ASSESSING INTERELATIONSHIPS AMONGST CRITICAL SUCCESS FACTORS FOR THE ADOPTION OF CIRCULAR PUBLIC PROCUREMENT

Cover page

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ZARIA

APRIL, 2025

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A THESIS SUBMITTED TO THE COLLEGE OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE (MSc.) IN PROCUREMENT MANAGEMENT

DEPARTMENT OF QUANTITY SURVEYING,
FACULTY OFENVIRONMENTAL DESIGN,
AHMADU BELLO UNIVERSITY,

ZARIA

APRIL, 2025

DECLARATION

I declare that the work in the dissertation entitled 'Assessing interrelationships amongst critical success factors for the adoption of circular public procurement' was carried out by me in the intheDepartmentofQuantity Surveying,AhmaduBelloUniversity,Zariaunderthe supervisionof **Dr. M. ABDULLAHI** and **Dr.H.A.AHMADU**. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this dissertation was previously presented for another Degree or Diploma at any University.

Taufiq MUSTAPHA	_____	_____
Name of student	**Signature**	**Date**

CERTIFICATION

This dissertation entitled **"Assessing Interrelationships amongst Critical Success Factors for the adoption of Circular Public Procurement"** by Taufiq MUSTAPHA, meets the regulations governing the award of the degree of Master of Science of Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

Dr. M. ABDULLAHI

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Chairman, Supervisory Committee Signature Date

Dr. H.A. AHMADU

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Member, Supervisory Committee Signature Date

PROF. P.G. CHINDO

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Head of Department Signature Date

PROF.M. N. SHU'AIBU

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Dean, College of Postgraduate Studies Signature Date

DEDICATION

This dissertation is dedicated to my lovely parents Alhaji Jimoh Femi Mustapha and Hajia Silifat Jokotade Mustapha.

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My sincere gratitude goes to the Almighty Allah for given me the opportunity to go through this study. I also express my sincere appreciation to my supervisors, Dr. Abdullahi Muhammed and Dr. Hassan A. Ahmadu for their guidance and immense contribution to this study. I appreciate their effort for constantly encouraging me to finish up the program. My sincere gratitude also goes to Dr. Abdurrahman Otori who guided me through my analysis using PLS-SEM. I am indeed very grateful.

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ABSTRACT

Circular procurement occurs when the buyer purchases products or services that follow the principles of the circular economy, supporting the assessment of designing, making, selling, reusing and recycling products to determine how to get the maximum value from them, both in use and at the end of their life". The need to reduce waste and resource inefficiency in public procurement and the need for a transition to a Circular Economy (CE) led to the development of circular public procurement (CPP). Despite the benefits of CPP, the adoption remains very low. The aim of this study is to assess the interrelationships amongst CSFs for the successful adoption of CPP. The study adopted a quantitative research approach using a questionnaire survey. The population of the study was made up of 943 Ministries, Departments and Agencies (MDAs) while the sample size was 281 MDAs. Descriptive statistics was carried out (mean, standard deviation and frequency table) using SPSS and structural equation modeling was performed with the aid of PLS to assess interrelationships amongst critical success factors for the adoption of circular public procurement. The findings revealed that organizational circular public procurement competency has a significant and positive effect on planning and monitoring (P Value < 0.01). Also, organizational circular public procurement competency has a significant and positive effect on change management program (P Value < 0.01) and lastly organizational circular public procurement competency has a significant and positive effect on re-engineering program (P Value < 0.01). They are also mutually influential. It is therefore recommended that Procuring entities should initiate planning and monitoring, change management program and re-engineering process geared towards circular public procurement competency.

Keyword: Procurement, Public Procurement. Circular Procurement, Circular Public Procurement, Critical Success Factors

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CHAPTER ONE

INTRODUCTION

1.0 BackgroundtotheStudy

Circular procurement occurs when the buyer purchases products or services that follow the principles of the circular economy, supporting the assessment of designing, making, selling, reusing and recycling products to determine how to get the maximum value from them, both in use and at the end of their life" (UNEP, 2021).Over the last decades, the excessive consumption of natural resources around the globe has become a major concern for nations, governments, regulatory bodies, non-governmental organizations (NGOs), and firms (Muhammad *et al*, 2024). Public procurement practices are considered the approach able to facilitate environmentally, socially and ethically production and consumption (Sonich & Jesper, 2020). Though, the adaptation and transformation towards a circular economy is in a nascent stage, there is a growing consensus that transitioning to a circular economy (CE) can help to address resource scarcity (Muhammad et al, 2024).

Procurement, as one of the most critical functions in Supply Chain Management (SCM), plays a vital role in helping organisations and governments achieve CE related objectives (Liuqi *et al.*, 2022). Also, due to its strategic role in sourcing, acquiring organisational resources, and managing supplier relationships, procurement has a key role to play in Circular Supply Chain Management (Muhammad *et al*, 2024). Traditional Procurement Practices are however no longer sufficient to manage the current and future challenges arising from climate change and the depletion of natural resources, therefore, circular procurement has emerged as a promising new concept in the CE context (Muhammad *et al.*, 2024).

It aims to transform supply chain practices from the linear (take, make and dispose) model to interconnected and closed energy and materials loops so as to minimize or avoid negative environmental impacts during the entire product life-cycle. Using the public sector's purchasing power to procure environmentally friendly goods and services can significantly contribute to sustainability in production and consumption and can also help create a critical mass to demand more sustainable goods, works and services that would otherwise be difficult to bring to market (Simone, 2021). Circular Procurement is more focused on the sourcing and use of materials that are natural, renewable, restorable or biodegradable, secondary and non-hazardous, specifically moving society toward circular economy (Muhammad *et al.*, 2024).

The need to reduce waste and resource inefficiency in public procurement and the need for a transition to a Circular Economy (CE) led to the development of Circular Public Procurement (CPP) (European Commission, 2020). CPP can lead to significant environmental benefits such as reduced greenhouse gas emissions and resource consumption, economic benefits such as cost savings and job creation and social benefits such as improved public health and increased social equity (Rizos *et al,* 2023).Despite the benefits of CPP, the adoption remains very low (Manninen *et al.,* 2023; Genovese *et al.,* 2024).

Series of efforts have been made to improve the adoption of CPP such as development of guidelines and tools for CPP (Rizos *et al.,* 2023); training and education programs to increase awareness and knowledge of CPP among procurement officials (Mannimen *etal.,* 2023); Others include procurement practices that could influence development towards CPP (Heidi *et al*, 2021); Barriers and enablers towards circular procurement management (Asad & Andrea, 2021); Benefits of stakeholder engagement and collaboration in promoting CPP (Suarez *et al.,* 2020; Tukker *et al.,* 2023); and benefits of digitalization in promoting CPP (Bertot *et al.,* 2020); antecedents of the

development and implementation of circular procurement and performance (Muhammad *et al.*, 2024); strategies, drivers and barriers towards circular public procurement (Annie, 2024); present state of research concerning circular procurement (Liuqi, 2022).The findings of (Muhammad *et al.*, 2024) indicates that cohesive pressures and integrated management system (IMS) are key antecedents of circular procurement practices among Chinese manufacturers. This finding is on Chinese manufacturing firms and therefore cannot be generalized. Also, the findings of (Annie, 2024) revealed new insight into which region of Europe faced more challenges to legitimise circular public procurement. Lastly, the findings of (Liuqi, 2022) The findings identify three themes; antecedents, practices and performance (outcomes). The outcomes include economic, environmental and social performance

1.2.Statement of The Problem

Researchers (Omoregbe & Azage, 2024; Wakkims, 2020; Safitiri, 2020) identified critical success factors that could lead to the adoption of sustainable procurement and e-procurement. These critical success factors include top management support, organizational circular public procurement competency, re-engineering process, change management program, supplier involvement among others. These collective efforts provide a useful basis for improving the adoption of circular public procurement that may lead to significant environmental, economic and social benefits. Leidecker and Bruno (1984) argued that critical success factors can be adapted and applied to different context provided that the key success factors are identified and validated.

Critical success factors are known to enable and facilitate the successful implementation and adoption of procurement system (Daniel & Osman, 2020).Uncovering theInterrelationshipsamongst theCriticalSuccessFactorsfortheadoptionofCircular

PublicProcurementisone of the fundamentalelementstoensure successfulCircular Public Procurementadoptionand implementation.

However, the absence of study in literature to uncover the nature of this dynamic interrelationships, constitute a gap which this research intends to fill.

1.3. Significance of the Study

The study will help in identifying CSFs specific to CPP adoption and the interrelationshipsamongst them. By so doing, public procuring entity will identify and use these CSFs necessary for the adoption of CPP. It will also assist procuring entity in establishing how these CSFs influence one another. Also, the findings of the study will enable Government and organisations to develop strategies for CPP adoption.The study will contribute to the achievement of sustainable development goals 19 which take into cognizance the need to protect the planet (environment) and people.Again, the study will also enhance understanding of factors influencing CPP adoption thereby enabling all stakeholders to make informed decisions.In addition, the study is justified by the need to address environmental and social challenges posed by traditional linear procurement practices.Lastly, the study will contribute to both theory and practice and therefore advance the field of CPP research and provide practical insight.

1.4 Aim and Objectives of the Study

The aim of this study is to assess the Interrelationships amongst CSFs for the successful adoption of CPP.

Other specific objectives are to

I. Identify CSFs for the successful adoption and implementation of procurement
II. Assess CSFs for the adoption of CPP.

III. Assess interrelationships amongst CSFs for adoption of CPP.

1.5Scope and Limitation of the Study

1.5.1 Scope

The scope of this study is limited to the interrelationships amongst CSFs for the adoption of CPP. Only federal Government Ministries, Departments and agencies (MDA's) in Nigeria are considered. This is because there is a general guideline (the public procurement Act) that guides all federal MDAs in Nigeria.

1.5.2 Limitation

The study is centered on only federal government MDA's in Nigeria. This may affect generalisation as state Government's MDAs are excluded. This is because the state MDAs have their separate laws as they do not in most cases follow the federal Government Public Procurement Act. Also,only 61.4% response rate was achieved. Though, this is good, it outcome of this research could have been better if the response rate was higher than 61.4%.

CHAPTER TWO

LITERATUREREVIEW

2.1 Concept of Procurement

Procurement is the acquisition of goods, works and services at the right price, place quantity (Ofori & Fuseini, 2020).Procurement is the activity of assessing buying of works, goods and services (Chigadi & Gakara (2020). Government across the world spend a huge chunck of their funds on the acquisition of goods, works and services and so inefficient procurement process can lead to huge loss that could negatively influence the survival and development of any economy across the world(Offori & Fuseini, 2020).Procurement includes activities that starts with identification of needs and ends with delivery of materials, works or service required in the public wherever this process is performed (Chigadi & Gekara, 2020).

