four variables significantly and positively affect quality attainment, with risk management emerging as the most influential factor. These insights confirm that proper procurement contract administration plays a central role in improving construction project quality. The study recommends that procurement practitioners and FA committees strengthen these administrative functions through training and improved monitoring mechanisms. This contributes new knowledge to procurement management and underlines the importance of governance in quality-focused project execution.

6.2.4 Procurement Contract Risk Management and the Performance of the Force Account Construction Project in Tanzania, as moderated by Regulatory Framework

This study investigates the effect of procurement contract risk management on the performance of FA construction projects in Tanzania and evaluates how the regulatory framework moderates this relationship. The study focuses on three key contract risk management factors: supply risk management, procurement internal control systems, and procurement contract administration. It adopted a cross-sectional research design, and data were collected from 318 respondents in the Dodoma region using a structured questionnaire. Data analysis was conducted through PLS-SEM. The results indicate that all three procurement contract risk management variables significantly influence performance in FA construction projects, in terms of quality attainment, timely completion, and cost-effectiveness. Additionally, the regulatory framework strengthens the relationship between procurement practices and project outcomes. These findings underscore the need for a solid legal and regulatory base to support procurement risk management practices. The study recommends reinforcing compliance with procurement laws and developing institutional capacities to manage risks effectively. It contributes to public sector procurement literature, especially in developing country contexts like Tanzania

6.3 Conclusion

This study has comprehensively assessed the influence of procurement contract risk management on the performance of FA construction projects in Tanzania. The findings into supply risk management revealed that multi-sourcing, effective supplier selection, post-qualification, and communication with suppliers are critical drivers of the timely completion of FA construction projects. Among these, effective supplier selection was identified as the most significant contributor. These findings align with the principles of Transaction Cost Theory, illustrating that minimising uncertainty and enhancing supplier reliability are essential for reducing delays in public construction projects.

Further, the assessment of procurement internal control systems underscored their importance in achieving cost-effectiveness. Factors such as stock control, record keeping, and authorisation processes were shown to significantly influence the cost-effectiveness of FA projects significantly, ensuring that resources are used efficiently and financial losses are minimised. Interestingly, segregation of duties, though

theoretically important, did not show a strong statistical relationship. Furthermore, procurement contract administration practices added another layer of understanding by demonstrating how risk management, relationship management, dispute management, and monitoring and control all contribute to improved quality attainment of FA construction projects. These functions not only uphold accountability but also ensure that project execution meets expected standards. Risk management emerged as a particularly strong determinant, underscoring the importance of anticipating and controlling potential disruptions for project success.

Finally, the study on procurement contract risk management, in combination with the regulatory framework, highlighted the broader institutional context that shapes construction project performance. When procurement contract risk management practices are supported by robust legal and regulatory systems, public construction projects are more likely to achieve their objectives in terms of quality, timely completion, and cost-effectiveness. The regulatory framework was found to enhance the positive effects of procurement contract risks management practices, suggesting that compliance and oversight mechanisms play a decisive moderating role.

6.4 Recommendations

Based on the comprehensive findings of this study, several recommendations are offered to enhance the performance of FA construction projects in LGAs in Tanzania. These recommendations are intended for policymakers, procurement practitioners, FA committee members, and other stakeholders involved in public sector construction and procurement oversight.

Policymakers should integrate principles of supply risk management, procurement internal control systems, and procurement contract administration tailored to the FA approach. These policies should emphasise preventive strategies, such as multi-sourcing and effective supplier selection, to enhance project efficiency. Also, the study recommends developing a national policy that mandates regular training and certification for members involved in FA projects, particularly in rural and semi-urban areas where technical skills are often lacking. This will professionalise FA implementation and improve procurement outcomes.

PPRA should strengthen its inspection and audit systems to more closely monitor FA construction projects, ensuring compliance with procurement laws, quality standards,

and contract terms. Also, PPRA recommended the development and Dissemination of Practical Guidelines: simplified, updated, and user-friendly guidelines on procurement contract risk management should be developed and made available to LGAs.

