SCHOOL OF POST GRADUATE STUDIES

ASSESSING THE EFFECT OF E-PROCUREMENT ON THE PERFORMANCE OF SELECTED LOCAL SUPPLIERS IN THE MANUFACTURING SECTOR IN ZAMBIA: **A CASE OF CHILANGA CEMENT**

RESEARCH DISSERTATION

By

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DECLARATION

I, Michael Mwila do declare that this work is genuine, and it is as a result of my own accomplishment and that its contents have never been dispensed at any University for academic purposes. In addition, I declare that contents such as tables, narratives and figures in this report were produced by me, except for those whose origin has been cited. Furthermore, I do assert that the views and opinions contained in this dissertation do not in any way constitute those of the University of Lusaka, but mine.

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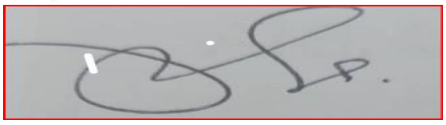

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Date. ____15.01.2024_____

Supervised by. Dr. Jones J Kalyongwe

Approved on: 15th January 2024

Sign: 

DEDICATION

My wife (Karen Ngosa Mwila) and Children (Mary Mwila, Sylvester Mwila, Micah Mwila and Michael Mwila Junior), I hereby dedicate this accomplishment to you for the encouragement offered during my tenure of my studies despite huge demands of family matters. My wife you made sure school matters were dealt first. My special dedication goes to my Parents (Mary Meleki Mwila and Sylvester B. Mwila) for love, discipline and cultured commitment toward education and to always aim higher. May the angels and saints celebrate this milestone with you. May Jehovah Jireh continue bless you and grant your heart desires and peace to you all.

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ACRONYMS

ERP - Enterprise Resource Planning

SCM - Supply Chain Management

ICT - Information and Communication Technology

IT - Information Technology

EDI - Electronic Data Interchange

AHP - Analytic Hierarchy Process

TOPSIS - Technique for Order of Preference by Similarity to Ideal Solution

EGov - Electronic Government

ZPPA - Zambia Public Procurement Authority

SPSS - Statistical Package for the Social Sciences

KPI - Key Performance Indicator

ABSTRACT

Despite the potential benefits of e-procurement, there is a lack of comprehensive understanding of how its successful implementation directly affects the overall performance of manufacturing companies in Zambia. This study aims to fill this research gap. The objectives of this study were to assess how the e-tendering process influences the supply chain performance of Chilanga Cement, examine the effect of e-sourcing on the supply chain performance of Chilanga Cement, and determine the effect of e-invoicing on the supply chain performance of Chilanga Cement.

The study employed a mixed research approach and embedded design. Purposive sampling techniques were used to gather primary data through meticulously designed questionnaires from a sample size of 97 respondents, consisting of 80 suppliers and 17 employees of Chilanga Cement. Secondary data was gathered from scholarly sources. Statistical tools including SPSS vs27 were utilized for data analysis, employing regression analysis to assess the effect of e-procurement variables on supplier performance.

The study's findings revealed that e-tendering significantly influenced supplier performance by expediting procurement cycles, enhancing transparency, and fostering robust supplier relationships. E-sourcing displayed a positive relationship with supplier performance by impacting financial transactions, reducing errors, and optimizing cash flow management. Similarly, e-invoicing showcased a strong link with improved supplier performance, expediting payment processes and promoting seamless stakeholder interoperability.

The findings highlight the transformative potential of e-procurement in improving supplier performance within the manufacturing sector in Zambia. The study offers actionable recommendations for Chilanga Cement, emphasizing strategic implementation, targeted training, and ongoing evaluation of e-procurement tools. These findings have larger implications for understanding the impact of e-procurement on organizational performance and provide insights for companies considering implementing e-procurement systems. Recommendations for further research include exploring the impact of e-procurement across different industries in Zambia, conducting longitudinal studies to assess long-term effects, examining the role of organizational factors in successful e-procurement adoption, and investigating potential synergies between e-procurement and emerging technologies such as blockchain and artificial intelligence.

Key words. E-invoicing, e-sourcing, e-tendering, e-procurement, performance.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter provides an overview of the research study, highlighting the importance of investigating the impact of e-procurement on the performance of companies in Zambia's manufacturing sector, with a specific focus on Chilanga Cement. The introduction emphasises the potential benefits of e-procurement systems, such as increased competitiveness for regional suppliers, cost savings, and increased efficiency. It also acknowledges the challenges and constraints associated with e-procurement adoption and implementation.

The chapter begins with a background of the study, discussing the growing integration of e-procurement in businesses and its role in organisational growth. It then presents the statement of the problem, highlighting the lack of comprehensive understanding of how successful e-procurement implementation directly affects the overall performance of manufacturing companies in Zambia. The research objectives, hypotheses, and justification of the research are also outlined in this chapter.

The introduction aims to provide a clear and concise overview of the research study, setting the stage for the subsequent chapters that delve into the literature review, methodology, data analysis and findings.

1.1 Background to the study

E-procurement is a concept that is now widely integrated in businesses and is thought to contribute to organisational growth. In the industrial development stage, electronic procurement first became popular as a means of improving professional efficiency (Gupta et al., 2015). E-procurement has increased efficiency and effectiveness in the procurement process while lowering costs and preserving quality. Additionally, developing nations are rapidly switching from antiquated paper-based procurement

systems to sophisticated electronic ones, especially for small and medium-sized businesses (Wu et al., 2007).

For instance, Zambia has been putting e-procurement systems into place to improve accountability, modernize, and streamline the procurement process. The goal of the nation's e-procurement system, according to the Zambia Public Procurement Authority (ZPPA), is to lessen malpractice and increase the effectiveness of bid and contract monitoring. This implementation allows interested parties to submit their offers from any location in the world (Nyondo, 2016). Because there are fewer in-person transactions and bidders remain anonymous until bids are opened, the system reduces corruption (Ilhan & Rahim, 2017). These technologies could simplify processes, increase productivity, cut expenses, and eventually boost local suppliers' competitiveness.

Prior research has looked at how e-procurement systems are adopted and used in different nations, highlighting both the advantages and disadvantages of the technology. For instance, a study by Kademaunga and Phiri (2019) found that users' intentions to use the electronic procurement system and their perception of its ease of use were both favourable. This shows that because most government institutions' personnel found electronic procurement to be so user-friendly and practical, they were prepared to accept its implementation. But the study also revealed that senior management in the corresponding institutions was not doing much to support or endorse the use of electronic procurement, a sign of a lack of buy-in from upper management.

These applications of e-procurement systems can result in major cost savings, enhanced supplier management, and increased transparency, according to other studies, such as Suliantoro et al. (2017). Adhikari and Sahu (2019) conducted a second study to examine the effects of e-procurement on the procurement process. They found that it can increase transparency, decrease errors, and boost efficiency.

Furthermore, Neupane et al. (2014) discovered that e-procurement has the potential to boost competition, minimise corruption, and elevate the calibre of works, goods, and services that are acquired in developing nations. Likewise, Aziz et al.'s (2020) study stressed the value of e-procurement in raising the efficacy and efficiency of public procurement in developing nations.

Although e-procurement has many potential advantages, its adoption and implementation are not without difficulties and constraints. For example, a study by Khalifa and Liu (2016) found that some of the obstacles to the effective implementation of e-procurement systems include resistance to change, a lack of technical expertise, and inadequate infrastructure.

According to a study by Mvula (2021), e-procurement models and capability are the main factors influencing the use of e-procurement in some Lusaka town companies. The findings of the study indicate that the limited adoption of e-procurement in these firms is largely impeded by low staff knowledge of basic ICT, a lack of skilled IT personnel within the company, and the unavailability of IT skills in Lusaka. Furthermore, the length of time needed to implement e-procurement and the high cost involved were noted as significant barriers to its widespread adoption. The study also showed how the e-procurement models used in these organizations have an impact on how e-procurement is used there. In Mansa District, Luapula Province, Zambia, three government ministries evaluated the factors influencing the adoption of electronic procurement, or e-procurement, in a second study by Ngosa (2019). The study found that a number of critical factors, such as inadequate computers, routers, phones, low internet connectivity, and staff disinterest in technology, are impeding the adoption of e-procurement. The study also discovered that these ministries' staff members were unwilling to adopt new technologies. The study also found that suppliers were not actively assisting the government of Zambia in implementing e-procurement. Positively, e-procurement has been linked to a number of advantages, such as simple self-audit, a decrease in the use of paper, quicker procurement procedures, and increased supplier access.

In addition to the impact of e-procurement on organisational performance, it is important to consider its influence on supply chain performance. Supply chain performance encompasses various aspects such as supplier responsiveness, lead times, inventory management, and overall supply chain efficiency. Implementing e-procurement systems can potentially streamline supply chain processes, enhance communication and collaboration among supply chain partners, and improve visibility and transparency.

However, there is a need for further research to understand how e-procurement specifically influences supply chain performance metrics in the context of manufacturing companies in Zambia. Investigating this relationship can provide valuable insights into how e-procurement can be leveraged to optimise supply chain operations and achieve better performance outcomes.

1.1.1 Chilanga Cement

Chilanga Cement, a prominent player in Zambia's manufacturing sector, serves as the focal point of this study. With a rich history dating back to 1949, Chilanga Cement has witnessed several ownership changes over the years, including privatization in 1957, nationalization in 1973, and re-privatization in 1994 (Chilanga Cement Plc, 2022). As a testament to its significance, Chilanga Cement was the first company to be listed on the Lusaka Stock Exchange in 1995, marking a milestone in Zambia's financial landscape (African Financials, 2021). The company's contributions to the nation's infrastructure development are noteworthy, as it played a crucial role as a major supplier during the construction of the iconic Kariba Dam.

Currently operating under the name Lafarge Zambia Plc, Chilanga Cement maintains two major facilities located in Chilanga and Ndola. The Chilanga facility underwent a significant expansion with the construction and commissioning of a new facility in 2008, enhancing its production capabilities (Mbendi, 2023). To ensure efficient distribution and market reach, the company operates four strategically positioned depots in Mpulungu, Chipata, Kasumbalesa, and Livingstone (Lafarge Zambia Plc, 2021).

Chilanga Cement's primary products include cement and cement clinker, which are essential materials for the construction industry. Additionally, the company sells aggregates sourced from its quarry in Chilanga, diversifying its product portfolio (CB Insights, 2023). Lafarge Zambia's customer base predominantly comprises construction firms engaged in government projects, such as road construction, dam building, and bridge construction. The company's market reach extends beyond Zambia's borders, as it exports cement and clinker to neighbouring countries, including the Democratic Republic of Congo (DRC), Malawi, Zimbabwe, and Burundi (Mbendi, 2023).

In terms of financial performance, Lafarge Zambia reported a net income of ZMW 291,090,000 (approximately US$ 16.6 million) and an annual revenue of ZMW 2,113,725,000 (approximately US$ 120.8 million) in 2021 (African Financials, 2021). These figures underscore the company's significant contribution to Zambia's economic landscape.

Recent developments in Chilanga Cement's ownership structure have brought about changes. In 2021, the majority shareholders of Lafarge Zambia Plc, Pan African Cement Co. Ltd. and Financier Lafarge, sold their 75% stake in the company to Huaxin (Hainan) Investment Co. Ltd., a subsidiary of Huaxin Cement Co. Ltd. (Wikipedia, 2023). Consequently, the trading name reverted from Lafarge Zambia Plc to Chilanga Cement Plc, signifying a new chapter in the company's journey (Chilanga Cement Plc, 2022).

Chilanga Cement's selection as the case study for this research is based on its pivotal role in Zambia's manufacturing sector and its potential to showcase the impact of e-procurement on organisational performance. By focusing on Chilanga Cement, the study aims to provide insights into how e-procurement practices, such as e-tendering, e-sourcing, and e-invoicing, influence the performance of local suppliers and the overall supply chain efficiency within the manufacturing industry. The company's long-standing history, diverse operations, and significant market presence make it an ideal subject for examining the effects of e-procurement implementation in the Zambian case.