According to Guan *et al.*, (2023), Procurement is the process of finding and agreeing to terms of acquiring works good and services from an external source or through a competitive bidding.Procurement is an essential operation of all organization irrespective of its size or domain(Guan *et al.*, 2023).

Procurement can be defined as externally obtaining all services, goods, capabilities and knowledge which are necessary for running, maintaining and managing the organizations primary and support activities (William, 2020).Procurement represents one of the largest items in an organization’s cost structure (William, 2020).Procurement is a multipart process that includes vendor certification and selection, requisition preparation and approval, order placement, goods receipt reconciliation and payment of invoice and order archiving (Abderahman *et al.,* 2024).Procurement is a critical organizational function that aims to ensure the quality of purchased materials or services and

connects supplier capabilities to in house manufacturing and distribution of materials and it is driven by three distinct criteria of cost quality and delivery (Abderahman *et al.*, 2024). Apart from these more conventional requirements, procurement concerns the environmental consequence of supply chain operational and management decision (Abderahman *et al.*, 2024).

According to Julius and Garshon (2022), Procurement is the structure that characterizes the administrative system approved by customers for the execution of project procedures and eventual management of the project. Procurement is an all-inclusive process in which contractors, engineers, designers and several consultants offer services for proposal and construction to carry out a comprehensive project to the clients (Julius & Garshon, 2022).

For the purpose of this study, the researcher defines procurement as the acquisition of goods, works and services at the right price, place, quantity and in line with specification.

2.2 Concept of Public Procurement

Public procurement is an effective tool for economic activities, socially sustainable development and it influence the operations and performance of the supply chain and the overall economyand it is an effective tool for government to engage in economic activities and drive social development (Shuxio *et al.*, 2023). Public procurement is an activity to obtain goods or services by ministries, institutions regional apparatuses or other institutions whose processes start from the planning of needs until completion of all activities whose budget are financed by the state & region (Safitiri, 2020).

According to Aristotelis andDimitris(2022),Public procurement is one the of the four key economic activitiesGovernment participate in and it account for one third of all government spending and 13% of GDP in OECD member countries.Public procurement of goods and services

are strategically important for three reasons;the economic impact is between 15-20 of the GPD of European countries,it is relevant for potential improvements in public services andit affects both the competitiveness of nations and the welfare of citizens (Williams, 2020).

For the purpose of this study, public procurement is defined as the acquisition of goods, works and services by public entities at the right price, place, quantity and in line with specification.

2.3 Concept of Circular Procurement

According to Mazen andAbdulaziz (2022),Circular Procurement attempts to promote the circular economy through the procurement of product and services. Circular procurement is the integration of Circular Economy and Procurement (Asad, 2022). It entails considering durability, resources efficiency,reuse, recyclability, refurbishment/retrofitting and buying recycled during the procurement process (Mazen & Abdulazeez, 2022). Circular Procurement can leverage the natural ecosystem, where natural resources can be transformed into manufactured products and the bye-products can be used as new resources for other industries (Asad, 2022).

Circular Procurement involves strategies to procure product and services that prioritise circular economy principles by enabling recycling reuse durability and long service lives of assets and it is a critical aspect of circular economy and the building block of applying circularity (Zeerak *et al.,* 2024).It entails the ambition to produce products and services with and extended lifespan and value retention (Sofia *et al.,* 2021). Circular Procurement is defined as the process by which organizations purchase goods works and services that seek to contribute to close energy and material loops within supply chain while minimizing and in the best case avoiding negative environmental impacts and waste creation across their whole life cycle (Zeerak *et al.,* 2024). It emphasized the reuse and recycling of materials to close the loops and prompt waste minimizing

and resources efficiency and also creates opportunities for reducing carbon emission, a key issue with the linear economic model(Zeerak *et al.*, 2024). It also has the potential to foster social sustainability by cultivating new job and business that prioritize circular economy and instigate positive outcomes for sustainable development.

Circular procurement is the procurement of competitively priced products or services or systems that lead to extended lifespan, value retention and or remarkably improved and non-risky cycling of biological or technical materials compared to other solutions for a similar purpose on the market(Mazen & Abdulaziz, 2022). Promoting circular procurement therefore requires focusing on the elements; Service instead of product, the product design use phase and end of life and Market dialogue (Mazen & Abdulaziz, 2022).

For the purpose of this study, circular procurement is defined as the acquisition of works. Goods and services that ensures reuse, remanufacture, recycling, refurbishment so as to close energy and material loops in the supply chain and avoid waste generation and negative environmental impact.

2.4 Concept of Circular Public Procurement

The European commission (2020) defines circular public procurement as the process by which public authorities purchase works goods and services that seek to contribute to close energy and material loops within supply chains while minimizing and in the best case avoiding negative environmental impacts and waste creation across their whole life cycle. The concept of circular economy has been coupled with public procurement and circular public procurement requires more than just introducing environmental criteria into the mix as it also requires new ways of thinking about needs processes and organizations (Heidi, 2021).

For the purpose of this study, circular public procurement is defined as the acquisition of works. Goods and services by public entities so as to ensures reuse, remanufacture, recycling, refurbishment in other to close energy and material loops in the supply chain so as to avoid waste generation and negative environmental impact.

2.5 Concept of Critical Success Factors

Critical success factors are conceptualised as resources that provide enabling and facilitating conditions for successful implementation and adoption of any system (Ofori&Fuseini, 2020). It could also include company's capabilities, legislation, financial funding, stakeholder awareness all which enable the implementation and adoption of a system (Davide*et'al.*, 2020). Bullen and Rockart (2023) defines critical success factors as the limited number of areas in which results if they are satisfactory, will ensure successful competitive performance for the organization. These success factors are the few key areas where things must go right for an organization to flourish and attain its goals (Guan *et al.*, 2023).

CSFs is the term for an element that is needed for an organization or project to achieve its mission as it is used as a planning tool to reach an ideal condition or success (Safitiri, 2020).Studies have revealed critical success factors to include trust, information quality, staff training and development, user acceptance to change, top management support, compliance with best practice, re-designing affected business process, continuous measurement of key benefits, technology and risk management (Ofori & Fuseini, 2020). These factors strongly influence the degree of initiation, continuation and success of a system and may contribute a lot to the transition which is progressively undertaken by an organization (Davide *et al.*, 2020).The purpose of critical success factors is the determination of the set of factors that the management considers critical for it to

succeed and once identified, these factors are started as the objectives of the organization and the information required to monitor their performance are identified (Guan *et al.,* 2023).

For the purpose of this study, critical success factors are those factors that an organization must put in place in other to achieve its goals of circular public procurement.

2.6 Critical success factors for the Adoption and implementation of Procurement

These critical success factors are adapted from literatures on sustainable procurement and e-procurement. They include top management support,change management program,end-user training, planning and monitoring, supplier involvement, policy and regulation, organizational circular public procurement competency, circular public procurement implementation strategy, stakeholder participation and re-engineering process as indicated on table 2.1

2.6.1 Concept Organizational Circular Public Procurement Competency

According to European Commission(2020), Circular Procurement competency is the ability of organisations to integrate circular economy principle into procurement practices which enables them to reduce waste, promote sustainability and drive innovation. It involves designing procurement process for circularity, sustainable sourcing, closed-loop systems and collaboration with supplies (McDonough & Braungart, (2002). Circular public procurement competency ensures that organisations minimises environmental impact of products throughout the product life cycle (Korhonen, *etal.,* 2020). It also reduces procurement and waste disposal costs (Ghisellini *etal.,* 2020).

2.6.2 Concept of Change Management Program

According to Kotler (2020), Change management program is a structured approach that helps in transitioning individuals, teams and organisations from a current state to a desired future state,

ensuring minimal disruption. It involves systematic process to implement changes effectively, sustainably and with minimal resistance (Kotler, 2020). Organisations with effective change management practices are more likely to meet project objectives (Prosci, 2022). Sustainable transformation happens when people believe in what they are doing and why they are doing what they are doing (Mckinsey, 2023). According to Prosci (2023), strong leadership commitment is crucial for successful change initiatives.

2.6.3 Concept of Re-engineering Program

According to Hammer and Stanton, (2020), Re-engineering program involves analysing and redesigning business processes to achieve significant improvements in efficiency, effectiveness and quality. It often involves a holistic approach to transforming business processes often leveraging technology and innovation to drive change. Re-engineering process improves efficiency by streamlining processes and eliminating waste (Davenport, 2020).

2.6.4 Concept of Planning and Monitoring

According to Kerzner (2020), Planning and monitoring are essential components of effective project management and effective organizational success. Planning involves setting goals, defining strategies and allocating resources to achieve desired outcome (Kerzner, 2020). Monitoring on the other hand involves tracking progress, identifying deviations and taking corrective actions to ensure project success (PMI, 2020). Planning and monitoring help optimise resource allocationand reduce waste (Neely *et al.*, 2020). It also enhances decision making by providing valuable insights for informed decision making (Kerzner, 2020). Planning and monitoring also increase the likelihood of project success (PMI, 2020).

2.7Critical Success Factors for The Adoption of Circular Public Procurement

OmoregbeandAzage,(2024); Chikadi and Gekera (2020); Safitiri *etal.,* (2020) conducted a study aimed at identifying critical success factors in e-procurement and procurement success which has helped to improve performance of procurement. The findings of the studies revealed that organisational public procurement competency, change management program, top management support, end-user training, e-procurement implementation strategy, stakeholder participation, policy and regulation, monitoring and evaluation, capacity building are all considered critical success factors that support the management and implementation strategy of e-procurement. Though the findings of safitiri *et' al.,* (2020) revealed that top management support is not considered relevant because top management are not directly involved in the execution of policies.

Heidi andArne (2021) conducted a study to examine how current procurement practices in Danish municipalities influence a development towards circular public procurement. A qualitative semi structured case study was applied with a population of 17 Danish municipalities granted with an interview request. The findings revealed that CPP is still perceived as new and difficult and its principles are vague. Also, CPP requires competence that are not present in the procurement department today. Though, the study examined how current procurement practices influence a development towards circular public procurement, there is need to study interrelationships amongst critical success factors for the adoption of circular public procurement. The study also used a qualitative research design with a population of seventeen (17) Danish municipalities, there is need to use a qualitative research design using a larger population.

Assad & Andrea (2020) conducted a study to find out the barrier and enablers towards circular public procurement management.Systematic literature review (SLR) was carried out by identifying studies on the circular economy and procurement/supply in the Scopus data base. The findings

revealed that from 2020 onward, studies have particularly used procurement as a fundamental area of discussion to adopt circularity. Strategies to implement circular economy at the functional level plays a significant role. An alteration of sourcing strategies and procurement processes needs to happen. Also, barriers and enablers were identified under three categories of micro, meso and macro. Though, the study looked at barriers and enablers towards circular public procurement with the aid of a systematic literature review, there is need to study interrelationships amongst critical success factors for the adoption of circular public procurement using a survey research design.