LGAs should institutionalise effective internal procurement control mechanisms, such as a clear approval process, real-time stock management, and effective record-keeping, to enhance cost control and transparency in FA projects. Also, LGAs are recommended to ensure that project planning includes risk identification and mitigation strategies. Clear lines of communication should be maintained between procurement officers, engineers, the FA committee, suppliers, and community stakeholders to avoid misunderstandings and delays. Regular capacity-building programs for the appointed members of FA committees should be organised to enhance their understanding of procurement laws, ethical practices, quality standards, and risk control procedures. Certification-based training could be introduced to professionalise committee members' roles and improve accountability in project delivery.

6.5 Contribution of the study

6.5.1 Empirical contribution

This study offers a comprehensive review of FA construction projects in Tanzania, addressing significant research gaps in the existing literature. It delves into the performance of these projects specifically within LGAs, providing fresh empirical insights into how various dimensions of procurement contract risk management influence project performance. Key factors such as supply risk management, internal control systems for procurement, contract administration, and regulatory frameworks are assessed for their effects on performance indicators, namely, timely completion, cost-effectiveness, and quality attainment. Notably, the research highlights specific aspects of supply risk management, including effective supplier selection, which emerged as the most impactful factor, underscoring the need for targeted interventions to enhance project performance.

The study further enriches the discourse on cost management by investigating the role of internal procurement controls, such as record keeping, authorisation processes, and stock control in achieving cost-effectiveness in FA construction. The finding that segregation of duties was statistically insignificant challenges conventional assumptions about internal controls. Additionally, the research links procurement contract

administration to quality attainment, showing that effective risk management, dispute management, relationship management, and monitoring significantly influence quality attainment of FA construction projects. By introducing regulatory frameworks as a moderating variable, the study reveals their nuanced effect on project performance, particularly their significant moderation of procurement internal controls and procurement contract administration. In this regard, the current study goes beyond the available literature, which focuses on other procurement practices and single-dimensional performance indicators. It brings a holistic, multi-variable, theory-driven empirical investigation grounded in the Tanzanian context. It offers an effective dataset and statistical analysis model that future studies in similar settings can replicate or adapt to verify and expand upon these findings. Thus, the study provides strong empirical evidence that enriches the discourse on public procurement efficiency and project delivery within developing countries.

6.5.2 Theoretical contribution

This study contributes significantly to the development and practical application of Transaction Cost Theory (TCT), Institutional Theory, and Agency Theory in the context of public procurement and construction project performance, particularly under the FA approach in Tanzanian LGAs.

The study expands the application of TCT by demonstrating how procurement practices such as multi-sourcing, supplier selection, post-qualification, and effective communication help to manage uncertainties and reduce risks that typically lead to project delays and cost overruns. Also in this study, transaction costs are specifically defined to include costs associated with risk management, relationship management, dispute resolution, and contract monitoring and control. By identifying and managing these cost drivers, public organisations can improve efficiency and achieve better project outcomes. Thus, the study supports and extends TCT by showing how strategic procurement risk management can minimise transaction costs and improve performance in the delivery of construction projects.

The study contributes to Institutional Theory by illustrating how internal control practices such as record-keeping, stock control, authorisation procedures, and segregation of duties are influenced by and reflect broader institutional norms and regulations. These practices demonstrate how expectations of transparency,

accountability, and compliance with formal procedures shape public procurement behaviour. The study also highlights challenges such as weak enforcement and inconsistent implementation of controls, reflecting gaps in the institutional environment. These findings align with the theory's concept of 'facilitating conditions', showing that for institutions to be effective, supportive structures and consistent enforcement must be in place.

The study advances Agency Theory by examining the relationship between procuring entities (principals) and FA committees (agents). It shows how internal control systems serve as mechanisms for aligning agents' goals with principals' goals. Controls such as segregation of duties, record-keeping, and authorisation help reduce information asymmetry, prevent opportunistic behaviour, and ensure that agents act in the principal's best interest. The findings confirm that when internal controls are effectively implemented, agents are more likely to make cost-effective, transparent, and accountable decisions, which contributes to improved project performance.