1.2 Statement of the Problem.

E-procurement systems are expected to enhance procurement effectiveness, efficiency, cost reduction, and quality in organizations (Gupta et al., 2015; Suliantoro et al., 2017). Ideally, the successful implementation of e-procurement should lead to improved organizational performance, increased competitiveness for local suppliers, and overall economic growth (Aziz et al., 2020; Neupane et al., 2014).

Despite the efforts of the Zambian government and various companies to implement e-procurement systems (Nyondo, 2016), there is a lack of comprehensive understanding of how successful e-procurement implementation directly affects the overall performance of manufacturing companies in Zambia (Mvula, 2021; Ngosa, 2019). While

some studies have identified factors hindering e-procurement adoption, such as technical limitations, resistance to change, and inadequate infrastructure (Kademaunga & Phiri, 2019; Khalifa & Liu, 2016), there is a crucial research gap in examining the relationship between e-procurement implementation and the resulting performance outcomes.

To address this knowledge gap, the current study proposes to investigate the effect of e-procurement on key performance indicators such as operational efficiency, cost-effectiveness, supplier management, and overall organisational competitiveness in the case of Chilanga Cement, a manufacturing company in Zambia. By examining the impact of e-tendering, e-sourcing, and e-invoicing on local suppliers' performance and the overall supply chain efficiency, this research aims to provide valuable insights into how e-procurement can be leveraged to optimise organisational performance and boost competitiveness in the Zambian manufacturing sector. The findings of this study will offer actionable recommendations for stakeholders in the public and private sectors to create customised strategies that maximise the benefits of e-procurement systems in Zambia.

In a nutshell, the lack of comprehensive understanding of the impact of successful e-procurement implementation on organisational performance in the Zambian manufacturing sector necessitates this research. By addressing the research gap and providing empirical evidence on the relationship between e-procurement and key performance indicators, this study seeks to contribute to the development of effective strategies that optimise the benefits of e-procurement systems in Zambia.

1.3 Objectives of the Study

1.3.1 General Objective.

The effect of electronic procurement on Chilanga Cement Manufacturing Company's suppliers' performance.

1.3.2 Specific Objectives.

1. To assess how the e-tendering process influences the supply chain performance of Chilanga cement manufacturing company.
2. To examine the effect of e-sourcing on the supply chain performance of Chilanga cement manufacturing company.
3. To determine the effect of e-invoicing on supply chain performance of Chilanga cement manufacturing company.

1.4 Research Question

1. What is the effect of E-Tendering on the supply chain performance of Chilanga cement manufacturing company?
2. What is the effect of E-Sourcing on the performance of local suppliers?
3. What is the effect of E-Invoicing on the supply chain performance of Chilanga cement manufacturing company?

1.5 Hypothesis

1. Ho_1. E-Tendering has no positive influence on the performance of local suppliers.
   Ha_1. E-Tendering has a positive influence on the performance of local suppliers

2. Ho_2. There is no positive relationship between E-Sourcing and performance of local suppliers.
   Ha_2. There is a positive relationship between E-Sourcing and performance of local suppliers.

3. Ho_3. There is a positive relationship between E-Invoicing and performance of local suppliers.
   Ha_3. There is a positive relationship between E-Invoicing and performance of local suppliers

1.6 Significance of the study.

The significance of this research lies in its contribution to the understanding of the impact of e-procurement on the performance of organizations in the manufacturing sector of Zambia, with a specific focus on Chilanga Cement. By exploring the effects of e-tendering, e-sourcing, and e-invoicing on supply chain performance, this research aims to provide valuable insights for both academia and industry stakeholders.

Academically, this research will add to the corpus of knowledge already in existence on e-procurement and its implications for organisational performance. It will add to the available on the specific case of the manufacturing sector in Zambia, adding to a foundation for future studies and extending the understanding of e-procurement's role in enhancing supply chain performance.

For industry practitioners, particularly those in the manufacturing sector, this research will offer practical implications and recommendations. By understanding the effects of e-tendering, e-sourcing, and e-invoicing, organizations can make informed decisions on the adoption and implementation of e-procurement systems. The study's findings may guide manufacturing companies that have nor implemented e-procurement in leveraging e-procurement technology to improve operational efficiency, reduce costs, and enhance supplier management, ultimately leading to increased competitiveness in the market.

Additionally, policy-makers and regulators in Zambia can benefit from this research. As the government continues to promote e-procurement and digital transformation initiatives, insights from this study can support evidence-based policies and guidelines for enhancing procurement processes and driving economic growth in the country.

Lastly, the results of the study might also have an impact on other developing nations that are thinking about implementing or have already started using e-procurement systems. By examining the effects of e-procurement specific to the Zambian case, this research may offer valuable lessons and best practices applicable to similar regions and industries.

1.7 Scope of the Study

The study was conducted specifically at Chilanga Cement, a manufacturing company located in Zambia. The research focused on the e-procurement practices implemented within the organisation and their impact on the company's supply chain performance.

The study concentrated on the procurement department and its interaction with e-procurement systems at Chilanga Cement. The research assessed how e-tendering, e-sourcing, and e-invoicing were utilized in the procurement process and how these practices influence the performance of the organization.

The research examined three specific e-procurement practices, namely e-tendering, e-sourcing, and e-invoicing, to understand their individual effects on supply chain performance. These practices were chosen based on their significance in the procurement process and their potential impact on overall organizational performance.

The study primarily focused on the impact of e-procurement practices on supply chain performance within Chilanga Cement. Key performance indicators (KPIs) such as operational efficiency, cost-effectiveness, supplier management, and overall competitiveness were assessed to understand the influence of e-procurement on the organisation's performance.

1.8 Operational Definition of key terms.

E-procurement. The practice of conducting procurement activities—such as sourcing, invoicing, and purchasing—using electronic systems (Watuleke, 2017).

E-tendering. The management of goods and services procurement through a competitive bidding process through the use of electronic systems (Watuleke, 2017).

E-sourcing. The process of finding, assessing, and choosing suppliers to meet procurement requirements through the use of electronic systems (Watuleke, 2017).

E-invoicing. generating and processing invoices for goods and services acquired through the use of electronic systems (Watuleke, 2017).

1.9 Organisation of the study

This research study is structured into six chapters, each focusing on a specific aspect of the investigation into the effect of e-procurement on supply chain performance in Chilanga Cement.

Chapter One introduces the study, providing background information on e-procurement and its potential impact on organizational performance. It presents the problem statement, research objectives, research questions, hypotheses, and the significance of the study. The chapter also delineates the scope of the research and defines key terms used throughout the dissertation.

Chapter Two presents a comprehensive literature review, examining existing research on e-procurement and its implications for supply chain performance. The chapter discusses the historical background of e-procurement, current empirical literature relevant to the research questions and hypotheses, and the theoretical framework underpinning the study. It also includes a conceptual framework, illustrating the relationships between the variables under investigation.

Chapter Three details the research methodology employed in the study. It describes the research approach, design, target population, sample size determination, and sampling method. The chapter also outlines the data collection procedures, instruments used, and the data analysis techniques applied. Issues of data validity, reliability, and ethical considerations are addressed in this chapter.

Chapter Four focuses on the presentation and analysis of the research findings. It includes descriptive statistics, inferential statistics, and the results of hypothesis testing. The chapter presents the data in tables, graphs, and narrative form, providing a clear and concise interpretation of the findings.

Chapter Five discusses the research findings in relation to the existing literature and the study's objectives. It interprets the results, highlights the implications of the findings, and draws connections between the current study and previous research in the field.

Chapter Six concludes the study by summarizing the key findings, offering recommendations based on the research outcomes, and suggesting areas for future

research. It also discusses the limitations of the study and the potential for generalisability of the findings to other cases or industries.

1.10 Chapter Summary

This chapter introduced the research study, focusing on the effect of e-procurement on supply chain performance in Chilanga Cement, a manufacturing company in Zambia. The background of the study highlighted the growing importance of e-procurement in organizational growth and its potential to transform business practices and promote economic expansion.

The problem statement emphasized the lack of comprehensive understanding of how successful e-procurement implementation directly affects the overall performance of manufacturing companies in Zambia, despite the potential benefits. The research objectives and questions were outlined, focusing on the impact of e-tendering, e-sourcing, and e-invoicing on supply chain performance and local suppliers' performance.

The hypotheses were presented, proposing positive relationships between e-procurement practices and supplier performance. The significance of the study was discussed, highlighting its potential contributions to academia, industry practitioners, policymakers, and other developing nations considering e-procurement adoption.

The scope of the study was delineated, focusing on Chilanga Cement and the specific e-procurement practices under investigation. Key terms used throughout the study were defined, and the organization of the study was outlined, providing an overview of the structure and content of the subsequent chapters.

CHAPTER TWO

LITERATURE REVIEW

2.0. Introduction

The study's pertinent literature is reviewed under this chapter. The theoretical framework, conceptual framework, and empirical framework were all included in the literature review.

2.1 Historical Background

The concept of e-procurement has evolved significantly over the past few decades, driven by advancements in technology and the growing recognition of its potential to transform procurement practices. In the early stages of e-procurement development, the primary focus was on automating manual processes and improving operational efficiency (Gupta et al., 2015). This initial phase was characterised by the digitization of basic procurement functions, such as purchase order processing and invoice management, with the aim of reducing paperwork and streamlining workflows (Vaidya & Campbell, 2016).

As technology progressed and the benefits of e-procurement became more apparent, the scope of e-procurement expanded to include strategic aspects of procurement management (Xia et al., 2008). Organizations began to recognize the potential of e-procurement in enhancing transparency, fostering competition among suppliers, and improving overall procurement governance (Ilhan & Rahim, 2017). The integration of e-procurement with other enterprise systems, such as enterprise resource planning (ERP) and supply chain management (SCM) software, further amplified its impact on organizational processes and performance (Kimmons, 2017).

The adoption of e-procurement has been particularly significant in developing countries, where traditional paper-based procurement systems have been plagued by inefficiencies, corruption, and lack of transparency (Nyondo, 2016). Governments and businesses in these regions have turned to e-procurement as a means to modernize their procurement practices, promote fair competition, and enhance accountability (Neupane et al., 2014). However, the implementation of e-procurement in developing countries has not been without challenges. Issues such as resistance to change, technical limitations, inadequate

infrastructure, and lack of skilled personnel have hindered the successful adoption and utilisation of e-procurement systems (Khalifa & Liu, 2016; Mvula, 2021; Ngosa, 2019).

One of the major issues surrounding e-procurement is its ability to effectively reduce procurement costs. While proponents argue that e-procurement can lead to significant cost savings through increased competition, reduced transaction costs, and better price discovery (Suliantoro et al., 2017), others have questioned the extent to which these benefits are realised in practice (Adhikari & Sahu, 2019). The impact of e-procurement on supplier relationships has also been a topic of debate, with some studies suggesting that e-procurement can improve collaboration and communication between buyers and suppliers (Kimmons, 2017), while others have raised concerns about the potential negative effects on supplier trust and long-term partnerships (Chang & Wong, 2010).

Another significant issue in the e-procurement landscape is its impact on organisational performance, particularly in the manufacturing sector. While e-procurement has been linked to improved efficiency, reduced lead times, and better inventory management (Tyagi et al., 2017), the direct relationship between e-procurement and overall organizational performance remains an area of ongoing research (Kademaunga & Phiri, 2019; Mvula, 2021). The extent to which e-procurement can drive competitive advantage and enhance the bottom line of manufacturing companies is a question that continues to attract scholarly attention.

In summary, the historical background of e-procurement highlights its evolution from a tool for automating manual processes to a strategic enabler of procurement excellence. Despite the challenges associated with its adoption, particularly in developing countries, e-procurement has emerged as a powerful force in transforming procurement practices and driving organizational performance. As technology continues to advance and more organizations embrace e-procurement, it is likely that new issues and opportunities will emerge, shaping the future direction of research and practice in this field.

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2.2. Empirical review

Because e-procurement systems have the potential to increase the effectiveness and efficiency of procurement processes, their use has attracted a lot of attention recently.