Muhammed *et al.,* (2024) conducted a study to explore the antecedents of development and implementation of circular procurement and examines its performance outcome. Data was collected from Chinese manufacturing industry using a convenience sampling approach, the questionnaires were distributed to manufacturing firms across the six Chinese administrative regions through multiple channels. The findings indicates that cohesive pressures and integrated management system (IMS) are key antecedents of circular procurement practices among Chinese manufacturers. Though, the study explored antecedents of development and implementation of circular procurement and its performance outcome, there is need to examine interrelationships amongst critical success factors for the adoption of circular public procurement.

Sonnich and Jesper (2020) carried out a study to organise, evaluate and identify patterns and clusters in published articles, providing an overview of the state of the art in green and sustainable public procurement. Structured search process and a transparent analysis of current literature was conducted. The findings revealed that awareness and knowledge of circular public procurement attributes based on circular policy and strategy implementation are essential to the conduct of circular public procurement. Simply not going for the lowest price but finding an optimum combination that includes risk, timeliness and cost for public institutions on a life-cycle basis.

Though, the study used structured search process to examines patterns and clusters of state of the art in green and sustainable procurement and also concluded that awareness and knowledge of circular public procurement are essential for the conduct of circular procurement, there is need to study interrelationships amongst critical success factors for the adoption of circular public procurement using a qualitative research approach.

Annie (2024) conducted a study to explore the strategies, drivers and barriers to legitimise circular public procurement within European public organization across different sectors. Qualitative research approach was used with the aid of secondary data. The study analysed case studies spanning from 2015 to 2023. The findings revealed new insight into which region of Europe faced more challenges to legitimise circular public procurement. Though, the study explored strategies, drivers and barriers to legitimise circular public procurement, there is need to study interrelationships amongst critical success factors for the adoption of circular public procurement using a survey research design.

Liuqi *et al.,* (2022) carried out a study discover the present state of research concerning circular procurement. A systematic literature review answers a well-defined question by identifying, selecting, and critically evaluating research. The overall selection process is divided into several steps. The findings identify three themes; antecedents, practices and performance (outcomes). The outcomes include economic, environmental and social performance.Though, the study discovered the present state of research concerning circular procurement and observed that the performance outcomes include economic, environmental and social outcome, there is need to study interrelationships between the critical success factors that will lead to the adoption of circular public procurement leading to the performance outcomes discovered.

Shuxiae *et al.,* (2024) carried out a study to find out the impact of public procurement on the adoption of circular economy practices. The sample used for the study are all firms listed on the shangai stock market in China from 2010-2020.The findings of the study revealed that supplier firms engaging in public procurement are more likely to adopt circular economy practices. Though, the study examined impact of public procurement on the adoption of circular economy, there is need to study interrelationships amongst critical success factors for the adoption of circular public procurement.

Roberto *et al.,* (2020) examines the environment benefits of reuse over recycle in the context of a full-scale modular building using a purposely build prototype. Systematic literature review (SLR) and analysis of research findings on deconstruction, reuse of components within the construction industry's circular economy practice and environmental assessment methods.The findings revealed that by adopting circular economy framework of design for disassembly and reuse which can reuse the entire steel structure which account for 60% of the mass of the building.Though, the study examines the benefits of reuse over recycle in the context of a full-scale modular building with the aid of a systematic literature review, there is need to focus on interrelationships amongst critical success factors for circular public procurement adoption using a survey research design.

Anne(2021) examines the intermediation throughout the pre-procurement consultation process of a national public procurement pilot project to support a more circular economy.Qualitative case study method was used and empirical data was collected through a multiple interview.Data were coded and analysed. Findings present evidence supporting the centrality of systemic intermediation initiative promoting a more circular economy and provide a unique contribution to the understanding of intermediation dynamics in demand articulation. Though, the study examined the intermediation throughout pre-procurement consultation process using qualitative case study

method, there is need to study interrelationships amongst critical success factors for the adoption of circular public procurement using quantitative research approach.

Zeerak and Fashim (2024) conducted a study to find out the barriers to the adoption of circular procurement within the construction industry and measures that could be taken to facilitate the adoption of circular procurement in the construction industry. Literature related to the research theme were retrieved and Meta analyses and content analysis were performed on the retrieved articles. The finding revealed that construction industries face hard barrier in circular procurement adaptation which is attributed to lack of technological prowess, knowledge gap and technical skills while soft barrier to circular procurement exist due to lack of awareness incentives and cultural factors. Among such soft barriers are lack of stakeholder engagement which is a major impediment to circular procurement adoption. Though, the study examines barriers to the adoption of circular procurement within the construction industry and measures that could be taken to facilitate adoption using meta-analyses, there is need to study interrelationships amongst critical success factors for the adoption of circular public procurement in the public sector using a quantitative research method.

Federica andMacro (2020) carried out a study to investigate how the sustainable development is pursued by manufacturing companies especially by focusing on circular economy paradigm that is considered one of the major drives of sustainability.SLR was used to identify eligible papers for review on Scopus and web of science.The findings revealed that risk management was a barrier to circular manufacturing. Also, data and information need to be monitored in addition to materials and energy consumption and all resources used along the product line. Though, the study examined how sustainable development is pursued by manufacturing companies especially by focusing on circular economy using systematic literature review, there is need to study interrelationships

amongst critical success factors for the adoption of circular public procurement using a survey research design.

Mayora and Sergio (2023) carried out a study to find out the major barriers and drivers to a circular economy in the construction sectors and the major role of the construction stakeholder in the transition. A SLR with explicit methods of data processing and analysis to protect against bias was used. The findings revealed that circular economy has gained relevance over the years in the construction industry, however a joint and interdisciplinary action between the construction stakeholders and government is needed to promote sustainable changes in the sectors. Though the study explored major barriers and drivers to a circular economy using systematic literature review, there is need to study interrelationships amongst critical success factors for the adoption of circular public procurement using a survey research design.

Obiora *et al.*, (2021) Examines the barriers and enablers of circular economy implementation in urban market in Anambra, Nigeria.A case study qualitative approach to data collection and analysis was adopted. Data was collected through interview within the urban market,sellers, market leaders, government officials using semi-structured question and observation. Findings revealed that the enablers of circular economy include the existence of active institutional structure, pre-existing policing framework, the presence of product reuse practices, and a high waste management financing. The barrier includes poor waste disposal technique absence of waste sorting schemes, non-regulated waste picking activities and policies not tailored towards extended producer responsibility. Though, the study examined barriers and enablers of circular economy implementation in the urban market in Anambra using a case study qualitative approach, there is need to study interrelationships amongst critical success factors for the adoption of circular public procurement using a quantitative research method.

2.8 Objective 1: Identification of Critical Success Factors for the Adoption and Implementation of Procurement

Table 2.1: Summary of variables measurement from literature review;

Variables	Measurement
Top Management Support	Measured by five (5) items adapted from Omoregbe & Azage (2024)
Organizational circular public procurement competency	Measured by four (4) items adapted from Omoregbe & Azage (2024)
Change management program	Measured by four (4) items adapted from Omoregbe & Azage; Wakkiams (2020)
End-User Training	Measured by four (4) items adapted from by Omoregbe & Azage (2024)
Supplier Involvement	Measured by three (3) items adapted from Omoregbe & Azage (2024)
Circular public procurement implementation strategy	Measured by two (2) items adapted from Omoregbe & Azage (2024); Wakkiams (2020)
Planning and Monitoring	Measured by five (5) items adapted from Safitri *et al.,* (2020)
Policies and Regulations	Measured by five (5) items adapted from Safitri*et al.,* (2020); Chikadi & Gekara (2020)
Re-engineering process	Measured by five (5) items adapted from Safitri*et al.,* (2020)
Stakeholder participation	Measured by five (5) items adapted from Safitiri, Chikadi & Gekara (2020)

Source: Researcher's compilation

2.9 Conceptual Framework

Conceptualresearchisrelatedtosomeabstractideasortheories.Itisgenerally usedby philosophersandthinkerstodevelopnewconceptsortoreinterpretexistingones(Kothari, 2014). The conceptual framework shows the relationship between the critical success factors for the adoption of circular public procurement.Theindependentvariablesrelating tothisstudy are change management program (CMGP), planning and monitoring (PAMG) and re-engineering program (REEP).The independentvariablesareexpectedtointerrelateasshowninfigure2.1below thatrepresentstheinterrelationshipamongstcriticalsuccessfactorsfortheadoptionof circular public procurement.

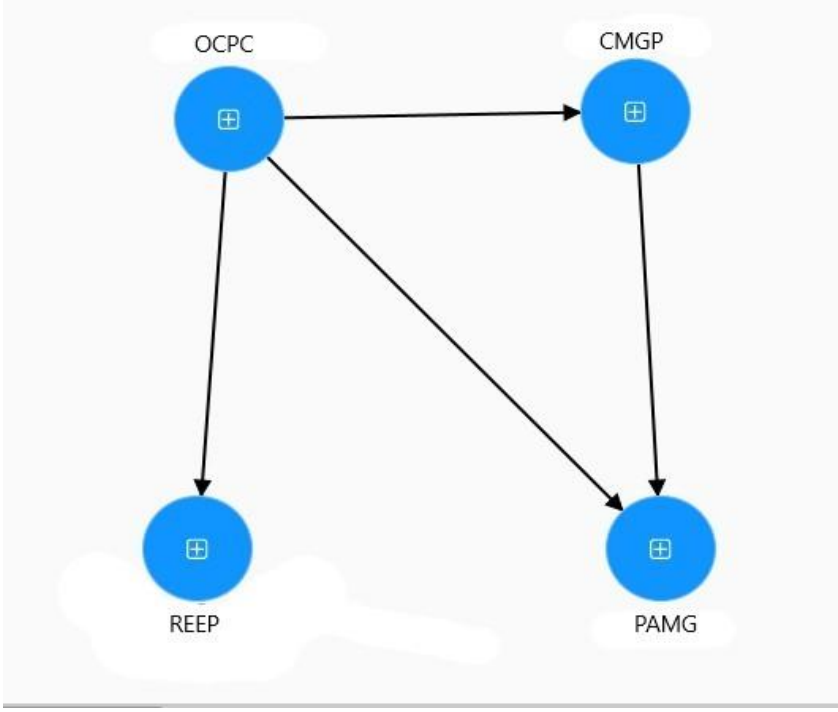


Figure 2.1: Conceptual Framework for the Study

Source: Researcher's compilation

The above network of relationships was developed after the Exploratory factor analysis and proposed four research hypotheses.

2.12Summary

Thisstudy focusedonassessingtheinterrelationshipsamongstcriticalsuccessfactorsforthe adoption ofcircular public procurement.Theresearchaimedatassessing thedynamicrelationships thatexistamongstCSFs for circular public procurementadoption.Thestudy'sobjectivesincludedidentifying andassessingthecriticalsuccessfactorsforcircular public procurementadoptionandassessing the interrelationshipsamongstcriticalsuccessfactorsfor circular public procurementadoption.The researchis significant for the government to enhance compliance with circular public procurement adoption in public entities and forpolicymakers to develop strategies for its adoptionbased on the finding.