6.5.3 Practical contribution

The study offers several practical contributions for policymakers, procurement practitioners, FA committees, and LGAs in Tanzania. For policymakers, the findings provide evidence-based recommendations for strengthening procurement policies and guidelines, particularly by institutionalising procurement contract risk management strategies, such as supply risk management, procurement internal control systems, and procurement contract administration. These strategies are shown to influence the performance of FA construction projects significantly and should be integrated into national procurement frameworks. For procurement practitioners and FA committees, the study offers a practical framework for identifying and managing procurement contract risks that commonly lead to project delays, cost overruns and quality problems. By applying these strategies, practitioners can ensure a more consistent and reliable flow of construction materials, ultimately improving project performance. Furthermore, the study highlights the importance of effective internal procurement control systems, including stock control, authorisation processes, and record-keeping, for achieving cost-effectiveness. LGAs can use these insights to enhance their oversight mechanisms, improve compliance, and optimise the use of limited financial resources. Generally, this study serves as a practical guide for improving procurement governance, ensuring value for money, and enhancing service delivery in public construction projects.

6.5.4 Study Limitations and Direction for Future Studies

The study focuses on FA construction projects within LGAs in the Dodoma Region of Tanzania, limiting the generalisability of the findings to other types of construction projects or to geographical settings where different laws, administrative procedures, and regulatory frameworks govern FA implementation. Future studies should therefore consider examining a broader range of construction project types to assess the influence of procurement contract risk management on performance across different contexts.

In addition, the study relied on cross-sectional data, which restricts the ability to infer long-term causal effects. Future research should expand the scope to include additional regions and incorporate longitudinal data to provide deeper insights into the long-term impacts of procurement contract risk management on project performance. Using longitudinal data would also facilitate a better understanding of long-term trends, behavioural changes, and policy effectiveness. The study's focus on timely completion, cost-effectiveness, and quality attainment provides important insights; however, future research should explore additional performance dimensions such as sustainability, environmental impact, social inclusion, and long-term maintenance of FA-implemented projects.

Although measures such as anonymity assurance and careful questionnaire design were applied to reduce common method variance (CMV), reliance on self-reported data remains a potential source of CMV. Similarly, the cross-sectional nature of the data may introduce endogeneity risks, such as omitted-variable bias or reverse causality, thereby affecting the precision of causal inferences. To mitigate these limitations, future research should adopt two-wave data collection, where predictor and outcome variables are collected at different time points, or employ multi-source data, combining responses from different stakeholders involved in FA projects. Such designs would strengthen causal interpretation, reduce CMV, and provide a more robust examination of procurement contract risk management practices.

APPENDICES

Appendix 1: Questionnaire Survey

Dear respondent,

My name is Shadrack Samwel Mwaiseje, a Doctor of Philosophy (PhD) candidate at the Moshi Cooperative University, Department of Procurement and Supply Chain Management. Currently, I am conducting a study that intends to investigate *"Procurement contract risks management and performance of force account construction projects in Tanzania."* This research aims to fulfil the requirements for a PhD in Procurement. You have been chosen to participate in this study as a respondent, and your cooperation and willingness are greatly appreciated. The information you provide in this questionnaire will be kept confidential and used only for academic purposes. Thank you in advance for your consideration.

In case of anything, please contact:

Shadrack Samwel Mwaiseje

mwaiseje@gmail.com

+255 714566347

Ph.D. Candidate

Part A: Preliminary information

S/No.	Item	Details / Responses
1	Questionnaire Number	
2	Date of Interview	
3	Name of Interviewer	
4	Distict/Municipal/City Council Name	
5	Primary school name	
6	Respondent's Contact (optional)	
7	Experience in force account construction project (in years)	
8	Type of force account committee	

Type of force account committee (Receiving and inspection committee, construction committee, and procurement committee)

Demographic profile

1. Your sex

a) Female

b) Male

2. Your age (in years)

3. Your highest level of education

a) Certificate

b) Diploma

c) Advanced
Diploma/Bachelor degree

d) Master degree

e) Ph.D. degree

f) Others

4. Your current position.....

Part B: Procurement Contract risks management

Please indicate your level of agreement or disagreement with the following statements by ticking the correct answer to each statement as it applies to your projects.