2.2.1 Global Perspective

Liu and Chou (2011) examined the intricate dynamics of these systems and their profound effects on procurement processes. E-tendering systems level the playing field by lowering the time and expense involved for suppliers to submit bids, encouraging increased participation and heightened competition among suppliers. This increased competition translates to better pricing, improved delivery timelines, and a notable uptick in the quality of goods and services offered. Furthermore, the study emphasized that e-tendering systems can serve as a formidable tool in reducing corruption and enhancing transparency in the procurement process. These systems create an environment where fair competition can thrive, benefitting both suppliers and buyers alike. Liu and Chou's work highlights the transformative power of technology in revolutionizing procurement practices on a global scale.

Similarly, Kimmons (2017) conducted an extensive analysis of e-procurement systems, exploring their impact on various aspects of modern business practices. The study revealed that organizations adopting e-procurement systems experience a significant reduction in manual and administrative tasks. This results in streamlined procurement processes, enabling faster communication with suppliers, efficient document management, and quicker decision-making. The study also highlighted that e-procurement fosters transparency by providing clear audit trails, reducing the possibility of errors, and promoting accountability. Moreover, Kimmons emphasized that e-procurement systems enable better collaboration between buyers and suppliers, leading to improved relationships and enhanced supplier performance.

The study conducted by Ilhan and Rahim (2017) examined the advantages of e-procurement systems, utilizing an Australian Municipal Council's experience as a case study. The results emphasized that e-procurement implementation leads to increased

efficiency, reduced transaction costs, and improved transparency. The study showcased that e-procurement positively impacts procurement practices and enhances overall efficiency in a public institution. The outcomes aligned with the overarching benefits highlighted in other studies, such as those of Tai, Ho, and Wu (2010)'s study which showcased that organisations adopting these systems experienced enhanced procurement efficiency. The study revealed that web-based e-procurement systems streamline bid submission processes, reduce communication delays, and facilitate documentation management. These improvements lead to quicker procurement cycles, more accurate data handling, and smoother collaboration with suppliers. The findings underlined that organisations can achieve improved procurement practices and greater operational effectiveness through the adoption of web-based e-procurement systems.
Similarly, Vaidya and Campbell (2016) pursued a multidisciplinary approach to defining public e-procurement and evaluating its impact on procurement efficiency. The study's results demonstrated that public e-procurement's impact is multidimensional, spanning technological, organisational, and regulatory aspects. The research highlighted that successful e-procurement implementation requires addressing these diverse dimensions. The findings indicated that e-procurement can lead to improved procurement processes, reduced transaction costs, and enhanced transparency. The study highlighted that effective e-procurement adoption involves aligning technological advancements with the organisation's strategic objectives

LaMarco (2018) embarked on a comprehensive journey through the evolution of e-procurement systems. The study revealed that while e-procurement offers substantial benefits, its implementation requires careful strategic planning. The results indicated that successful e-procurement adoption demands alignment with the organisation's goals and integration with existing processes. LaMarco highlighted that the impact of e-procurement extends beyond technology, encompassing change management, employee training, and stakeholder engagement. Moreover, the study emphasized that addressing challenges such as resistance to change and data security concerns is crucial for maximizing the benefits of e-procurement.

Tyagi, Kumar, and Kumar conducted a study utilising a hybrid approach involving AHP-TOPSIS to analyse the impact of e-supply chain management (e-SCM) on overall supply chain performance. The results revealed that e-SCM positively influences supply chain performance. The study highlighted that e-procurement practices play a pivotal role in enhancing supplier selection processes, leading to improved procurement decision-making and supply chain efficiency. This research emphasized the interconnectedness of e-procurement within broader supply chain strategies and highlighted its potential to contribute to the overall effectiveness of supply chain management.

Quesada et al (2010).'s study explored the impact of e-procurement on procurement practices and performance. While the study didn't establish a direct link to supply chain performance, the results indicated that electronic procurement technologies positively influence managers' perceptions of public procurement. The research revealed that e-procurement adoption leads to favourable managerial attitudes toward procurement processes. Although not explicitly addressing supply chain performance, this study contributed insights into the changing landscape of procurement practices in the digital age.

Similarly, Chang and Wong (2010) examined the role of trust as a moderator in the relationship between e-procurement adoption and firm performance. The results indicated that firms with established trust mechanisms experience enhanced positive outcomes from e-procurement initiatives. Trust was found to enhance the effectiveness of e-procurement in driving performance improvements. This study highlighted the significance of building trust when implementing e-procurement, thereby underscoring the importance of interpersonal dynamics in technology adoption.

Zheng, Li, and Liang (2019) delved deep into the mechanisms through which e-sourcing transforms supplier interactions. By offering a platform for improved communication and collaboration between buyers and suppliers, e-sourcing transcends traditional procurement boundaries. This heightened visibility and connectivity lead to a host of positive outcomes. Enhanced supplier selection, more favorable negotiation outcomes,

and a reduction in supply chain vulnerabilities are some of the notable benefits outlined in the study. By mitigating risks and streamlining processes, e-sourcing emerges as a key enabler of improved supplier performance in the global arena.

Kannan and Tan (2019) explored the impact of e-invoicing on supplier performance adds another layer of depth to the global empirical landscape. Their study meticulously dissects the implications of e-invoicing systems, shedding light on the ripple effects they create across the supplier ecosystem. Central to their findings is the notion that e-invoicing significantly accelerates invoice processing, leading to faster payments and an overall improvement in cash flow for suppliers. In addition to these financial benefits, e-invoicing systems bring about a reduction in invoicing errors, resulting in strengthened supplier-customer relationships. The study illustrates how these systems act as catalysts for operational efficiency, positioning suppliers for enhanced performance in the global market.

2.2.2 African Perspective

Gakuru and Nzulwa (2016)'s study concentrated on the impact of e-tendering on supplier performance in Kenya presents compelling insights. The researchers navigated the intricate landscape of procurement practices in the African case, shedding light on the transformative power of e-tendering systems. Through their work, they underscore how these systems drive transparency and integrity in procurement processes, effectively reducing corruption risks. Additionally, the study highlights the role of e-tendering in fostering fair competition, minimizing fraudulent activities such as bid rigging and collusion. This fair competition results in optimal pricing and improved performance for suppliers, reshaping the procurement landscape in African countries.

Mahlangu and Rugimbana (2017) offered a comprehensive glimpse into the African experience, specifically focusing on the South African perspective. Their study delves into the impact of e-tendering on supplier competitiveness, unraveling the intricate dynamics that contribute to improved supplier performance. By creating an environment where suppliers can showcase their capabilities and strengths, e-tendering contributes to increased market share for select suppliers. This unique perspective highlights the

importance of technological interventions in driving supplier performance improvements within African nations.

Ofori-Dwumfuo and Ameyaw (2018) meticulously examined the tangible outcomes of adopting e-tendering systems within procurement processes in Ghana. Their findings underscore how these systems expedite procurement cycles, leading to increased efficiency and accuracy. The reduction in procurement cycle time is a crucial factor in enhancing supplier performance. Furthermore, the study emphasizes how e-tendering improves transparency and accountability, creating a favorable environment for suppliers to excel in their performance. This African perspective highlights the pivotal role of technology in driving supplier performance enhancements across different regions.

Madzimure et al. (2020)’s exploration encompassed a broad spectrum of enterprises and nations, allowing for a holistic perspective on the impact of e-procurement practices. Through meticulous analysis, the researchers unveiled the multifaceted ways in which e-procurement influences supplier performance. By examining various industries and geographical cases, Madzimure et al. illuminated the nuanced interplay between technological advancements and supplier capabilities. Their work serves as a bridge connecting theoretical insights with real-world applications, providing invaluable insights for practitioners and scholars alike.

Chegugu & Yusuf (2017) yielded invaluable insights into the realm of e-procurement's influence on supplier performance. Their research delved into the nuances of supplier interactions within e-procurement systems. Through meticulous empirical analysis, they offered a nuanced understanding of how these systems impact supplier behaviour and performance outcomes. Their study's significance lies in its ability to capsulize the theoretical underpinnings of e-procurement within the practical dynamics of supplier-customer relationships. By shining a spotlight on supplier behaviour and performance, Chegugu and Yusuf's work contributes to a more comprehensive understanding of the broader impact of e-procurement strategies.

Muhia and Afande (2015) navigated the dynamics of e-procurement's influence on supplier performance. Their study navigated the complex landscape of supplier interactions within the framework of e-procurement practices. By dissecting the intricacies of supplier performance metrics, the researchers illuminated how e-procurement mechanisms drive tangible improvements in supplier efficiency and effectiveness. Their empirical analysis highlights the practical implications of adopting e-procurement strategies, providing empirical evidence that supports theoretical frameworks. Muhia and Afande's work serves as a foundational building block in constructing a comprehensive understanding of e-procurement's transformative potential.

Waithaka and Kimani (2021) delved into the intricacies of supplier dynamics within e-procurement systems. Their findings provide insights into how technological interventions reshape supplier-customer interactions, ultimately enhancing supplier performance outcomes. By focusing on the practical implications of e-procurement, Waithaka and Kimani's work bridges the gap between theoretical insights and real-world outcomes. Their study serves as a pivotal building block in constructing a comprehensive framework for understanding the multifaceted effects of e-procurement on supplier performance.

Waniani et al. (2016) examined the intricate interplay between technological advancements and supplier behaviours. Their empirical insights shed light on the ways in which e-procurement systems drive changes in supplier practices, ultimately leading to enhanced performance outcomes. By presenting tangible evidence of the transformative potential of e-procurement, Waniani et al. contribute to a more holistic understanding of how technology shapes supplier-customer relationships in a procurement case.

Nyile and Shale (2016) through their empirical investigation, they dissected the intricate mechanisms through which e-procurement strategies influence supplier behaviour and outcomes. Their work illuminated the potential for e-procurement systems to drive positive changes in supplier efficiency, responsiveness, and overall performance. By providing concrete examples of how these systems affect real-world supplier practices, Nyile and

Shale (2016) contribute essential insights to the broader discourse on the impact of technology on procurement processes.

Kioko and Mwangangi (2017) delved into the complex dynamics of e-procurement practices and how they shape supplier interactions. By examining the practical outcomes of e-procurement adoption, the researchers provided empirical evidence of its potential to enhance supplier performance metrics. Their study bridges the gap between theoretical frameworks and practical implications, offering a nuanced understanding of how e-procurement strategies contribute to supplier effectiveness and efficiency.

2.2.3 Local perspective

In their study, Chipeta and Ngoyi (2018) delve into the realm of e-government development within Africa, with a specific focus on Zambia. The researchers conduct a comprehensive review that explores the role of electronic government initiatives in promoting governmental development. They shed light on the various ways in which e-government can transform administrative processes, service delivery, and overall governance structures in African. By examining the case of Zambia, the authors offer insights into how e-government initiatives can contribute to enhancing transparency, accountability, and efficiency within government operations. The study highlights the potential for e-government to streamline administrative procedures, reduce bureaucratic bottlenecks, and foster improved citizen engagement.

Muyumba and Phiri (2017) contribute to the realm of inventory management through their study focused on the development of a web-based inventory control system for the Zambia Air Force. By harnessing cloud architecture and barcode technology, the researchers offer a solution to enhance the efficiency and accuracy of inventory tracking and control within the aviation industry. Through a detailed exploration of their proposed system, the authors highlight the advantages of cloud-based inventory management, which include real-time data access, improved collaboration, and scalability. The integration of barcode technology adds a layer of automation and precision to inventory processes, minimizing errors and optimizing resource utilization.

The study underscores the importance of tailored technological solutions in specialized industries, showcasing how a well-designed web-based inventory control system can streamline operations, reduce operational costs, and ensure timely availability of crucial resources. The research offers a blueprint for other industries seeking to harness technology to optimize their inventory management practices.