2.13 Definition of Terms

Some terms are defined in the context of this research work in order to avoid any misunderstanding on the part of the audience. These terms include;

Procurement: This is the acquisition of goods, works and services at the right price, place, quantity and in line with specification.

Public procurement: This is the acquisition of goods, works and services by public entities at the right price, place, quantity and in line with specification.

Circular procurement: This is the acquisition of works, goods and services that ensures reuse, remanufacture, recycling, refurbishment so as to close energy and material loops in the supply chain so as to avoid waste generation and negative environmental impact.

Circular public procurement: this is the acquisition of works. Goods and services by public entities so as to ensures reuse, remanufacture, recycling, refurbishment so as to close energy and material loops in the supply chain so as to avoid waste generation and negative environmental impact.

Critical success factors: These are those factors that an organization must put in place in other to achieve its goals of circular public procurement.

CHAPTER THREE

RESEARCH METHODS

3.1 ResearchApproach

The researchadoptedquantitative researchapproach.The advantage of the quantitative research designisthatitfocusesontheprinciplesofdeductivetheory testing,ensuresprotectionagainst bias,managingalternative explanationsandallowsgeneralizationandreplicationof results (Creswell&Creswell,2018).BurrellandGross(2019) highlightedthatquantitative researchis often used byresearchersto observephenomenaor events that affect individuals.

3.2 Method ofData Collection

Thestudyemployedaquestionnairesurvey.Thepreliminary questionnairewasdevelopedwith supportfromtheliteraturereview.Questionnairesare among thetechniquesofdatacollectionin whicheach respondentwillbe asked to respondtothe same setof questionsina pre-determined order (Bird,2019).Inthisstudy,thequestionnairewas themajormeansofcollecting datafromrespondents.Aself-administeredquestionnairewas usedtoaskclose-ended questions fortherespondents to complete. The questionnaire wasadministeredtoo n e procurementofficersfrom each federalMDAs i n Nigeria. It was sent a WhatsApp group that comprise procurement officers in all federal Government MDAs in Nigeria through Google form.

To ensurethatthequestionnairemeasureswhat itissupposedtomeasure,convenientlanguage wereusedin formulatingthequestions. The questions administeredis attached as AppendixI.Participantswere askedtoratethestatementsusinga 5-pointLikertscale,withoptionsranging from1for–strongly disagreeto5for–stronglyagree.

3.3 Population of theStudy

Thepopulationofthestudyreferstothepopulationtowhicha researcherwantstogeneralizethe resultsofthestudy.Thepopulationmay involvealargergroupofpeople,institution,orthings thathasoneormorecharacteristicsincommononwhichastudy focuses.Itconsistsofallcases of individualsor elementsthatfita certainspecification(Kothari, 2014).Inthisstudy,the targeted populationwas made up of 943Nigerian federal government Ministries,DepartmentsandAgencies (MDAs) (Budget Office, 2000). One procurement officer each from each MDAs constitute the population. This is becausethey aredirectlyrelatedwithday-to-day procurement operationswithin their respectiveMDA.

3.4 SampleSize

A sample populationof281was arrived at.Findingsfromtotalpopulationsamplingareoftenconsideredhighly credibleand arelesslikely tobechallengedbecausethey arebasedondatafromtheentirepopulation.Thestudyarrivedat a samplesizeof two hundred and eighty-one (281)respondents through the use of numberestimation formula as suggested byYamane (1967).

$$n = \frac{N}{1 + N(e)^2}$$

Where: n = samplesize; N =population size (finite population); e=desiredlevel of significance; (in this caseis 5 per cent)

$$n = \frac{943}{1 + 943(0.05)^2}$$

$$n = 281$$

Thesamplesizeof 281 was adequate(M o s e r & K a l t o , 1 9 7 1) . Selectingasampleisanimportantsteptobeconsideredwhenconductingresearch.

3.5 SamplingMethod

Thestudy adoptedaconveniencesamplingmethodforthestudy.Samplingisthe statisticalmethodofselecting asubsetofaninterestpopulation(referred toasasample)inorder tomakeobservationsandstatisticalinferencesaboutthatpopulation.Becauseoffeasibility of timeand cost constraints, researchers cannot study entire populations;therefore, theymustselectrepresentative samplefrom thepopulation ofconcern for observation andanalysis.It iscritical to selectasamplethatistruly representativeofthepopulationsothatsample'sinferencescanbe appliedtothepopulationofinterest(Bhattacherjee,2012).Sampling couldalsobeseenaswhere theresearcherselectsatrandomcertaincasesthatwill,inallprobability,yieldtheinformation thatisrequired(Eke,2017).Simplerandomsampling isatechniqueinwhicheachunitinthe population has achance (non-zero probability)ofbeing chosenin thesample, andthechancecan bepreciselycalculated (Bhattacherjee, 2012).

3.6Method ofData Analysis

ThestudyadoptedaDescriptivestatisticsu c h a s m e a n a n d s t a n d a r d d e v i a t i o n with the aid of SPSSandStructuralEquationModel(SEM) with the aid of PartialLeast Square(PLS).

Descriptivestatisticwasusedinthisstudy toenabletheresearchertoprovideaclear descriptionofinformation,especially onthecharacteristicsanddemographicalinformationof respondents.Thepurposeofusingdescriptiveanalysisinthisstudy wastogetquantitative descriptionsandasummary ofquantitativedata.Descriptiveanalysisenablestheresearcherto reduce

large data into manageable form (Hayes, 2017). To get a general summaryof the descriptionofthestudyvariables,thestudy usedfrequency,percentagesandmean,andthey were presented in tables.

To modelthe interrelationship between CSFs foradoption of CPP, thepartialleast squaresmethod was employed to provide the data analysis for itsexcellentrelationship prediction(Hair, *etal., 2014*;Buniya,*et al.,* 2023).PLS-SEM generallyemploys acausal modelingstrategy,whichisdesignedtousenon-normaldatawithsmallersamplesizes.Itcanfurtherbeusedtooptimizetheexplainedvarianceofdependent latentvariables(Hair,etal.,2011; Buniya, *et al.,* 2021)

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSIONS

4.1 Response Rate

The data was collected from Ministries, Departments and Agencies in Nigeria. The study employed link from the google form created for the administration of questionnaire. The researcher followed-up respondents frequently through calls, SMS and WhatsApp messages.Table 4.1 shows the summary of the number of questionnaires distributed, though the survey was via the link shared over the internet and WhatsApp. After the expiration of the time, 174 responses were recorded resulting in 126 shortages. This provided us with valid response rate of 61.9%. According to Mugenda and Mugenda (2003), a 50% response rate is adequate, 60% good and above 70% rated very well. The sample size of 61.9% was therefore considered adequate for the study.

Table 4.1: Questionnaire Distribution and Response Rate

Questionnaires Distributed	Returned	Response Rate (%)
281	174	61.9%

Source: Researcher's Compilation

4.2 Demographic Information ofRespondents

Table 4.2showsthe percentage distributionofprocurement professionals, theirdiscipline,educationalqualification, professional registration status andyears of experienceof the respondents.The findingsfromTable4.2indicatesthat1.1%oftherespondentshadDiploma,37.9%

hadHND/B.Sc,57.5% hadobtainedMasters degree and 3.4% had a PhD degree.Therefore,thissignifiesthatthe respondents hadattainedthe necessaryeducation and knowledgeas a good number of them has Masters degree.

The resultfurther revealedthat65.5% of the respondentswere professionalmembers,13.8% were corporate memberswhile 19.5% of the respondentswere fellow froma procurement professional body. It is clear that all of them belong to procurement professional body and as such gave necessary and up to date response to the questionnaire.

Table4.1alsoshowsthatmajorityoftherespondents(34.5%)hadworkedbetween6-10years,23%oftherespondentshadworkedbetween 11-20years, 28.7%hadworked between1-5years and 9.2% had worked for above20years.Thissignifiesthat the respondentshaveattaineda reasonableworkingexperience thatwillhelpinproviding necessaryinformation toachievetheobjectives ofthe study.

Table 4.1 indicates that 41.4% of the procurement officers are in the middle level, 29.9% are in the strategic level while 26.4% are in the operational level. This indicates that a good percentage of the procurement officers in the procuring entities surveyed are in the middle and strategic level. Therefore, they were able to give adequate response to the questions asked.

Table 4.2: DEMOGRAPHIC DATA RESULT

Data	Frequency	Percentage (%)
Educational Qualification:		
Diploma	2	1.1
HND/BSc	66	37.9
Masters	100	57.5
PhD	6	3.4
Total	174	100
Professional Registration:		
Professional Member	114	65.5
Corporate Member	24	13.8
Fellow	34	19.5
Missing Data	2	1.1
Total	170	100
Procurement Experience:		
1-5 years	50	28.7
6-10 years	60	34.5
11-20 years	40	23.0
Above 20 yearsMissing Data	16	9.2
Total	8	4.6
	174	100
Designation:		
Strategic	52	29.9
Middle	72	41.4
Operational	46	26.4
Missing Data	4	2.3
Total	174	100

Source:Field Study,2024

4.3 Data Cleansing and Preliminary Analysis

One of the first steps in ensuring the accuracy of the data collected is to subject the data generated to data screening (Tabachnic*etal.*, 2013). This is to ensure minimal distortion that possibly can be caused by inaccurate data. On the basis of this, data collected were screened and preliminary test were carried out for normality and multicollinearity.

4.3.1 Data coding

The questionnaires that were duly responded to and returned were 174. These were coded and entered into the SPSS variable view page. Each item/question was coded based on its main variable initials and its serial position in relation to other items under the same latent construct. For example, the ten items measuring critical success factors were coded as Top Management Support (TMGS), Organisational Circular Public Procurement Competence (OCPC), Change Management Program (CMGP), End-User Training (ENUT),Supplier Involvement (SUIN), Circular Public Procurement Implementation Strategy (CPIS), Planning and Monitoring (PAMG), Policy and Regulation (PORE), Reengineering Process (REEP) and Stakeholder Participation (SHPA). The study employed five (5) points Likert scale for the survey, using 1 for strongly disagree and 5 for strongly agree.

4.3.2 Normality

Normality test was carried out on the basis of individual items measuring the constructs in the study. The study utilized skewness and Kurtosis statistics to assess the normality. While skewness measures the symmetry of the distribution, kurtosis measures the peakness or flatness of a distribution when compared with normal distribution (Hair *etal.*, 2013). To them, if the variation from the normal distribution is sufficiently large, all resulting statistical tests are invalid. Critical values of +2.58 (.01 sig level) and +1.96 (@ .05 sig level) are benchmark. The results of this test showed that all items are relatively normal.