Part B1: Supply risks management (SRM)						
Multi-sourcing (MSO)						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
MSO1	A large number of suppliers to deal with can reduce the risk of supply tremors.					
MSO2	A larger supplier base reduces the risk of dependence on suppliers and enables getting a reasonable price.					
MSO3	We rely on many suppliers to make it easier to get the best.					
MSO4	The risk of material delays can be reduced if we deal with many suppliers.					
MSO5	Quality of materials can be achieved through dealing with many suppliers who are competing with each other.					
Effective supplier selection (ESS)						
CODE	Statements	Strongly disagree	Di sagree	Neutral	Agree	Strongly agree
ESS1	A formal supplier selection process is performed.					
ESS2	Our supplier selection criteria ensure only suppliers meeting our standards are selected.					
ESS3	The selection process has often identified suppliers with a history of high performance.					
ESS4	The least-cost consideration has always guided the determination of the supplier.					
ESS5	The criteria for selection ensure that only suppliers with high-performance indicators are contracted.					

Post-qualification						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
PSQ1	We conduct post-qualification to be sure of supplier performance.					
PSQ2	We conduct post-qualification for the sake of determining the financial capability of the supplier.					
PSQ3	We conduct post-qualification to be sure of the current commitment of the supplier.					
PSQ4	Post-qualification enables the procuring entity to get a reliable supplier.					
PSQ5	Post-qualification helps to know the litigation record of the supplier.					
Effective communication with the supplier (EFC)						
EFC1	Our organisation shares relevant procurement information with suppliers in a timely manner.					
EFC2	Communication between our organisation and suppliers is clear and easy to understand.					
EFC3	Suppliers promptly provide feedback or responses to our communication requests.					
EFC4	There is an open and transparent communication channel between our organisation and suppliers.					

Part B3: Procurement Internal control system (PIC)						
Segregation of duties (SGA)						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
SGA1	No interference with responsibilities in the project.					
SGA2	Every team member of the project works independently.					
SGA3	The team's responsibilities differ from those of other team members in the project.					
SGA4	Members of one team can perform the responsibilities of other teams.					
SGA5	The project supervisor identifies the roles of each team in the project.					

Authorisation Process (AUT)						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
AUT1	Authorisation of material performed by a responsible person.					
AUT2	Authorisation procedures are conducted in an efficient manner.					
AUT3	A different person does the initiation and approval of materials.					
AUT4	Approving procedures are done without influencing each other.					
Stock control (STC)						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
STC1	We conduct a regular and accurate stock checks.					
STC2	Materials are kept in a safe custody room.					
STC3	Materials are issued based on the requirements of the site.					
STC4	Inspection records for received materials are thorough and accurate.					
STC5	Materials are counted after discrepancies occur.					
STC6	The storekeeper is responsible for keeping stocks.					
Record keeping (REK)						
REK1	We usually record each transaction in the project.					
REK2	All contracts/agreements with stakeholders are properly documented and stored.					
REK3	All receiving and issuing of materials are recorded properly.					
REK4	All invoices and receipts are systematically recorded and stored.					
REK5	The project team maintains timely and accurate records throughout the construction process.					

Part B4: Procurement Contract Administration (PCA)						
Monitoring and Control (MOC)						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
MOC1	Our committee regularly monitors the progress of the construction project to ensure it stays on schedule.					
MOC2	Any deviations from the project plan are promptly addressed through corrective actions.					
MOC3	Regular inspections are conducted to ensure that the construction work adheres to the required specifications and standards.					
MOC4	Our committee reviews project milestones at each stage to ensure that we are on track to achieve our goals.					