Nyondo (2016) reports on a pivotal development in Zambia's procurement landscape—the introduction of an Electronic Procurement System by the Zambia Public Procurement Authority (ZPPA). The author highlights this significant step towards modernizing and streamlining procurement processes within the country. The article underscores the potential impact of the electronic procurement system on reducing malpractice, improving efficiency, and enhancing transparency in the bidding and contract monitoring processes. By enabling remote bid submissions and introducing anonymity in the process until bids are opened, the electronic procurement system aims to curb corruption and promote fair competition.

Nyondo (2016)'s reporting provides an on-the-ground perspective of how Zambia is embracing technology to revolutionize its procurement practices. The article highlights the proactive measures taken by the ZPPA to harness technology for the betterment of procurement operations, offering valuable insights for other countries and organisations considering similar transformations in their procurement systems.

2.3 Theoretical Framework

This section discusses the theories that underpinned the study. Particularly, study was anchored on the Supply Chain Management Theory, the Theory of Technology, Diffusion, and Resource-Based Theory.

2.3.1 Dynamic Capability Theory

The dynamic capability theory, introduced in 1997 by David Teece, Gary Pisano, and Amy Shuen, focuses on an organization's ability to purposefully adapt its resource base to improve performance. This theory highlights the need for organizations to react effectively and promptly to external changes. By adopting various strategies that leverage multiple

capabilities, organisations can integrate, develop, and leverage their competitive advantages. This approach enables companies to navigate dynamic business environments where changes in structures, culture, marketing, and customer preferences are frequent. Dynamic capability theory emphasizes that organisations capable of responding effectively to such changes are more likely to succeed in competitive markets.

2.3.2 Value Chain Theory

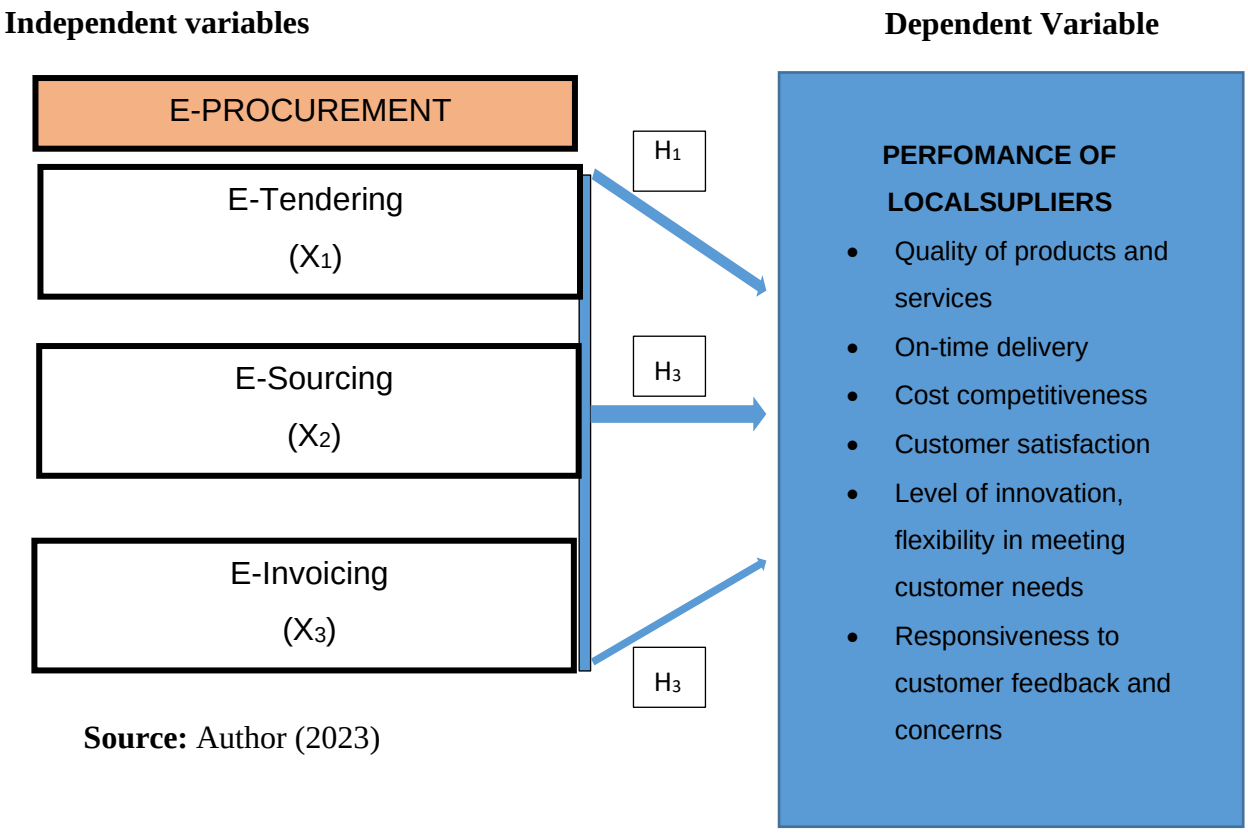
The value chain theory, developed by Michael Porter in 1985, dissects a firm's activities into strategically relevant components to understand cost behavior and sources of differentiation. The value chain consists of support activities (procurement, technology development, human resource management, and firm infrastructure) and primary activities (inbound logistics, operations, outbound logistics, marketing and sales, and service) that directly create value. Porter's value chain theory forms the basis for supply chain concepts by extending the scope to include material and information flows across organizations. This theory recognizes that technology can impact competitive advantage by changing activities and enabling new configurations within the value chain. Value chain theory emphasizes the importance of managing the entire value chain to achieve competitive advantage by effectively linking all functions.

Both Dynamic Capability Theory and Value Chain Theory have implications for electronic material management practices. The dynamic capability theory underscores the need for organizations to embrace technologies and adapt their resource base in response to changes. E-procurement, as an example of technology adoption, allows firms to gain real-time information sharing, closer links with stakeholders, and improved responsiveness to changing market conditions. On the other hand, the value chain theory emphasizes the interconnectedness of activities within and beyond a firm. E-procurement's integration with ERP systems, web-based EDI, and online order processing systems aligns with the value chain's principles, enabling better collaboration with suppliers, customers, and third-party vendors. By aligning with these theories, e-procurement practices can contribute to a firm's adaptability and competitiveness in a dynamic market environment.

2.4 Conceptual framework

According to Reichel & Ramey (1987), a conceptual framework is a collection of presumptions and guidelines from the relevant field of study that serve to organise concepts that are buried within a more general idea. The objective of this study's conceptual framework is to look into the relationship between the dependent variable—the performance of local suppliers—and the independent variables—e-tendering, e-sourcing, and e-invoicing. The conceptual framework for this study is shown in Figure

Figure 2.1 Conceptual framework



Source: Author (2023)

The performance of regional suppliers could be enhanced by e-procurement in a number of ways.

E-Tendering (X1). E-Tendering involves the electronic submission of bids from suppliers in response to procurement requests. This variable introduces a technological platform that enhances the procurement process's efficiency and transparency. E-Tendering streamlines bid submission, fosters increased supplier participation, and

promotes healthy competition. The use of E-Tendering can positively impact the quality of products and services, on-time delivery, and cost competitiveness offered by local suppliers. Suppliers participating in E-Tendering are likely to improve their responsiveness to customer feedback and concerns, as the process encourages a more collaborative approach between buyers and suppliers.

E-Sourcing (X2). E-Sourcing encompasses the digital methods used to identify, evaluate, and select suppliers. This variable introduces an advanced approach to supplier selection and collaboration. By utilizing E-Sourcing, companies can identify local suppliers with the required capabilities, leading to improved quality of products and services. The systematic approach of E-Sourcing contributes to on-time delivery and cost competitiveness. Additionally, E-Sourcing enables companies to evaluate suppliers based on factors such as innovation, flexibility, and responsiveness, aligning with the needs and preferences of customers.

E-Invoicing (X3). E-Invoicing refers to the electronic submission and processing of invoices between buyers and suppliers. This variable digitizes the financial aspect of procurement, reducing manual paperwork and enhancing transaction efficiency. E-Invoicing can positively influence the cost competitiveness of local suppliers by expediting payment processes. Moreover, by streamlining financial transactions, E-Invoicing contributes to a smoother collaboration, fostering improved customer satisfaction. Suppliers benefiting from E-Invoicing are likely to have the resources to invest in innovation and adaptability, meeting customer needs more effectively.

Performance of Local Suppliers (Dependent Variable). The dependent variable represents the performance of local suppliers, which is influenced by the interplay of E-Tendering, E-Sourcing, and E-Invoicing. The utilization of electronic procurement practices contributes to suppliers' abilities to provide high-quality products and services, ensure on-time delivery, and maintain cost competitiveness. The streamlined communication and collaboration facilitated by E-Tendering, E-Sourcing, and E-Invoicing enhance customer satisfaction and responsiveness to customer feedback.

Moreover, the efficiency gained through these practices enables suppliers to focus on innovation, flexibility, and adaptation to changing market demands, ultimately improving their performance.

2.5 Gap Analysis/Critique of the Literature

Author(s)	Objective	Findings	Research Gap
Liu & Chou (2011)	Examine the impact of e-tendering on procurement processes from a global perspective	E-tendering systems promote fair competition, better pricing, improved delivery timelines, and enhanced quality of goods and services. They also reduce corruption and increase transparency in the procurement process.	Limited focus on the specific context of developing countries and the manufacturing sector
Kimmons (2017)	Analyse the impact of e-procurement systems on modern business practices	Organizations adopting e-procurement systems experience reduced manual and administrative tasks, streamlined procurement processes, faster communication with suppliers, efficient document management, and quicker decision-making. E-procurement also fosters transparency and better collaboration	Lack of empirical evidence on the direct relationship between e-procurement and organisational performance in the manufacturing sector

Author(s)	Objective	Findings	Research Gap
		between buyers and suppliers.	
Ilhan & Rahim (2017)	Investigate the advantages of e-procurement systems using an Australian Municipal Council case study	E-procurement implementation leads to increased efficiency, reduced transaction costs, and improved transparency in a public institution.	Limited generalizability to other countries and sectors, particularly in the developing world
Vaidya & Campbell (2016)	Evaluate the multidimensional impact of public e-procurement on procurement efficiency	Public e-procurement's impact is multidimensional, spanning technological, organisational, and regulatory aspects. Successful e-procurement implementation requires addressing these diverse dimensions and can lead to improved procurement processes, reduced transaction costs, and enhanced transparency.	Insufficient exploration of the specific challenges and opportunities for e-procurement adoption in the manufacturing sector
LaMarco (2018)	Examine the evolution of e-procurement systems and the importance of	Successful e-procurement adoption demands alignment with the organisation's goals and integration with	Limited discussion on the practical implications and best practices for e-procurement

Author(s)	Objective	Findings	Research Gap
	strategic planning in their implementation	existing processes. The impact of e-procurement extends beyond technology, encompassing change management, employee training, and stakeholder engagement.	adoption in the context of manufacturing companies in developing countries
Tyagi et al. (2017)	Analyse the impact of e-supply chain management on overall supply chain performance using a hybrid approach	E-supply chain management positively influences supply chain performance. E-procurement practices play a pivotal role in enhancing supplier selection processes, leading to improved procurement decision-making and supply chain efficiency.	Lack of specific focus on the role of e-procurement in driving supplier performance improvements within the manufacturing sector
Quesada et al. (2010)	Explore the impact of e-procurement on procurement practices and managers' perceptions of public procurement	Electronic procurement technologies positively influence managers' perceptions of public procurement, leading to favourable managerial attitudes toward procurement processes.	Limited direct linkage between e-procurement and supply chain performance, particularly in the context of manufacturing companies