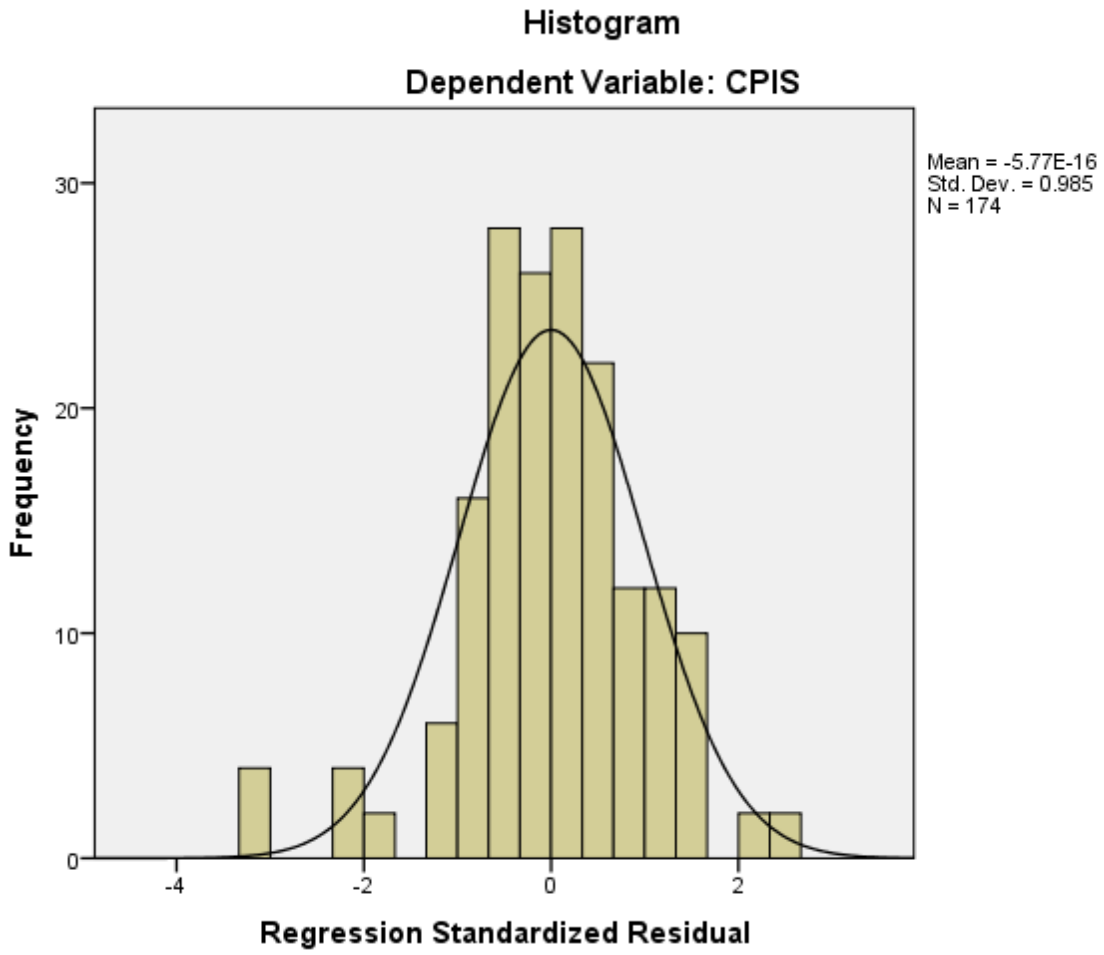


Figure 4.1. Normality Test
Source: Field Work, 2024

4.3.3 Descriptive Statistics

The descriptive statistics of the latent variables used in the current study are the focus of this section. To explain the respondents' perceptions on each of the constructs, descriptive statistics in the form of the mean (*i.e.*, the sum of the observed outcomes from the sample divided by the total number of events) and standard deviation (*i.e.*, the measure that is used to quantify the amount of variation or dispersion of a set of data values) for the latent variable were computed. When the mean and standard

deviation are combined, it tends to provide a better indication of the pattern of responses in a data collection. All the constructs used in this study were assessed using a 5-point Likert scale. As a consequence, all of the latent constructs' mean and standard deviation were calculated using the same 5-point Likert scale: 1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, and 5=strongly agree.

4.4 Critical Success factors (CSFs) for Adoption of Circular Public Procurement(Objective 2)

Critical success factors can be applied across different context as they represent key factors that contributes to the success of an organization (Rockart, 1979). They can be transferred across context, though it necessary to consider the specific organization and environmental factors (Boynton & Zmud, 1984). Leidecker and Bruno (1984) also suggested that critical success factors can be adapted and applied to different context provided that the key success factors are identified and validated.

Critical success factors can be validated by testing their relevance, completeness and consistency (Boynton & Zmud, 1984). Exploratory factor analysis was used to validate critical success factors by identifying the underlying factors that contribute to a successful circular public procurement and eliminating the redundant or irrelevant ones (Hair *et al.*, 2010; Kline, 2014; Stevens, 2009) as can be seen in table 4.5.

Table 4.3 presents a descriptive statistic of Critical Success Factors with their associated ranking for the adoption of Circular Public Procurement.From the statistics in Table 4.3, the top three ranked critical success factors were appropriate circular public procurement implementation schedule; setting of success targets relating to circular public procurement; consultation, communication and issue resolution with end-users;and ensuring that changes required in supporting processes are directly related to the speed of implementation of circular public procurement. However, provision of

necessary information technology infrastructure, trained personnel with requisite skills and knowledge;compliance with standard operating procedures; lack of conspiracy between providers of goods and services; and adequate experience and exposure to skills needed have the least ranked score from the study. Among these CSFs, appropriate circular public procurement implementation schedule; setting of success targets relating to circular public procurement were the esteem critical success factors.These suggests the need for adequate planning and continuous monitoring of processes.

Table 4.3: Ranking of Critical Success factors for the adoption of CPP

S/N	Item	Mean	Rank
1	Top management intervention in the form of end-user training and the development of resource materials has helped to overcome end-users' resistance.	3.92	1st
2	Organizational competency ensures effective application of the principles of circular public procurement.	3.61	2nd
3	Top management has the power and authority to make strategic decisions to develop circular public procurement vision and strategy	3.51	3rd
4	Top management support positively influences the extent of organizational assimilation of circular public procurement.	3.49	4th
5	The solutions are attractive to end-users and view circular public procurement as the preferred means by which to purchase goods and services.	3.43	5th
6	The implementation of circular public procurement strategies has led to cost reduction.	3.41	6th
7	The procurement process is carried out in accordance with applicable regulations on circular public procurement	3.39	7th
8	There are necessary modalities that boost supplier confidence in accepting circular public procurement as valid and legal.	3.38	8th
9	End-users are willing to change long term internal processes as a result of awareness and acceptance of circular public procurement.	3.38	8th
10	There exists appropriate procurement implementation schedule	3.37	10th
11	Employees and other end-users prefer a fast and easy circular publicprocurement process.	3.36	11th
12	Top management intervention in the form of end-user training and the development of resource materials has helped to overcome end-users' resistance.	3.31	12th
13	The circular public procurement master plan is clearly and systematically structured.	3.30	13th

14	There is conformity of laws/regulations regarding policies with environmental changes	3.28	14th

Table 4.3 Cont'd

S/N	Item	Mean	Rank
15	Our organization identifies at what level each stakeholder can and should be involved in circular public procurement.	3.25	15th
16	There is adequate conformity of laws/regulations regarding policies with changes as a result of circular public procurement.	3.25	15th
17	There is support from the top management for circular public procurement.	3.24	17th
18	Success targets relating to circular public procurement are set.	3.24	17th
19	Roles and responsibilities of end-users often change as a result of circular public procurement.	3.22	19th
20	There is strict legal sanction related to fraud on circular public procurement issues.	3.22	19th
21	Top management ensures that changes required in supporting processes are directly related to the speed of implementation of circular public procurement.	3.22	19th
22	Top management ensures consultation, communication and issues resolution with end-users so as to achieve successful change management.	3.22	19th
23	There exists a coherent policy related to accountability on circular public procurement matters.	3.20	23rd
24	Our organization have a clear standard operating procedure on circular public procurement.	3.20	23rd
25	Top management deploy the necessary change management to change the psyche of the employees.	3.18	25th
26	Our organization ensures circular public procurement application by creating documented and executable strategies.	3.16	26th
27			

	There exists team work among professionals that represent a wide spectrum of skills for circular public procurement.	3.16	26th

Table 4.3 Cont'd

S/N	Item	Mean	Rank
28	Changes in roles and responsibilities of employees and other end-users are identified and communicated in a way that allows them to absorb the information and incorporated in their work process.	3.14	28th
29	Our organization educates suppliers on the benefits of circular public procurement.	3.14	28th
30	Management provides necessary information technology infrastructure, trained personnel with requisite skills and knowledge.	3.14	30th
31	Our organization evaluates achievement targets for circular public procurement	3.13	31st
32	Our organization limits stakeholder involvement to one representative from each functional area.	3.11	32nd
33	Procurement officers carry out daily monitoring on circular public procurement.	3.11	32nd
34	End-users with challenge of integrating circular public procurement into their mode of operation are encouraged and taught the art of proficiency in the use of circular public procurement.	3.10	34th
35	There exists compliance with standard operating procedures on circular public procurement.	3.09	35th
36	Top management ensures more learning and commitment on the part of end-users so as to brace-up with circular public procurement initiatives.	3.08	36th
37	Our organization ensures circular readiness of suppliers through right consultation and communication.	3.06	37th
38	Employees has adequate experience and exposure to skills needed to perform circular public procurement projects	3.03	38th
39	There is periodic user satisfaction survey so as to identify possible need for additional training of end-users on circular public procurement.	3.03	38th

40	There is no conspiracy between providers of goods and services on circular public procurement matters.	3.03	38th

Table 4.3 Cont'd

S/N	Item	Mean	Rank
41	There exists evaluation of things on circular public procurement that cannot be re-engineered.	2.99	41st
42	It is not possible for cooperation between procurement officers and providers on circular public procurement.	2.75	42nd

Source: Field work, 2024

4.5 Kaiser-Meyer-Olkin (KMO)test and Bartlett's Test for Interrelationships amongst CSFs

Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were performed to measure the degree of intercorrelations amongst the CSFs and/or the appropriateness of Exploratory factor analysis (EFA). The KMO value was 0.902, higher than the threshold of 0.80 recommended by Netemeyer et al (2003), suggesting a high degree of common variance among the CSFs. The Bartlett's test of sphericity significance probability was 0.000, indicating that the entire correlation matrix was not an identity matrix and there were relationships among the CSFs (Hair *et al.,* 2009).