Risk Management						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
RIM1	Our committee identifies potential risks at the beginning of the construction project.					
RIM2	We have clear strategies in place to manage and mitigate risks in construction projects.					
RIM3	Risk assessment is regularly conducted throughout the project lifecycle to ensure issues are addressed promptly.					
RIM4	We actively monitor the construction project to identify emerging risks and take corrective action when necessary.					
RIM5	We have a contractual plan for supervising the contract.					

Relationship Management (RTM)						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
RTM1	The communication between our committee and key stakeholders is effective at all times (RTM 1).					
RTM2	There is Collaboration and trust among team members of the project (RTM2).					
RTM3	When problems occur in projects, we manage them collaboratively (RTM3).					
RTM4	All feedback is provided to all team members of the project.					
Dispute Management (RTM)						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
DSL1	We have a dispute resolution mechanism plan for the project.					
DSL2	When a dispute occurs, it is solved immediately to avoid the risks.					
DSL3	All committees are responsible for managing disputes in the projects.					
DSL4	All members of the project understand the dispute resolution mechanism.					
Part C: Regulatory framework (RFR)						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
RFR1	We adhere to the laws and regulations provided by regulatory organs.					
RFR2	Execution of the project is carried out in accordance with the terms and conditions stipulated in the PPA and its regulations.					
RFR3	We are adhering to the guidelines issued by regulatory authorities in executing the project.					
RFR4	The guidelines provided by the authorities are friendly.					

Part D: Performance (PFA)						
Cost-effectiveness (COE)						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
COE1	We consistently track project expenses against the budget.					
COE2	We managed to reduce procurement costs in the projects.					
COE3	There is better measurement tracking and reporting of incurred costs and realised benefits in the project.					
COE4	We save a lot due to the reduction in the prices of materials.					
COE5	The purchasing team purchases from approved suppliers to avoid substandard purchases and reduce the cost of impulse buying.					
COE6	The team reduces procurement administrative costs through better supply risk management.					

Timely completion (TCO)						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
TCO1	Our suppliers always meet the set date of deliveries.					
TCO2	The project team ensured that all activities in the project were conducted as planned.					
TCO3	All team members speak on time management in the project.					
TCO4	The purchasing team ensures the availability of the required materials at the right time.					
TCO5	The time used in various activities and processes within the project has been reduced.					

Quality Attainment (QAL)						
Code	Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
QAL1	We are delighted with most of the materials supplied.					
QAL2	We are satisfied with the quality of the work.					
QAL3	We are delighted with what the contractor does for us.					
QAL4	We have a quality plan in place when managing a project.					
QAL5	All project teams are satisfied with the quality of work.					

Appendix 2: Introduction Letter for Data Collection from Moshi Cooperative



UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

MOSHI CO-OPERATIVE UNIVERSITY (MoCU)
CHUO KIKUU CHA USHIRIKA MOSHI



OFFICE OF THE VICE CHANCELLOR

06 Sokoine Road, 25121 Mfumuni,
P. O. Box 474, Moshi, Tanzania, Tel: +255 272751833,
Email: vc@mocu.ac.tz, Website: www.mocu.ac.tz

Unapojibu tafadhali taja:

Kumb. Na. MoCU/UGS/3/41

Tarehe: 24 Februari, 2023

Katibu Tawala,
Ofisi ya Mkuu wa Mkoa,
S. L. P. 914,
DODOMA – TANZANIA.

**YAH: KIBALI CHA KUFANYA UTAFITI KWA WANAFUNZI WA CHUO
KIKUU CHA USHIRIKA MOSHI (MoCU)**

Tafadhali husika na kichwa cha habari hapo juu.

Madhumuni ya barua hii ni kumtambulisha kwako **Ndugu Shadrack Samwel Mwaiseje** mwanafunzi wa Chuo Kikuu cha Ushirika Moshi ambaye kwa sasa anatarajia kufanya utafiti katika eneo lako.