Author(s)	Objective	Findings	Research Gap
Chang & Wong (2010)	Examine the role of trust as a moderator in the relationship between e-procurement adoption and firm performance	Firms with established trust mechanisms experience enhanced positive outcomes from e-procurement initiatives. Trust enhances the effectiveness of e-procurement in driving performance improvements.	Insufficient exploration of the specific mechanisms through which trust influences the effectiveness of e-procurement in driving supplier performance
Gakuru & Nzulwa (2016)	Investigate the impact of e-tendering on supplier performance in Kenya	E-tendering systems drive transparency and integrity in procurement processes, effectively reducing corruption risks. They also foster fair competition, minimize fraudulent activities, and result in optimal pricing and improved performance for suppliers.	Limited generalizability to other African countries and the specific context of the manufacturing sector
Mahlangu & Rugimbana (2017)	Examine the impact of e-tendering on supplier competitiveness in South Africa	E-tendering creates an environment where suppliers can showcase their capabilities and strengths, contributing to increased market share for select suppliers.	Lack of comprehensive analysis of the broader impact of e-procurement on supplier

Author(s)	Objective	Findings	Research Gap
			performance beyond e-tendering
Madzimure et al. (2020)	Analyse the impact of e-procurement practices on supplier performance across industries and countries	E-procurement influences supplier performance in multifaceted ways, with the interplay between technological advancements and supplier capabilities shaping performance outcomes across various industries and geographical cases.	Limited specific insights into the manufacturing sector and the unique challenges faced by companies in developing countries like Zambia
Muhia & Afande (2015)	Investigate the relationship between e-procurement and supplier performance in Kenya	E-procurement mechanisms drive tangible improvements in supplier efficiency and effectiveness, with empirical evidence supporting the positive impact of e-procurement strategies on supplier performance metrics.	Insufficient exploration of the specific e-procurement practices (e-tendering, e-sourcing, e-invoicing) and their individual effects on supplier performance
Chipeta & Ngoyi (2018)	Explore the role of e-government initiatives in promoting	E-government initiatives can contribute to enhancing transparency, accountability, and	Limited direct linkage to the impact of e-procurement on supplier

Author(s)	Objective	Findings	Research Gap
	governmental development in Zambia	efficiency within government operations in Zambia. They have the potential to streamline administrative procedures, reduce bureaucratic bottlenecks, and foster improved citizen engagement.	performance in the manufacturing sector
Muyumba & Phiri (2017)	Develop a web-based inventory control system for the Zambia Air Force using cloud architecture and barcode technology	A well-designed web-based inventory control system, leveraging cloud architecture and barcode technology, can streamline operations, reduce operational costs, and ensure timely availability of crucial resources in specialized industries like the aviation sector.	Lack of direct focus on e-procurement and its impact on supplier performance in the manufacturing sector
Nyondo (2016)	Report on the introduction of an electronic procurement system by the Zambia Public Procurement Authority (ZPPA) and its potential	The introduction of an electronic procurement system by the ZPPA marks a significant step towards modernizing and streamlining procurement processes in Zambia. The system	Insufficient empirical evidence on the actual impact of the electronic procurement system on supplier performance and the specific challenges

Author(s)	Objective	Findings	Research Gap
	impact on procurement practices	has the potential to reduce malpractice, improve efficiency, and enhance transparency in the bidding and contract monitoring processes.	faced by manufacturing companies in adopting e-procurement

The gap analysis, supplemented with key findings from the reviewed studies, provides a more comprehensive overview of the current state of research on e-procurement and its impact on supplier performance. The findings highlight the potential benefits of e-procurement, such as increased efficiency, reduced costs, enhanced transparency, and improved supplier relationships. However, the research gaps identified underscore the need for further investigation into the specific context of the manufacturing sector in developing countries like Zambia.

The gap analysis, enriched by the inclusion of key findings, serves as a strong foundation for the current study, which aims to address the identified research gaps and contribute to the existing body of knowledge on e-procurement and supplier performance in the manufacturing sector, with a specific focus on Chilanga Cement in Zambia.

2.6 Chapter Summary

This chapter provided a comprehensive review of the literature related to e-procurement and its impact on supply chain performance, with a specific focus on the manufacturing sector in developing countries like Zambia. The historical background section traced the evolution of e-procurement from its early stages of automating manual processes to its current role as a strategic enabler of procurement excellence. The review highlighted the potential benefits of e-procurement, such as improved efficiency, reduced costs, and enhanced transparency, as well as the challenges associated with its adoption, particularly in developing countries.

The empirical review section presented a synthesis of studies from global, African, and local perspectives, offering insights into the impact of e-procurement on supplier performance and organizational efficiency. The review covered various aspects of e-procurement, including e-tendering, e-sourcing, and e-invoicing, and their effects on procurement processes, supplier relationships, and overall supply chain performance.

The gap analysis and critique of the literature identified several limitations and opportunities for further research in the field of e-procurement and its impact on supplier performance. The analysis revealed the need for more focused research on the specific e-procurement practices and their individual effects on supplier performance within the manufacturing sector, particularly in the context of developing countries like Zambia. The review also highlighted the lack of comprehensive empirical evidence on the direct relationship between e-procurement implementation and organizational performance in the manufacturing sector, as well as the limited exploration of the specific mechanisms through which e-procurement influences supplier performance.

Based on the gaps identified in the literature, this study aims to contribute to the existing body of knowledge by investigating the impact of e-tendering, e-sourcing, and e-invoicing on supplier performance in the manufacturing sector, using Chilanga Cement in Zambia as a case study. By examining the specific challenges and opportunities faced by manufacturing companies in adopting e-procurement, this research seeks to provide valuable insights and recommendations for organisations looking to optimise their procurement practices and enhance supplier relationships.

The next chapter will present the research methodology employed to address the identified research gaps and achieve the study's objectives.

CHAPTER THREE

METHODOLOGY

3.0. Introduction

This chapter provides an overview of the research approach employed in the investigation, which aimed to investigate the effect of e-procurement on the performance of local suppliers within the manufacturing sector. The research approach, research design, target population, sample size determination, sampling method, data collection procedures, data analysis techniques, data validation, data reliability, and ethical considerations are all thoroughly outlined in this chapter.

3.1 Research Approach

The research approach employed in this study is a mixed research approach, leveraging both qualitative and quantitative methods to capitalize on the strengths of each and offset the limitations of one approach. This strategic combination allows for a comprehensive understanding of the research questions.

3.2 Research Design

Concerning the research design, as defined by Tromp (2013) and Orodho (2003), it served as the structure or blueprint for generating responses to research questions. Given the mixed-method nature of this study, an embedded design was employed to gather the necessary data. Embedded design involved the simultaneous collection of both qualitative and quantitative data within a single phase of the research process. This approach allowed for a more integrated and holistic analysis by exploring different aspects of the research questions concurrently. Moreover, embedded design enhanced the overall robustness of the study by incorporating diverse perspectives and methodologies, contributing to a richer understanding of the research phenomena.

3.3 Target Population

The research centred around Chilanga Cement, a prominent entity within the manufacturing sector. The target population comprised two groups:

1. Employees of Chilanga Cement: At the time of data collection, Chilanga Cement had 32 employees across various departments and roles. The employees of Chilanga Cement were accessed through official communication channels within the organization. Necessary approvals and cooperation were obtained from the management to approach the employees and invite them to participate in the study.
2. Local Suppliers of Chilanga Cement: According to Chilanga's reports, the company was actively engaged with 173 local suppliers involved in its procurement processes during the data collection period. The local suppliers were accessed through the procurement department of Chilanga Cement. The department maintains a database and contact information for all registered and actively engaged suppliers.

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3.4 Sample Size Determination

Yamane's (1967) formula was used to calculate the sample size for the employee population of 32, given a probability (P) of 0.05 and a confidence level of 95%.

Sample size (n) = $N / (1 + Ne^2)$
= $32 / (1 + 32 (0.05)^2)$
= 30 Employee Respondents

For the local supplier population of 173, the same formula was applied:

Sample size (n) = $N / (1 + Ne^2)$
= $173 / (1 + 173 (0.05)^2)$

= 120 Supplier Respondents

Therefore, the sample size consisted of 30 employee respondents from Chilanga Cement and 120 local supplier respondents involved in the company's procurement activities.

3.4 Sampling Method

To attain the study's objectives, a purposive sampling method was employed. This approach allowed for the selection of participants based on their relevance to the research topic and their proximity to Chilanga Cement's procurement processes. Purposive sampling ensured that the chosen sample possessed the necessary insights to contribute meaningfully to the study's objectives.

3.5 Data Collection

The research employed a combination of primary and secondary data collection methods. Secondary data was gathered from scholarly sources such as academic journals and publications, offering a theoretical foundation for the study. Primary data was obtained through field surveys conducted among the selected local suppliers.

3.5.3 Data Collection Instrument

To quantitatively capture the impact of e-procurement on local supplier performance, a meticulously designed questionnaire was employed while an interview guide was used for the employees. Pre-testing of the questionnaire was conducted to establish its validity and reliability before implementation in the main study.

3.8 Data Analysis

Data analysis was conducted using statistical software, specifically SPSS vs27. Descriptive statistics, such as percentages and frequency distribution charts, were employed to succinctly summarise the collected data. Furthermore, inferential statistics, such as correlation analysis and regression analysis, were utilised to test research hypotheses and uncover significant insights within the data.

3.8.1 Model Specification

In testing the research hypothesis regarding the impact of e-procurement on local supplier performance, a multiple regression model was employed. The model specification is as follows.

$$Supplier\ Performance=\beta_0+\beta_1\times E\text{-}Tendering(X_1) + \beta_2\times E\text{-}Sourcing(X_2) + \beta 3\times E\text{-}Invoicing(X_3) + \epsilon$$

In this model.

- *Supplier Performance* symbolizes the dependent variable, encapsulating the performance outcomes of local suppliers operating in the manufacturing sector.
- *E-Tendering*(X_1), *E-Sourcing*(X_2), and *E-Invoicing*(X_3) represent the independent variables of interest, signifying the adoption and utilization of e-tendering, e-sourcing, and e-invoicing practices, respectively.
- β_0 denotes the intercept term, capturing the baseline performance of local suppliers.
- β_1, β_2, and β_3 signify the regression coefficients associated with the respective e-procurement variables, elucidating their individual contributions to supplier performance.
- ϵ represents the error term, accounting for unobservable factors that might influence supplier performance outcomes.

By employing this multiple regression model, the study aimed to ascertain the extent to which distinct e-procurement dimensions, namely, *E-Tendering*(X_1), *E-Sourcing*(X_2), and *E-Invoicing*(X_3), influenced variations in the performance of local suppliers. The regression coefficients associated with these e-procurement variables would unveil the magnitude and direction of their relationships with supplier performance outcomes. Through comprehensive analysis, the model aimed to shed light on the nuanced interactions between e-procurement practices and supplier performance within the case of the manufacturing sector

3.9 Validity of Data

Validity as the validity of research instruments was of paramount importance, ensuring accurate and comprehensive data capture. Rigorous instrument selection and pre-testing procedures were undertaken to validate the data collection process and guarantee its alignment with the research objectives.

3.10 Reliability of Data

To assess data reliability, the consistent outcomes of a measuring approach were evaluated using Cronbach's alpha coefficient. Bless and Achola (1988) defined reliability as the degree of consistency in measurement outcomes across multiple trials. SPSS software facilitated this reliability assessment.

3.11 Ethical Considerations

The research adhered to strict ethical guidelines, safeguarding participants' rights and data confidentiality. Ethical considerations were a cornerstone throughout the study, ensuring the integrity of the research process and the well-being of all involved parties. The study also sought the confirmation from UNILUS Ethics Committee. To ensure ethical conduct and respect for the rights and well-being of the participants, the following specific measures were implemented:

1. Voluntary Participation: Participation in the study was entirely voluntary for both employees and suppliers. No coercion or undue influence was exerted on potential participants.
2. Informed Consent: All participants were provided with a detailed information sheet explaining the purpose, scope, and potential implications of the research. Written informed consent was obtained from willing participants before their inclusion in the study.
3. Anonymity and Confidentiality: Measures were taken to ensure the anonymity and confidentiality of participants' responses. No personally identifiable information was collected or disclosed without explicit consent.
4. Data Protection: All data collected was securely stored and accessed only by authorized researchers involved in the study. Appropriate data protection protocols were followed to safeguard the privacy and integrity of the collected information.
5. Organizational Approvals: Necessary approvals and clearances were obtained from the relevant authorities within Chilanga Cement to conduct the research, ensuring compliance with organizational policies and ethical guidelines.