Table 4.4 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.902
	Approx. Chi-Square	7941.850
	Df	861
	Sig.	0.000

Sourced:SEM, 2024

4.6 Underlying CSFgroupings

Exploratory factoranalysis(EFA)uncoversarelatively smallsetofcommonunderlyingfactors that represent thecorrelations among alargeset ofinterrelated variables. EFA isconducted using atwo-stepprocedure:factorextractionandfactorrotation.Theformeristoidentify theinitial numberoffactorgroupingsunderlying thelargesetofvariables,whilethelattermakesthe groupingsmoreinterpretableanddeterminesthenumberoftheunderlyinggroupings(Hair*etal.*,2009).Thus,EFAwasadoptedinthisstudytoexploretheunderlyinggroupingsamongthe CSFs.Therefore,thecollecteddatawere appropriatefor EFA.Asfor factorextraction,principal componentanalysis(PCA)wasusedtoidentify theunderlyinggroupedfactors becauseofits distinctive characteristicof data reductioncapacity.Factors witheigenvaluesabove 1.00were retained(Hair*etal.*,2009).Promaxrotation methodwasappliedwhichbeginswithavarimax solutionandthenraisesfactorloadingstoa statedpowerdesignatedkappa.Consequently,small loadings becomeclose to zero, whereaslargeloadings remain substantial. Extraction with promaxrotationwasalsoadoptedinpreviousstudiesusingEFA(Zhao*et al.,* 2014).

Table 4.5 Result of Exploratory Factor Analysis for CSFs for the adoption of CPP

CSFs	Factor 1	Factor 2	Factor 3	Factor 4
CSF35	0.790			
CSF33	0.709			
CSF24		0.746		
CSF25		0.717		
CSF26		0.710		
CSF6			0.821	
CSF7			0.818	
CSF13				0.763
CSF12				0.757
CSF10				0.700

Source:Field Survey,2024

A total of 42 CSFs was tested using EFA in order to group the factors and also to remove factors that will not contribute anything meaningful to the outcome of the study. Therefore, the EFA categorized the factors into 4 groups. Also, CSFs with values below the threshold of 0.7 were removed leaving only 10 CSFs for analyses.

4.7 Interrelationships among CSFgroupings

Based on theEFA results, a conceptual frameworkwas developed to describethe CSFs andthe hypothetical relationships amongthefourCSFgroupings as indicated in figure4.1.

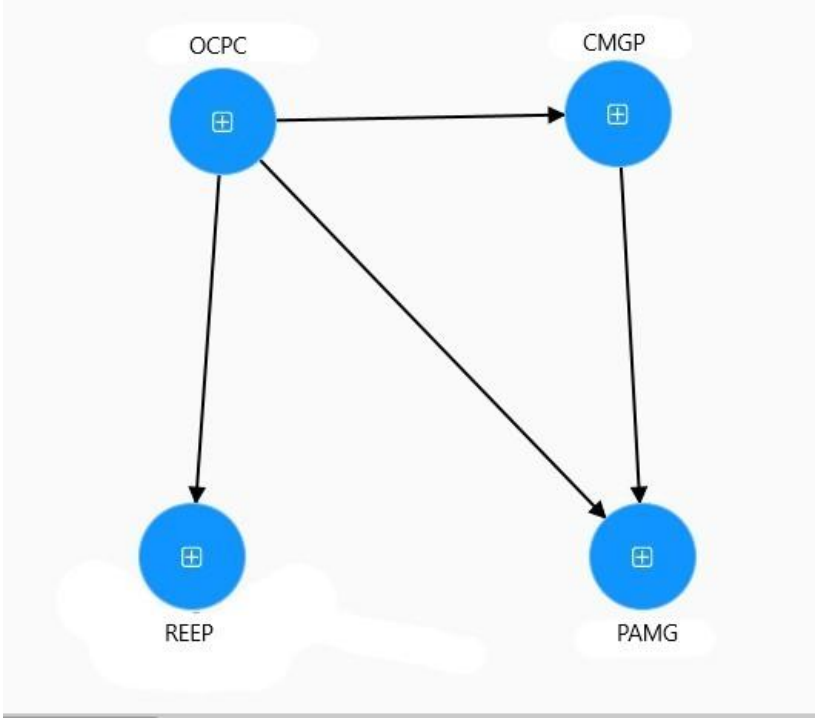


Figure4.2: Interrelationships amongstCSFs

Source: Field work, 2024

This framework proposed fivehypotheses asfollows;

H_{01}: Organizational Circular Public Procurement Competency (OCPC) does not positively influence Change Management Program (CMGP)

H_{02}: Organizational Circular Public Procurement Competency (OCPC) does not positively influence Planning and Monitoring (PAMG)

H_{03}: Organizational Circular Public Procurement Competency (OCPC) does not positively influence Re-engineering Process (REEP)

H_{04}: Change Management Program (CMGP) does not positively influence Planning and Monitoring (PAMG)

4.8 Results of Structural EquationModeling for Interrelationships amongst CSFs

StructuralEquationModeling (SEM)hasbeenconsideredasoneofthemostsuitablestatistical methodstotestandestimatetherelationshipsamong multiplevariables(Zhao*etal*.,2013,2014). SEMinvolvestwotypes ofvariables:observedvariablesandlatentvariables. Theformercanbedirectly measuredfromasurvey orsometypeofobservation,whereasthe latterisconstructedfromtheobservablevariables.ASEMmodelconsistsofmeasurement modelsandastructuralmodel.Inthisstudy,themeasurementmodelsspecify therelationships betweeneachCSF(the observedvariable)anditsassociatedgrouping(thelatentvariable), while the structuralmodel provides the dependencerelationships linkingthe threegroupings (thelatent variables). The resultof structural equation model is presented in figure4.2.

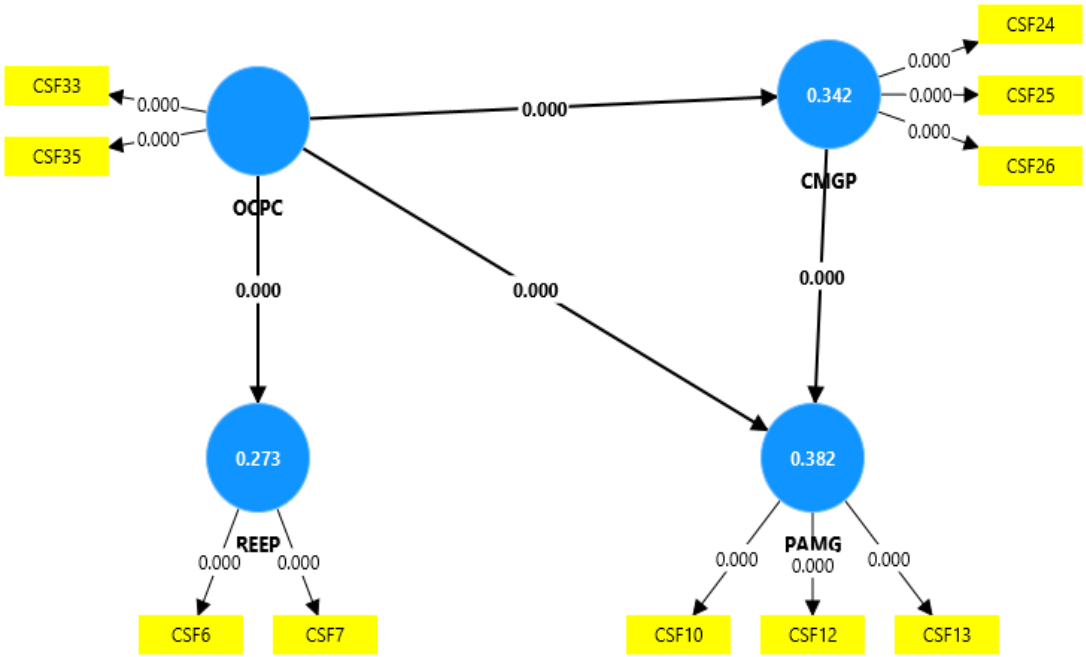


Figure 4.3: Structural Equation Model on CSFs for CPP adoption

Source: Field Work, 2024

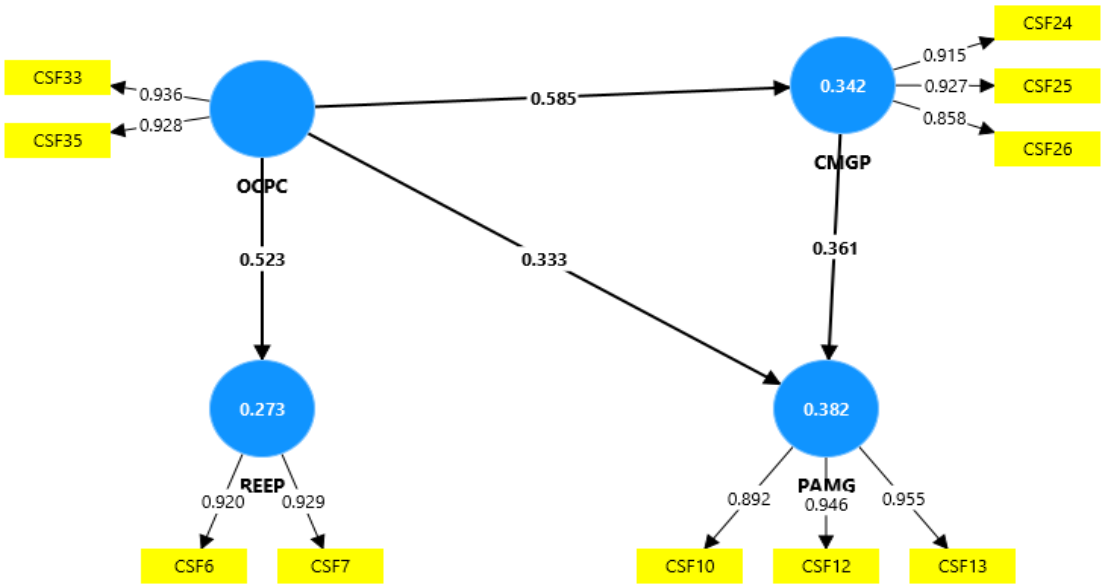


Figure 4.4: Measurement Model on CSFs for CPP adoption

Source: Field Work, 2024

4.8.1 Measurement Model on CSFs for CPP adoption

The model revealed that allthe indicator has factor loadinggreater than the required threshold of 0.7.. This signifiesthatalltheindicatorsarehighlycorrelatedwithintheirassociatedconstructs and thereforevalid forhypothesis test.

4.9 Testing the Measurement Model

AccordingtoGhozali(2012),themeasurementmodelisa measurementthatdescribesthe relationshipbetweeneachblockindicatoranditslatentvariables.Latentvariablesaredivided intotwo,namely exogenousandendogenous latentvariables.Thereare twocriteriatotestunder the measurementmodel(ConvergentandDiscriminantvalidity). Eachofthese criteria hasthree stages of test, namelyfactorloadingstest, compositereliabilitytest andtheaverage variance extracted test (Convergent validity) and Cross loadings, Fornell Larcker Criterion and Heterotrait- MonotraitRatio (HTMT) (Discriminant validity).