Maombi haya yamezingatia Waraka wa Serikali wenye Kumb. Na. MPEC/R/10/1 wa tarehe 7 Julai, 1980 pamoja na Hati Idhini ya Chuo Kikuu Cha Ushirika Moshi (MoCU). Moja ya majukumu ya Chuo ni kufanya tafiti na kutumia matokeo ya tafiti hizo katika kufundishia. Aidha, wanafunzi hufanya tafiti kama sehemu ya masomo yao wakiwa Chuoni.

Ili kufanikisha utekelezaji wa tafiti hizo, Makamu Mkuu wa Chuo hutoa vibali vya kufanya tafiti nchini kwa wanataaluma na wanafunzi kwa niaba ya Serikali na Tume ya Sayansi na Teknolojia.

Hivyo basi, tunakuomba umpatie mwanafunzi aliyetajwa hapo juu msaada atakaouhitaji ili kufanikisha utafiti wake. Gharama za utafiti atalipia mwenyewe. Msaada anaouhitaji ni kuruhusiwa kuonana na viongozi na wananchi ili aweze kuzungumza nao kuhusiana na utafiti wake. Aidha, endapo kuna maeneo yanayozuiliwa kufanyika kwa shughuli hii, tafadhali mjulishe hivyo.

Mada ya utafiti wa mwanafunzi aliyetajwa hapo juu ni: **"Procurement Contract Risks Management and Performance of Force Account Construction Projects in Local Government Authorities in Dodoma Region, Tanzania"**

Maombi haya ni kwa ajili ya utafiti utakaofanyika **Mkoa wa Dodoma** kuanzia tarehe 24 Februari, 2023 hadi 23 Februari, 2024.

Wako katika ujenzi wa Taifa,



Prof. Alfred S. Sife
Makamu Mkuu wa Chuo

Nakala kwa: Shadrack Samwel Mwaiseje (Mtafiti)

Appendix 3: Data collection permit from the Regional Administrative

**JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA**

Mkoa wa Dodoma
Anwani ya Simu REGCOM
Simu Nambari: 026 2324343/2324384
E-Mail No. ras@dodoma.go.tz
Fax No. 026 2320046/2320121
Unapojibu tafadhali taja:



Ofisi ya Mkuu wa Mkoa,
Jengo la mkapa,
2 Barabara ya Hospitali
S.L.P. 914,
41103 DODOMA.

Kumb.Na.BA.84/467/01/62

20/3/2023

Mkurugenzi wa Jiji,
Halmashauri ya Jiji la Dodoma

Mkurugenzi wa Mji
Halmashauri ya Mji wa Kondoa

Wakurugenzi Watendaji (W)
Halmashauri za Wilaya za
**Bahi, Chamwino, Chemba, Kondoa,
Kongwa na Mpwapwa**

YAH: KIBALI CHA KUFANYA UTAFITI

Ofisi ya Mkuu wa Mkoa imepokea barua kutoka Chuo Kikuu cha Ushirika Moshi (MoCU) yenye Kumb.Na.MoCU/UGS/3/41 ya tarehe 24 Februari, 2023 kuhusu maombi ya kufanya utafiti.

2. Chuo Kikuu kimetoa kibali cha utafiti kwa ndugu Shadrack Samwel Mwaiseje mwanafunzi wa chuo hicho kufanya utafiti kuhusu **"Procurement Contract Risk Management And Performance Of Force Account Construction Projects In Local Government Authorities In Dodoma Region Tanzania"**. Muda wa kufanya utafiti huo ni kuanzia tarehe 24 Februari, 2023 hadi 23 Februari, 2024.

3. Kwa barua hii, namtambulisha kwako ndugu Shadrack Samwel Mwaiseje ili umpokee na kumpatia ushirikiano utakaohitajika ili kukamilisha utafiti wake.

Nashukuru kwa ushirikiano daima.

Prisca Luşoli

**Kny: KATIBU TAWALA MKOA
DODOMA**

Nakala: Ndugu Shadrack Samwel Mwaiseje (Mtafiti)
CHUO KIKUU CHA USHIRIKA MOSHI