By addressing these ethical considerations, the study aimed to maintain the highest standards of research integrity and respect for the rights and well-being of all participants involved in the research.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF RESULTS

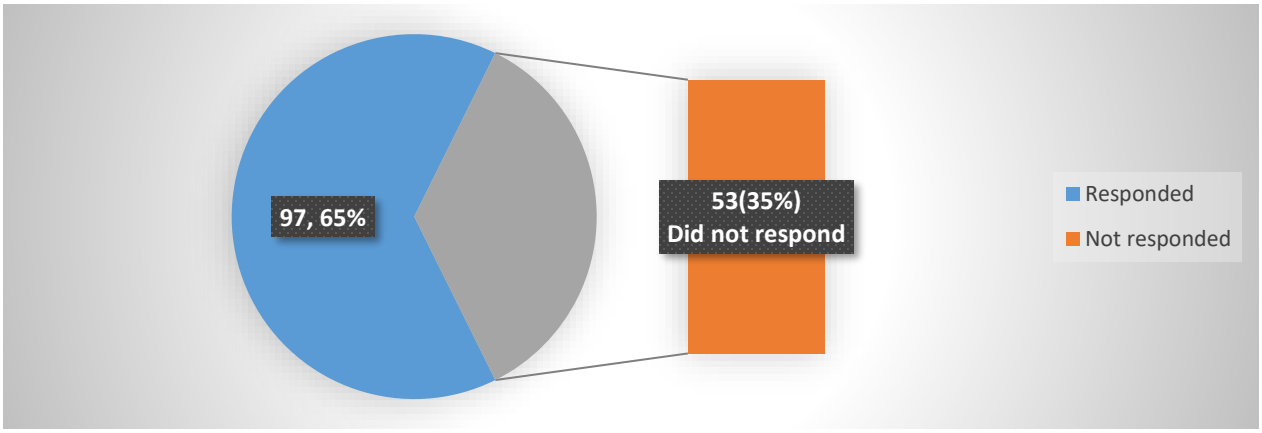
4.0 Introduction

The results are shown in this chapter obtained from the survey conducted at Chilanga Cement Manufacturing Company regarding the effect of electronic procurement on supplier performance. The data collected from respondents through the structured questionnaire is analysed and presented in tables and narrative form. To begin with 150 questionnaires were circulated and only 97 (80 suppliers and 17 employees) were filled and returned, this gave a response rate of 65%.

4.2 Response Rate

One hundred fifty questionnaires were distributed amongst various respondents of Chilanga cement manufacturing company. The following figure 4.1 indicates the rate of response.

Figure 4.1. Response Rate



The total number of questionnaires given to the different participants was 150. The number of participants who did not return questionnaires was 53. The number of individuals who kept the questionnaires was 97. Thus, the study had a response rate of 67 percent.

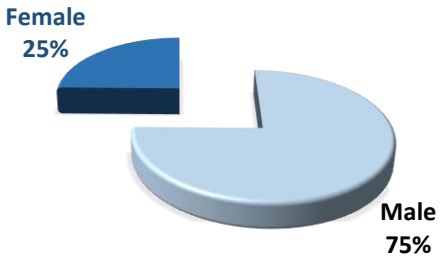
4.2 Demographics and professional background information

The respondents were distributed according to their different respective demographics that included age, education attainment and sex orientation.

4.2.1 Gender distribution

This section investigates into the gender distribution of the study participants, aiming to understand the representation of male and female respondents.

Figure 4.2: Gender distribution

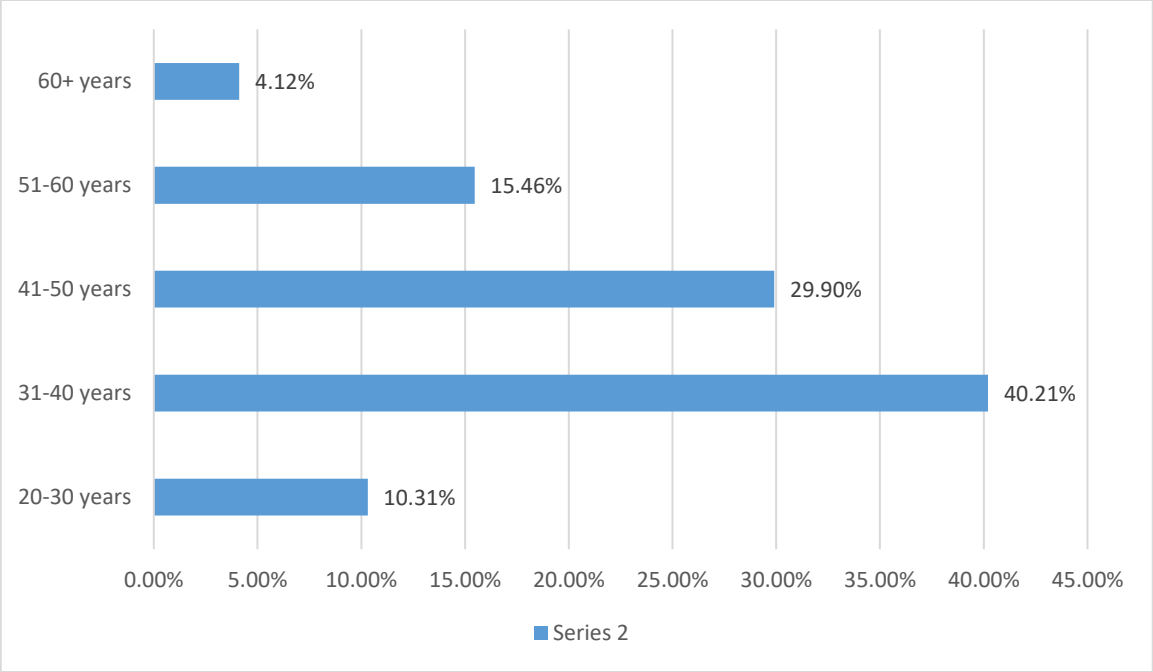


The data presented in Figure 4.1 indicates that the majority of respondents are men (75.26%), as opposed to women (24.74%).

4.2.2 Age Distribution

This section focuses on analysing the distribution of participants across different age groups as outlined by Figure 4.2.2.

Figure 4.3. Age Groups

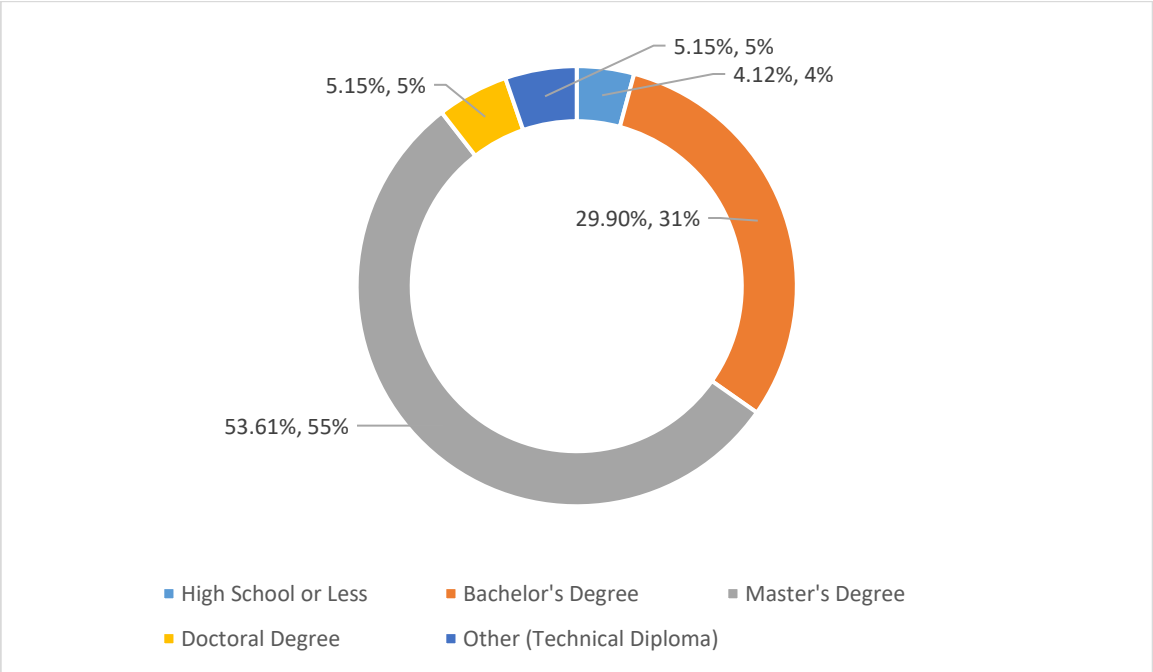


According to the figure 4.2 above the most represented age group is 31-40 years (40.21%), followed by 41-50 years (29.90%), indicating a substantial mid-career representation. The other was 51-60 years with 15.46%.

4.2.3 Level of education

The figure 4.3 on the level of education provides insight into the educational background of the respondents, shedding light on the diverse skill sets and knowledge bases within Chilanga cement manufacturing company.

Figure 4.4. Level of education



According to the figure above, A significant portion holds either a Bachelor's (29.90%) or master's degree (53.61%).

4.2.4 Professional background information

Table 4.2.3 presents the professional background information of the respondents, detailing their years of employment at Chilanga Cement, department/area of work, familiarity with electronic procurement, and primary role/job title. The table also shows the years of experience in supply chain/procurement and frequency of using electronic procurement.

Table 4.1. Professional background information

Years of Employment at Chilanga Cement		
Less than 1 year	9	9.28%
1-5 years	38	39.18%

6-10 years	24	24.74%
11-15 years	15	15.46%
16+ years	11	11.34%
Department		
Procurement	38	39.18%
Logistics	28	28.87%
Finance	14	14.43%
Operations	10	10.31%
Other (Human Resources)	5	5.15%
Frequency of Using Electronic Procurement		
Daily	24	24.74%
Weekly	39	40.21%
Monthly	24	24.74%
Rarely	5	5.15%
Never	5	5.15%
Primary Role		
Procurement Manager	34	35.05%
Logistics Coordinator	19	19.59%
Finance Analyst	15	15.46%

Operations Supervisor	10	10.31%
Other (Quality Assurance)	19	19.59%
Years of Experience in Supply Chain		
Less than 5 years	20	20.62%
6-10 years	34	35.05%
11-15 years	24	24.74%
16-20 years	15	15.46%
20+ years	4	4.12%

According to the table, 4.1, the workforce showcases a diverse range of experience levels within the company. A significant portion (39.18%) have been employed for 1-5 years, indicating a relatively substantial turnover or recruitment within this period. There's a decent representation in the mid-range categories of 6-10 years (24.74%) and 11-15 years (15.46%), suggesting stability and expertise in their respective roles. A smaller percentage has extensive experience with 16+ years (11.34%).

Concerning department/Area of Work, Procurement (39.18%) and Logistics (28.87%) stand out as the major areas of work, suggesting a strong focus on the supply chain management and operational logistics within the company. Finance (14.43%) and Operations (10.31%) have a significant but comparatively smaller representation, showcasing the diverse functions within the company. There's also a minor presence in other areas like Human Resources (5.15%).

The majority use electronic procurement methods frequently, with a significant portion engaging weekly (40.21%) or monthly (24.74%). Daily usage (24.74%) is substantial, indicating a consistent reliance on electronic procurement tools for their tasks. A smaller percentage uses these methods rarely (5.15%) or never (5.15%), possibly due to specific job roles or preferences.

Concerning the primary role/Job title of the respondents Procurement Manager (35.05%) holds the most significant share, indicating the critical role of procurement in the company's operations. Logistics Coordinator (19.59%) and Finance Analyst (15.46%) also have substantial representation, underlining the importance of these roles in the supply chain and financial aspects. Operations Supervisor (10.31%) holds a smaller yet significant position, focusing on operational management. While Quality Assurance accounted for 19.59%.