Table 4.6 Factor Loadings Test for Interrelationships amongst CSFs for the adoption of CPP

	CMGP	OCPC	PAMG	REEP
CSF10			0.892	
CSF12			0.946	
CSF13			0.955	
CSF24	0.915			
CSF25	0.927			
CSF26	0.858			
CSF33		0.936		
CSF35		0.928		
CSF6				0.92
CSF7				0.929

Source:SEM,2024

4.9.1 FactorLoadings Test

Thefactorloadingstestisusedtomeasuretherelationshipbetweenalatentconstruct(factor) anditsobservedindicators(variables).The indicatorvalue is requiredtofulfillthethreshold>0.7 (Tabachnick & Fidell,2013). Table 4.5showsthatallthe indicator has factor loadinggreater than the required threshold. This signifiesthatalltheindicatorsarehighlycorrelatedwithintheirassociatedconstructs and thereforevalid forhypothesis test.

Table 4.7: Multicollinearity Test Results (VIF) on CSFs for CPP adoption

	CMGP	OCPC	PAMG	REEP
CMGP			1.519	
OCPC	1		1.519	1
PAMG				
REEP				

Source: SEM, 2024

4.9.2 Multicollinearity Test Results (VIF)

The study utilized Variance inflation Factor (VIF) to test for multicollinearity. A VIF value ≥ 5 shows serious multicollinearity (Kothari &Garg, 2014). There was no problem of multicollinearity as all VIF are less than 5 as shown in table 4.7. The low VIF vaxcdlues indicates that the constructs are relatively independent, making them suitable for inclusion in regression analyses without the risk of multicollinearity adversely affecting the results.

Table 4.8 Constructreliability andvalidity (compositereliability Averagevariance extracted)

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
CMGP	0.883	0.888	0.928	0.811
OCPC	0.849	0.851	0.93	0.869
PAMG	0.923	0.932	0.951	0.867
REEP	0.831	0.833	0.922	0.855

Source: Field Survey, 2024

4.9.3 Composite reliability andAverageVarianceExtractedTest

Thesecriteriaareusedtomeasuretheaccuracyofanitemoragroupofitems.Theindicator value required to fulfill theAVE validitytest mandatory>.50while forcomposite reliability, the threshold >.70 (Tabachnick & Fidell, 2013).Basedontheresultintable4.7.ItisshownthattheCompositeReliability andAVEvalue of the variablesi.e. Change Management program,Organizational circular public procurement Competency, Planning and MonitoringandRe-engineering Programisgreaterthan.70and.50.Thisindicatesthattheindicatorsthatform latent constructs can besaid to havegood reliabilityand validitytest.

Table 4.9: Heterotrait-MonotraitRatio (HTMT)

	CMGP	OCPC	PAMG	REEP
CMGP				
OCPC	0.673			
PAMG	0.611	0.613		
REEP	0.795	0.622	0.674	

Source: SEM, 2024

4.9.4 Heterotrait-MonotraitRatio (HTMT)of interrelationships amongst CSFs for the adoption of CPP

Theresultoftable4.8revealeddiscriminantvalidity wassupportedbetweenalltheconstruct. Themaximum valueis 0.795 which is less than 0.85 thresholds.

Table 4.10 Cross Loadingof interrelationships amongst CSFs for the adoption of CPP

	CMGP	OCPC	PAMG	REEP
CSF10	0.44	0.474	0.892	0.51
CSF12	0.568	0.509	0.946	0.56
CSF13	0.537	0.534	0.955	0.585
CSF24	0.915	0.543	0.546	0.671
CSF25	0.927	0.554	0.482	0.643
CSF26	0.858	0.48	0.471	0.526
CSF33	0.571	0.936	0.52	0.488
CSF35	0.517	0.928	0.493	0.486
CSF6	0.646	0.469	0.489	0.92
CSF7	0.62	0.498	0.606	0.929

Source: SEM, 2024

4.9.5 Cross Loading of interrelationships amongst CSFs for the adoption of CPP

Theresultsofcross-loading inthetable4.7below,havemetthe requirementsofconvergent validity,havingavalueforeachindicator >0.07.Itcanbeconcludedthatregardingthisstudy, thevalueofdiscriminantvalidityisgoodatcross-loading.Gooddiscriminantvalidityisshown by theAVEquadrantrootsforeachconstructthatarelargerbetweentheconstructsinthemodel (Ghozali2021).Therefore,themeasurementmodelswerereliable and valid forthe structural path modeling.

Table 4.11:FornellLarckerCriterionof interrelationships amongst CSFs for the adoption of CPP

	CMGP	OCPC	PAMG	REEP
CMGP	0.901			
OCPC	0.585	0.932		
PAMG	0.556	0.544	0.931	
REEP	0.684	0.523	0.594	0.925

Source: SEM, 2024

4.9.6 FornellLarckerCriterion of interrelationships amongst CSFs for the adoption of CPP

Table4.10evaluatesdiscriminantvaliditybycomparingtheaveragevarianceextracted(AVE) for eachconstructwiththesquaredcorrelationsbetweenconstructs.FornellLarckerCriterion statethatthesquarerootofAVEmustbegreaterthanthecorrelation(Fornell,Larcker1981; Hair*etal.*,2011).Therefore, thefindingsinTable4.10suggestedthatnocorrelationbetweenany two CSFgroupings washigher than the square root of theirAVE values.

4.10 Structural Model Testing (Inner Model) of interrelationships amongst CSFs for the adoption of CPP

ThenextstageistheInnerModelwhichteststhestructuralmodelbylookingattheR-Squares, F-Squaresand PathCoefficientfor eachendogenousvariable topredictthe strengthof the structural model (Ghozali, 2021).

Table 4.12: Effect of R Square Valueof interrelationships amongst CSFs for the adoption of CPP

	R-Square	R-Square Adjusted	Effect Size
CMGP	0.342	0.338	Medium
PAMG	0.382	0.375	Large
REEP	0.273	0.269	Medium

Source: SEM, 2024

4.10.1 Effect ofR-SquareValue

AccordingtoHair*etal.*,(2011),R-squareshowsstrongresultsifthevalue is0.75,0.50indicatesamoderatemodel,and0.25indicatesaweakmodel.Basedonthetable 4.11,Itcanbestatedthattheaverageresearchvalueismoderate.Thepercentage of the R-squarevalue of Change ManagementProgramonOrganizational Circular Public ProcurementCompetenceis34.2%.This signifiesthatrelationshipismoderate.The percentageof R-Square value of Planning and Monitoring on Organisational Circular Public Procurement Competencyindicatesastrong relationshipwithaneffect of38.2%. Also, the percentage ofthe R-square valueof Re-engineering Process on Organizational Circular Public Procurement competencyindicatesamoderaterelationshipwithaneffect of27.3%.

Table4.13:EffectofF-Square Value

	CMGP	OCPC	PAMG	REEP
CMGP			0.139	
OCPC	0.519		0.118	0.376
PAMG				
REEP				

Source: SEM, 2024

4.10.2 Effect ofF-SquareValue

According toGhozali(2021),intesting F-squares,ifyougetavalueof0.02, itisincludedinthe smallstructurallevel,0.15isincludedin themiddle,and0.35isincluded inthelargestructural level.The resultsfromtable4.12indicatethattwo constructobtainedR-squarevalue is above 0.35, which signifies a largestructural level while the other two obtained a medium value.

Table 4.14:PathCoefficient

	CMGP	OCPC	PAMG	REEP
CMGP			0.361	
OCPC	0.585		0.333	0.523
PAMG				
REEP				

Source: SEM, 2024

4.10.3 PathCoefficient

ThePathCoefficientisavaluethatshowsthevalueofthevariabledirectionandhasapositive ornegativedirection.Thevalue that rangesfrom0to1 havepositivevalues,while0to-1has negative values. Table 4.12present Pathcoefficientvalue of change management program on planning and monitoring, Organisational Circular Public Procurement Competence on Change Management Program,Oraganizational Circular Public Procurement Competencies on Planning and Monitoring and Organizational Circular Public Procurement Competencies on Re-engineering Process.It can beconcluded that thevalueofthepath coefficient ofthe research results ispositive.

4.11 HypothesisTesting

Intestingthehypothesis,twocriteriamustbefollowed,namelywhenthet-statisticvalueis0.596forone-tailedbecauseittheststhehypothesisbasedontheeffectofxonyandtheeffect testusesdirecteffect,aswellaslooking atthep-values(0.05).Thet-statisticvaluetestis usedto seethesignificanteffectbetweenvariablesinthestudyandtheirsignificanceandthep-values areusedtodeterminewhetherthehypothesisinthestudy isacceptedorrejected.Hypothesis testingcan beseen in table 4.14 below:

Table 4.15:PathCoefficient (Hypothesis Testing)

path coefficient

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
CMGP -> PAMG	0.361	0.367	0.087	4.142	0	Reject
OCPC -> CMGP	0.585	0.585	0.072	8.131	0	Reject
OCPC -> PAMG	0.333	0.327	0.088	3.783	0	Reject
OCPC -> REEP	0.523	0.523	0.07	7.483	0	Reject

P Value > 0.01
Source: SEM, 2024

Furthermore,bootstrappingmethod(Davison, 1997)wasadoptedtotestthestatistical significance ofthepathcoefficientsinthestructuralmodelandthustestthe hypotheses.Alarge numberofbootstrapsubsamplesshouldbeused(Hair*etal*.,2011)whichwasappliedinthisstudy.Thesubsam pleswererandomly drawnfromthe174responses.Thetwo- tailed critical t-valuewas0.596 at the0.05 significancelevel.

Table4.12indicatesthataunitincreaseinChange Management Program willleadtoan increaseinOrganisational Circular Public Procurement Competencyby34.2%.Similarly, theresultalsorevealedthataunitincreaseinPlanning and MonitoringleadtoanincreaseinOrganisational Circular Public Procurement Competencyby 38.2%. Lastly,table4.12indicatesthataunit increaseinRe-engineering Processwillleadtoanincreasein Organisational Circular Public Procurement Competencyby27.3%.Thissignifiesthat thereisastrong and

mediuminterrelationshipamong thefourvariables.Fromtable4.14,the resultindicates that four hypotheses proposedforthe studywerepositive and significant.

4.12 Discussion of Findings on Interrelationships amongst CSFs for the adoption of CPP

ThePathCoefficientisavaluethatshowsthevalueofthevariabledirectionandhasapositive ornegativedirection.Thevalue that rangesfrom0to1 havepositivevalues,while0to-1has negative values. Table 4.12present Pathcoefficientvalue of change management program on planning and monitoring, Organisational Circular Public Procurement Competence on Change Management Program,Oraganizational Circular Public Procurement Competencies on Planning and Monitoring and Organizational Circular Public Procurement Competencies on Re-engineering Process.It can beconcluded that thevalueofthepath coefficient ofthe research results ispositive

Theresultof hypothesis1indicatesthatthep-valuesof 0.000<0.05,whichmeansthat theyare mutuallyinfluential. Thet-statisticvalueof 8.131 >0.596means that thevariable valueis significant.Therefore,itcan beconcludedthatOrganisational Circular Public Procurement Competency hasapositiveandsignificanteffect on ChangeManagement Program. This is in line with Omoregbe & Azage (2024).