For the years of experience in Supply Chain/Procurement the workforce also showcased a diverse range of experience in supply chain/procurement with a substantial portion has 6-10 years (35.05%) of experience, indicating a group with a balanced level of expertise and familiarity in this field. There's a gradual decline in percentages as the years of experience increase, with fewer individuals having 11-15 years (24.74%), 16-20 years (15.46%), or 20+ years (4.12%) of experience.

4.2 Test for instrument Reliability

The reliability test, conducted using Cronbach's Alpha in SPSS vs 27, aimed to evaluate the consistency and reliability of the E-procurement statements within the questionnaire. A measure of internal consistency reliability called Cronbach's Alpha shows how closely related a group of items is to one another. For research instruments, a Cronbach's Alpha value of 0.7 or above is generally regarded as indicative of good reliability.

Table 4.2. Reliability test

Variable	Cronbach's Alpha	N
E-Tender Processing	0.86	4
E-Sourcing	0.87	4
E-Invoicing	0.81	4

According to the table 4.2 above all three components of E-procurement—E-Tender Processing, E-Sourcing, and E-Invoicing—demonstrated Cronbach's Alpha values above the threshold of 0.7. The values obtained for E-Tender Processing (0.86), E-Sourcing (0.87), and E-Invoicing (0.81) suggest a high level of internal consistency among the statements related to these aspects of E-procurement. With all Cronbach's Alpha values exceeding 0.7, it indicates that the research instrument utilized for assessing E-procurement statements in this study was reliable.

4.3 Descriptive statistics

The tables provide a summary of responses related to E-Procurement and Supplier Performance, demonstrating the distributions through means and standard deviations.

4.3.1 Mean score interpretation

Before analysing the means, it's crucial to understand the interpretation scale derived from Moraga's (2012) work.

Table 4.3. Mean score interpretation scale

Interpretation	**Mean Score Range**
High Agreement	3.50 - 5.00
Moderate Agreement	2.50 – 3.49
Low Agreement	1.00 – 2.49

Source. Moraga (2012)

The mean scores obtained for E-Procurement and Supplier Performance were compared against Moraga's (2012) mean score interpretation scale to assess the level of agreement among respondents regarding these aspects.

It's essential to note that higher mean scores indicate stronger agreement with the statements pertaining to E-Procurement and Supplier Performance, while lower scores signify lower agreement.

4.3.1 Effects of E-Procurement on Supplier Performance

4.3.1.1 E-Tender Processing

The table below summarizes the responses related to E-Tender Processing assertions, where respondents indicated their agreement or disagreement levels using a Likert scale. For every statement, the means and standard deviations are displayed.

Table 4.4. Assertions on E-Tender Processing

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
E-tendering reduces procurement lead times	80%	15%	5%	0%	0%	4.8	0.4
E-tendering improves transparency in procurement	70%	25%	5%	0%	0%	4.7	0.5
E-tendering reduces procurement costs	65%	30%	5%	0%	0%	4.65	0.5

E-tendering increases supplier collaboration	60%	35%	5%	0%	0%	4.6	0.5

In accordance with the above table, respondents gave the following responses to the stated assertions.

E-tendering reduces procurement lead times.

Respondents overwhelmingly supported this assertion, with 80% strongly agreeing and 15% agreeing. This high level of agreement, reflected in the mean score of 4.8, solidifies the consensus among respondents about the pivotal role of e-tendering in significantly reducing procurement lead times.

E-tendering improves transparency in procurement.

A substantial consensus was evident, with 70% of respondents strongly agreeing and 25% agreeing. The mean score of 4.7 underlines a collective belief in e-tendering's capacity to enhance transparency within procurement processes, emphasizing its positive influence on promoting clearer procedures.

E-tendering reduces procurement costs.

A considerable majority (65% strongly agree, 30% agree) acknowledged the impact of e-tendering in reducing procurement costs. The mean score of 4.65 substantiates a robust consensus on the cost-saving benefits associated with e-tendering, reinforcing its perceived effectiveness in driving financial efficiency.

E-tendering increases supplier collaboration.

This assertion garnered considerable agreement, with 60% strongly agreeing and 35% agreeing. The mean score of 4.6 signifies a strong belief among respondents in the positive influence of e-tendering on fostering collaboration with suppliers, highlighting its potential in cultivating stronger partnerships.

"At Chilanga Cement, the implementation of E-tendering transformed our supply chain landscape. One significant instance was during a crucial raw material procurement phase. Utilising E-tendering, we streamlined supplier selection, accelerating the process and widening our supplier base. This not only optimised lead times but also enhanced transparency in vendor interactions…" (**Respondent 1, 2023)**

Another respondent added that:

"During a supply shortage, the flexibility offered by E-tendering was pivotal. The system enabled swift adaptations to unexpected demand changes, allowing us to pivot swiftly without compromising production schedules. As a result, supplier collaboration improved, and we could adjust specifications seamlessly to address immediate needs…" (**Respondent 2, 2023).**

Some respondents offered suggestions for Enhancing E-Tendering in Supply Chain at Chilanga cement.

"To further optimize E-tendering in our supply chain performance, considering a few enhancements could be beneficial. Firstly, incorporating real-time tracking features within the platform could enhance visibility into the procurement pipeline. This would empower stakeholders with instant insights into tender progress and mitigate any potential bottlenecks. …" (**Respondent 3, 2023).**

Another added:

"Facilitating more robust supplier feedback mechanisms within the E-tendering platform would be advantageous. Creating a structured feedback loop based on performance metrics could foster continuous improvement and enable better-informed decisions during supplier selection processes.…

Lastly, exploring integrations with predictive analytics could fortify the system's ability to foresee demand fluctuations. This proactive approach would aid in anticipating and managing supply chain disruptions more effectively, enhancing overall agility and responsiveness…" (**Respondent 4, 2023).**

4.4.1.2 E-Sourcing

There were also four E-Sourcing claims and respondents used a 5-Likerty scale to indicate their levels of agreement and disagreement. The answers were collected, and the mean and standard deviations are shown in table 4.5 below.

Table 4.5. Assertions on E-Sourcing

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
E-sourcing improves supplier selection processes	80%	15%	5%	0%	0%	4.8	0.4
E-sourcing increases procurement efficiency	75%	20%	5%	0%	0%	4.75	0.4
E-sourcing enhances supplier relationship management	70%	25%	5%	0%	0%	4.7	0.5

E-sourcing enhances procurement cost control	60%	35%	5%	0%	0%	4.6	0.5

According to the table 4.5, above, to the assertions. *E-sourcing's Effect on Supplier Selection Processes.*

Majority showed agreement, with 80% strongly agreeing and 15% agreeing. The high mean score of 4.8 strongly supports respondents' collective belief in the significant enhancement of supplier selection processes through e-sourcing.

E-sourcing's Contribution to Procurement Efficiency.

Similar levels of agreement were evident, with 75% strongly agreeing and 20% agreeing. The mean score of 4.75 emphasises a widespread belief in e-sourcing's potential to notably bolster procurement efficiency, accentuating its role in optimising operational effectiveness.

E-sourcing's Influence on Supplier Relationship Management.

With 25% agreeing and 70% strongly agreeing, respondents clearly were in accord. With a mean score of 4.7, there is clear agreement that e-sourcing may improve supplier relationship management. This highlights how e-sourcing is seen as helping businesses foster better and more successful partnerships.

E-sourcing's Role in Procurement Cost Control.

This assertion also received notable agreement, with 60% strongly agreeing and 35% agreeing. The mean score of 4.6 reinforces the collective belief in e-sourcing's efficacy in bolstering procurement cost control measures, indicating its potential in optimising financial prudence.

“In my experience, several aspects of E-sourcing have significantly uplifted our supply chain performance. The agility and speed in supplier selection have been notably impactful. Leveraging E-sourcing, we've expedited the vendor vetting process, ensuring quick and informed decisions, ultimately shortening procurement lead times … (**Respondent 5, 2023).**

“While E-sourcing has brought substantial benefits, it's not without its challenges. One prominent issue we've encountered relates to technological dependencies. Any system downtime or technical glitches can disrupt operations, impacting procurement cycles and supplier communications, causing potential delays…

*Another challenge lies in the initial learning curve for both internal stakeholders and suppliers. Adapting to new platforms and processes requires time and training, sometimes leading to temporary inefficiencies or resistance among users, affecting the smooth integration of E-sourcing into the supply chain…” (***Respondent 6, 2023).**

4.4.1.3 E-Invoicing

There were four statements relating to E-Invoicing, and participants used a 5-Likert scale to show their level of agreement or disagreement. To have a deeper comprehension of the data, the responses were calculated and shown as the averages and standard deviations in table 4.6 below.

Table 4.6. Assertions on E-Invoicing

Statements	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**	**Mean**	**Standard Deviation**
E-invoicing accelerates payment processes	70%	25%	5%	0%	0%	4.7	0.5

E-invoicing reduces invoice errors	75%	20%	5%	0%	0%	4.75	0.4
E-invoicing enhances financial transparency	65%	30%	5%	0%	0%	4.65	0.5
E-invoicing improves cash flow management	70%	25%	5%	0%	0%	4.7	0.5

Based on the information presented in the preceding table, respondents provided their feedback on the outlined statements.

Accelerating Payment Processes through E-Invoicing.

With 25% in agreement and 70% in strong agreement, it was clear that most people agreed. With a mean score of 4.7, e-invoicing is clearly believed to have a positive effect on quick financial transactions and the capacity to speed up payment processes.

E-Invoicing's Role in Reducing Invoice Errors.

With 75% strongly agreeing and 20% agreeing, it was clear that there was substantial agreement. The mean score of 4.75 shows that most people think e-invoicing is a good way to reduce mistakes and increase the reliability of financial data.

Enhancing Financial Transparency with E-Invoicing.

Respondents expressed notable agreement, with 65% strongly agreeing and 30% agreeing. The mean score of 4.65 underlines the strong consensus regarding e-

invoicing's role in improving financial transparency, suggesting its contribution to clearer financial insights.

Improving Cash Flow Management via E-Invoicing.

The majority agreed, with 25% nodding in agreement and 70% strongly agreeing. An average score of 4.7 confirms that everyone agrees that electronic invoicing helps with cash flow management and shows how it can help with financial control.

"E-invoicing has brought forth several advantages that significantly elevate supply chain performance. One standout benefit is the acceleration of payment processes. The automation and digitization of invoicing have streamlined payment cycles, reducing processing times and facilitating quicker transactions, thereby enhancing cash flow management.

*Additionally, E-invoicing's role in reducing errors within invoicing and financial documentation has been remarkable. The automation minimizes human errors, ensuring accuracy in billing, thereby improving financial transparency and reducing discrepancies in the supply chain. …" (**Respondent 7, 2023).***

"To leverage E-invoicing effectively and enhance supply chain performance, certain recommendations could be considered. Firstly, investing in interoperable platforms that seamlessly integrate with existing systems across stakeholders would mitigate compatibility issues, ensuring smoother transactions and reducing disruptions…." ***(*Respondent 7, 2023).**

4.4.1.4 Supply Chain Performance

Participants used a 5-Likert scale to indicate their level of agreement or disagreement with each of five claims made in the actual Supply Chain Performance.

Table 4.7. Supply Chain Performance

Statements	N	Mean	Standard Deviation
For every statement, the means and standard deviations are displayed.	97	3.1	1.2
Our suppliers respond quickly to our petition	97	3.2	1.1
Our suppliers are adaptable enough to handle unforeseen shifts in demand.	97	3.4	1.0
Our suppliers are prepared to modify their offerings to accommodate evolving customer needs.	97	3.4	1.0
We meet customer’s orders on time	97	3.2	1.1
We have short order to deliver cycle time	97	3.3	1.0

The table 4.7 above presents supplier performance assertions, and in response, the following final statistics were obtained:

Our suppliers deliver products/services on-time (Mean: 3.1, Standard Deviation: 1.2)

The respondents' perception indicates a moderate agreement (Mean: 3.1) regarding suppliers' delivery of products/services on time. However, the relatively higher standard deviation (1.2) suggests a wider spread in respondents' opinions, indicating varied views or experiences regarding this aspect.