Also, from theresultsoftheanalysisof hypothesis2, itcanbeconcludedthatOrganisational Circular Public Procurement Competencyhasa significantandpositive influence onPlanning and Monitoring.Thiscanbe proven by theresultsofT-valuesandp-valueswhichare0.000and3.783,meaning thatthevariablevalueissignificant. This is in line with Omoregbe & Azage (2024).

Again, the resultsofhypothesis3, indicates that therelationshipbetweenOrganisational Circular Public Procurement Competencyand Re-engineering Process hasapositiveandsignificantimpact.Thisresultisevidencedbythe p-

valueof0.000<0.05meaningthattheyaremutuallyinfluentialandthet-statisticof7.483> 0.596.The hypothesis testedindicatedthatorganizationalcircular public procurementcompetency wasstatistically significant, suggestingthat itisastronginfluencingfactorof re-engineering processon circular public procurement. This is in line with Safitiri *et al.,* (2020)

Lastly, resultsofthe analysisof hypothesis4canbeconcludedthat changemanagement programhasasignificantpositiveeffect on planning and monitoring as can beseenfromthe p-valuesof0.000<0.05 andthet-statisticvalueof4.142>0.596.

CHAPTERFIVE

SUMMARY OF FINDINGS, CONCLUSIONAND RECOMMENDATIONS

5.1 Summary ofFindings

Circular public procurement can lead to significant environmental benefits such as green-house emission and resource consumption, economic benefits such as cost savings and job creation and lastly social benefits such as improved public health and social equity. Thepurposeofthis studyis toassess the interrelationships amongst critical success factors for the adoption of circular public procurement.The followings arethesummaryof findings ofthestudy;

I. Thestudyidentified42criticalsuccessfactorsthroughareviewoftheliterature.Procurement specialists employedby Nigerian federal government MDAs weregiven questionnairebased on the validated CSFs.

II. The identifiedcriticalsuccessfactorswerefurther categorisedintofourgroupings such as organizational circular public procurement competency, change management program, re-engineering program and planning and monitoring usingexploratoryfactoranalysis(EFA).Thesegroupingswereconfirmed bythePLS-SEMresultsasalltherelevantstatisticalindicatorswere acceptable.

III. Furthermore,from the statisticsinTable 4.2,itwasrevealedthatthe topthree ranked critical successfactorswere appropriate procurement implementation schedule; setting of success targets;consultation, communication and issues resolution with end-users; and changes in line with speed of resolution.

IV. Also,necessary information technology infrastructure, trained personnel with requisite skills and knowledge; compliance with standard operating procedures; no conspiracy between

providers of goods and services; and adequate experience and exposure to skills needed havetheleastrank scorefromthestudy.Among theseCSFs, appropriate procurement implementation schedule and setting of success targetswere the top rankedcriticalsuccessfactor.Thissuggeststheneedfor a procurementsystemthat willenhance accountability,transparency,responsiveness,dependability inpublic procurement system.

V. Theinterrelationshipsamongstthecritical success factors were determined with the aid of partialleastsquarestructuralequationmodeling(PLS-SEM).

The resultof hypothesis1concludedthatOrganisational Circular Public Procurement Competency and Change Management Program are mutually influential and there exist positive and significant relationship amongst them.

Secondly,the result of hypothesis 2 indicates that Organisational Circular Public Procurement Competency and Planning and Monitoring are mutually influential. This also indicates that there exist positive and significant relationship amongst them.

Also, the result of hypothesis 3 indicates that Organisational Circular Public Procurement Competency and re-engineering process are mutually influential

Lastly, the result of hypothesis 4 indicates that Organisational Change Management Program and Planning and Monitoring are mutually influential

VI. All null hypotheses were rejected and all alternative hypotheses were accepted.

5.2 Conclusion

It can therefore be concluded that there exist a significant positive and mutual relationships amongst Critical Success Factors for the adoption of Circular Public Procurement.

5.3 Recommendations

Procuring entities should continuously initiate Change Management Programs that is geared towards Organisational Circular Public Procurement Competency.

Also, procuring entities should always ensure adequate Planning and Monitoring of activities geared towards organizational Circular Public Procurement Competency.

Again, procuring entities should ensure a continuous Re-engineering of their processes to ensure that Circular Public Procurement Competency of workers improve.

Lastly, procuring entities should ensure Planning and Monitoring Program that is geared towards Change Management Programs to enhance Organisational Circular Public Procurement Competency.

5.4. Contribution to Knowledge

This research work has established the Critical Success Factors for the adoption of Circular Public Procurement and the interrelationships amongst them.Top management intervention in the form of end-user training with a mean score of 3.92 and organizational competency with a mean score of 3.61 were the most critical success factors. Also, organizational circular public procurement competency has a positive and significant effect on chance management program with a p-value of $0.000<0.05$ while organizational circular public procurement competency has a positive and significant effect on planning and monitoring with a p-value of $0.00>0.05$. The critical success factors are also mutually influential.

5.5. Suggestion for Further Studies

Future researches could study Critical Success Factors for the implementation of Circular Public Procurement and the interrelationships among them. Also, since this study was tailored specifically to the public entity, future researchers could also study interrelationships amongst Critical Success Factors for the adoption and implementation of Circular Procurement in the private sectors.

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Appendix

Department of Quantity Surveying,

Faculty of Environmental Design,

Ahmadu Bello University,

Zaria

10th September, 2024

Dear Respondents,

My name is Mustapha Taufiq, a postgraduate student currently running an M.sc in Procurement Management at the Department of Quantity Surveying, Ahmadu Bello University, Zaria. I am currently carrying out research titled **'Assessing interrelationships amongst critical success factors for the adoption of circular public procurement'.** Any information provided will be used for academic purpose ONLY. There are no risks associated with your participation and your response will remain confidential and anonymous

Thank you

Part A: Demographic information

When completing this questionnaire please tick (√) in the application box or provide an answer as appropriate.

Which of the following best describe your educational qualification?

. Diploma

- HND/Bsc
- Masters
- PhD

Which of the following best describe your professional registration status?

- Professional member
- Corporate member
- Fellow

Which of the following best described your years of experience in procurement?

- 1 – 5 years
- 6 – 10 years
- 11 – 15 years
- 16 – 20 years
- Above 20 years

Which of the following best describe your designation in your organization?

- Strategic
- Middle
- Operational

- Others

Part B. Success Factors

The following present critical success factors for the adoption of circular public procurement in an organization. Using a scale of 1 -5 where 1 – strongly disagree, 2 – disagree, 3 = moderately agree, 4 = agree, and 5 = strongly agree.

Please, kindly give your assessment of the level of importance of these critical success factors for the adoption of circular public procurement in your organization.

Thank You

Yours faithfully

Mustapha Taufiq
08065322153
mustaphataufiq@gmail.com

Part B. Success Factors

The following present critical success factors for the adoption of circular public procurement in an organization. Using a scale of 1 -5 where 1 – strongly disagree, 2 – disagree, 3 = moderately agree, 4 = agree, and 5 = strongly agree.

Please, kindly give your assessment of the level of importance of these critical success factors for the adoption of circular public procurement in your organization.

Statement	1	2	3	4	5
Top Management Support					
There is support from the top management for circular public procurement.					
Top management support positively influences the extent of organizational assimilation of circular public procurement.					
Top management has the power and authority to make strategic decisions to develop circular public procurement vision and strategy					
Top management intervention in the form of end-user training and the development of resource materials has helped to overcome end-users' resistance to circular public procurement.					
Organizational circular public procurement competency					
Employees has adequate experience and exposure to skills needed to perform circular public procurement projects					
Management provides necessary information technology infrastructure, trained personnel with requisite skills and knowledge for smooth circular public procurement implementation.					
There exists team work among professionals that represent a wide spectrum of skills for circular public procurement.					
Organizational competency ensures effective application of the principles of circular public procurement.					
Change Management Program					
Top management deploy the necessary change management to change the psyche of the employees that may not brace up with the advancement and implementation of circular public					

procurement initiatives.					
Top management ensures more learning and commitment on the part of end- users so as to brace-up with circular public procurement initiatives.					
Top management ensures consultation, communication and issues resolution with end-users so as to achieve successful change management for circular public procurement implementation					
Top management ensures that changes required in supporting processes are directly related to the speed of implementation of circular public procurement.					
End-user Training					
The solutions are attractive to end-users and view circular public procurement as the preferred means by which to purchase goods and services.					
End-users are willing to change long term internal processes as a result of awareness and acceptance of circular public procurement.					
There is periodic user satisfaction survey so as to identify possible need for additional training of end-users on circular public procurement.					
End-users with challenge of integrating circular public procurement into their mode of operation are encouraged and taught the art of proficiency in the use of circular public procurement.					
Supplier Involvement					
There are necessary modalities that boost supplier confidence in accepting circular public procurement as valid and legal.					
Our organization educates suppliers on the benefits of circular public procurement.					
Our organization ensures circular readiness of suppliers through right consultation and communication.					
Circular public Procurement Implemegr 3 c , ntation Strategy					

Our organization ensures circular public procurement application by creating documented and executable strategies.					
The implementation of circular public procurement strategies has led to cost reduction.					
Planning and Monitoring					
Our organization evaluates achievement targets for circular public procurement					
Our organization have a clear standard operating procedure on circular public procurement.					
Success targets relating to circular public procurement are set.					
There exists appropriate procurement implementation schedule					
Procurement officers carry out daily monitoring on circular public procurement.					
Policies and Regulations					
There exists a coherent policy related to accountability on circular public procurement matters.					
There is strict legal sanction related to fraud on circular public procurement issues.					
The procurement process is carried out in accordance with applicable regulations on circular public procurement					
There is adequate conformity of laws/regulations regarding policies with changes as a result of circular public procurement.					
There is conformity of laws/regulations regarding policies with environmental changes					
Re-engineering Process					
There is no conspiracy between providers of goods and services on circular public procurement matters.					
It is not possible for cooperation between procurement officers and providers on circular public procurement.					
There exists compliance with standard operating procedures on					

circular public procurement.					
The circular public procurement master plan is clearly and systematically structured.					
There exists evaluation of things on circular public procurement that cannot be –reengineered.					
Stakeholder Participation					
Our organization identifies at what level each stakeholder can and should be involved in circular public procurement.					
Our organization limits stakeholder involvement to one representative from each functional area.					
Employees and other end-users prefer a fast and easy circular public procurement process.					
Roles and responsibilities of end-users often change as a result of circular public procurement.					
Changes in roles and responsibilities of employees and other end-users are identified and communicated in a way that allows them to absorb the information and incorporated in their work process.					