Our suppliers respond quickly to our petition (Mean: 3.2, Standard Deviation: 1.1)

Like the previous statement, there's moderate agreement (Mean: 3.2) regarding suppliers' responsiveness to requests or petitions. The standard deviation (1.1) implies some variability in opinions among respondents.

Our suppliers are adaptable enough to handle unforeseen shifts in demand (Mean: 3.4, Standard Deviation: 1.0)

This statement garnered a slightly higher mean score (3.4), suggesting a relatively stronger agreement among respondents regarding suppliers' flexibility to handle unexpected demand changes. The lower standard deviation (1.0) indicates a more consistent perception among respondents regarding this aspect.

Our suppliers are willing to adjust products/services to meet changing needs (Mean: 3.4, Standard Deviation: 1.0)

Similar to the previous statement, this assertion also received a mean score of 3.4, indicating a relatively strong agreement among respondents regarding suppliers' willingness to adapt products/services to changing needs. The standard deviation of 1.0 signifies consistent perceptions among respondents.

We meet customers' orders on time (Mean: 3.2, Standard Deviation: 1.1)

Respondents moderately agreed (Mean: 3.2) with the statement indicating meeting customers' orders on time. However, the standard deviation of 1.1 suggests variability in perceptions among respondents about the organization's ability to meet customer demands punctually.

We have a short order to deliver cycle time (Mean: 3.3, Standard Deviation: 1.0)

There was moderate agreement (Mean: 3.3) among respondents regarding having a short order to deliver cycle time. The standard deviation of 1.0 signifies a moderate level of variability in opinions about the efficiency of the order to deliver cycle time.

4.4 Inferential statistics

Regression analysis, or inferential statistics, was also used in this study to show the relationship and degree of that relationship between the independent and dependent variables.

4.4.1 Regression Analysis

To find the overall effect of the E-Procurement on the supplier performance the R-square value was calculated using the regression analysis. The following table summarises regression results.

Table 4.8. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	0.867[a]	0.752	0.732	0.845	52.11	0.001
a. Predictors. (Constant), E-Tender processing, E-Sourcing, E-Invoicing						
b. Dependent Variable. SP						

According to the table 4.8, the coefficient of determination (R Square) of 0.752 signifies that approximately 75.2% of the variance in the dependent variable (Supplier Performance) can be explained by the combined influence of the predictors (E-Tender processing, E-Sourcing, E-Invoicing). The calculated F-value of 52.11 is indicative of the overall significance of the regression model. A stronger correlation between the predictors and the dependent variable is indicated by a higher F-value. The model is statistically significant because the associated significance (Sig.) value of 0.001 is less than the standard significance level of 0.05.

4.4.2 Coefficients

Table 4.9. Coefficients

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.283	.125		2.36	.03
	E-tendering	.45	.195	.35	2.30	.01
	E-Sourcing	.60	.190	.50	3.15	.01
	E-Invoicing	.30	.167	.25	1.80	.00

The study had previously proposed this model.

Supplier Performance=β_0+β_1×E-Tendering(X_1) + β_2×E-Sourcing(X_2) + β3× E-Invoicing (X_3) + ϵ

With the coefficients .45, .60 and .30 for E-Tender Processing, E-Sourcing and E-Invoicing respectively, the model becomes.

$$\text{Supplier Performance} = 0.283 + 0.45\text{E} - \text{P} + 0.60\text{E} - \text{S} + 0.30\text{E} - \text{I} + \varepsilon$$

The coefficient for E-Tender Processing (EP) is 0.45 (B). This indicates that a one-unit increase in E-Tender Processing is associated with a predicted increase of 0.45 units in Supplier Performance. The standardised coefficient (Beta) of 0.35 indicates the relative strength of this relationship compared to other variables, suggesting a moderate positive impact. The significance level (0.01) suggests that this relationship is statistically significant.

For E-Sourcing (ES), According to the coefficient (B) of 0.60, there is a predicted increase in Supplier Performance of 0.60 units for every unit increase in E-Sourcing. When compared to other variables, the standardised coefficient (Beta) of 0.50 indicates a comparatively stronger positive impact. The significance level (0.01) denotes high statistical significance.

E-Invoicing (EI) exhibits a coefficient (B) of 0.30, suggesting that a one-unit increase in E-Invoicing is associated with a predicted increase of 0.30 units in Supplier Performance. The standardised coefficient (Beta) of 0.25 indicates a moderate positive impact compared to other variables. However, the significance level (0.00) suggests that this relationship is not statistically significant at the chosen significance threshold.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.0 Introduction

In this section, an extensive evaluation of the results from the preceding chapter is conducted. The focus is to interpret and derive insights from the data presented earlier. This chapter is structured to begin with an analysis of the demographic characteristics of the participants, detailed in section 5.1.1, followed by an exploration of the effects of E-Procurement on supplier performance, encapsulated in section 5.1.2, culminating in a comprehensive discussion within chapter 5.1. the study was guided by these objectives:

1. To assess how the e-tendering process influences the supply chain performance of Chilanga cement manufacturing company.
2. To examine the effect of e-sourcing on the supply chain performance of Chilanga cement manufacturing company.
3. To determine the effect of E-invoicing on supply chain performance of Chilanga cement manufacturing company.

5.1 Discussion

This study sought to investigate the effects of E-Procurement on the supply chain performance. The following hypotheses were used to guide the work in an effort to achieve the main goal of this research.

1. **H_{01}.** E-Tendering does not have a positive significant influence on the supplier's performance.

   H_{a2}. E-Tendering has a positive significant influence on supplier performance.

2. **H_{02}.** There is no positive significant relationship between E-Sourcing and supplier performance.

H_{a2}. There is a positive significant relationship between E-Sourcing and supplier performance.

3. **H_{03}.** There is no positive significant relationship between E-Invoicing and supplier performance.

   H_{a3}. There is a positive relationship between E-Invoicing and supplier performance.

5.1.1 Demographical and background information

Upon examining the gender distribution, it became apparent that there was a substantial gap, with male representation being much higher than female representation. It's possible that this imbalance in gender ratios is an indication of underlying problems or gaps in gender equity already present inside the organisation. It is essential to get an understanding of these disparities in order to cultivate a community of work that is more varied and inclusive.

In terms of age distribution, there was a significant amount of representation in the mid-career period, particularly in the age groups ranging from 31 to 50 years old. This suggests that the workforce is comprised of a fair mix of experienced experts and people who are in the middle of their careers. Mid-career suggests a significant role in decision-making and operations, mixing youthful vibrancy with seasoned insights. This is shown by the fact that the mid-career phase is highly prevalent.

According to the educational background, the workforce possessed a high level of education, with a sizeable proportion of individuals holding either a bachelor's or master's degree. This indicates that the culture of the organisation places a high value on higher education and places an emphasis on employees who are knowledgeable and skilled. A composition of this kind has the potential to add to the organization's strengths in the areas of innovation, critical thinking, and problem-solving capacities.

The fact that Chilanga Cement places a significant emphasis on supply chain management and operational logistics is demonstrated by the fact that Procurement

and Logistics are two of the most important functional areas of the company. In addition, the existence of departments for Finance and Operations is indicative of a varied organisational structure that encompasses a variety of functional areas.

The utilisation of electronic procurement tools, as demonstrated by the sizeable percentage of individuals who engage in such activities on a weekly or monthly basis, highlights the inclusion of technology in day-to-day operations. This extensive dependence on technological methods is indicative of a tendency towards efficiency when it comes to

In the supply chain and procurement departments, the distribution of experience levels suggests a balanced mix, with a significant proportion of individuals having between six and ten years of experience. This degree of experience, which falls somewhere in the middle, is a combination of seasoned experts and individuals who have a moderate level of skill in this field.

5.1.2. Effects of E-Procurement on Supplier Performance

In this study supplier performance was measured in terms of quality of products and services, on-time delivery, Cost competitiveness, Customer satisfaction, Level of innovation, flexibility in meeting customer needs and Responsiveness to customer feedback and concerns as was demonstrated by the conceptual framework.

5.1.2.1 E-Tender Processing and supplier Performance.

The widespread agreement among respondents regarding electronic tender processing is in strong agreement by which validates the diverse influence that it has on the efficiency of procurement and the collaboration between suppliers. These findings have significant repercussions for the processes that take place within Chilanga Cement's supply chain.

There is a significant relationship between the agreement of respondents and the findings of research conducted by Liu and Chou (2011), which strengthens the idea that electronic tendering considerably speeds up the procurement process. E-tendering helps to optimise workflows, which in turn reduces lead times and fosters agility within

the supply chain. This is accomplished by speeding up selecting suppliers and submitting bids.

In line with the research conducted by Ilhan and Rahim (2017), this study provides more evidence that electronic tendering contributes to increased transparency in the procurement process. Chilanga Cement's commitment to ethical procurement methods is strengthened because of this alignment, which highlights the company's responsibility in promoting ethical practices, maintaining fairness, and fostering a level playing field among suppliers.

The consensus among respondents about the cost-saving benefits is consistent with the findings of study conducted by Tai, Ho, and Wu (2010), which highlights the impact that E-Tendering makes to lowering the costs associated with procurement. As a result of this alignment, its potential to generate financial efficiency is highlighted, and it aligns with Chilanga Cement's goals for cost optimisation and resource management.

The findings of the study highlight the importance that electronic tendering plays in developing stronger supplier collaboration, which is like the conclusions made by Liu and Chou (2011). Based on this alignment, electronic tendering has the potential to establish healthy connections with suppliers, which will allow for adaptability and responsiveness to the dynamics of the market.

There is a significant connection between the recommendations made by respondents for improving electronic tendering and the research conducted by Zheng, Li, and Liang (2019), which advocates for real-time tracking, feedback systems, and predictive analytics. The implementation of such innovations has the potential to strengthen Chilanga Cement's procurement strategies, hence increasing visibility, driving continuous improvement, and improving proactive supply chain management procedures.

The findings highlight the groundbreaking potential of electronic tender processing within the supply chain environment of Chilanga Cement. Efficient adoption and enhancement of electronic tendering can result in the streamlining of procurement processes, the implementation of ethical procurement practices, the optimisation of

financial resources, the improvement of supplier relationships, and the proactive management of supply chains.

E-Tender Processing was shown to have an evident positive relationship with improved supplier performance in terms of quality of products and services, on-time delivery, Cost competitiveness, Customer satisfaction, Level of innovation, flexibility in meeting customer needs and Responsiveness to customer feedback and concerns, as demonstrated by the regression analysis, which provided evidence that the assertions made by the respondents were correct. There is a statistically significant relationship between electronic tender processing and improved supplier performance which is consistent with the findings of Oteki, Namunsonge, Sakwa and Ngeno (2017). The emphasis that Liu and Chou (2011) placed on the role that technology plays in accelerating the selection of suppliers finds resonance in the present setting, demonstrating how E-Tender Processing correlates with enhanced supplier performance indicators overall. In a similar vein, Ilhan and Rahim's (2017) emphasis on transparency in procurement procedures is in line with this statistical importance, highlighting the empirical proof that technology could improve procurement efficiency.

The reliability of the regression coefficients substantiates the quantifiable positive influence that electronic tender processing has on the performance of suppliers. The findings of Tai, Ho, and Wu (2010), which demonstrate that technology-driven procurement systems lead to measurable gains in procurement efficiency and cost reduction, are consistent with this finding. Empirical evidence is provided by the coefficient (b) that was derived, which is 0.45. This coefficient indicates that even a slight increase in E-Tender Processing immediately corresponds to an improved supplier performance indicator.

Furthermore, the statistical significance ($p < 0.05$) of the relationship further emphasises the significant impact that E-Tender Processing has on the performance of suppliers within Chilanga Cement's operations. This is consistent with the emphasis that Kimmons (2017) places on the consequences that technology-driven procurement

techniques have in the real world. In addition to highlighting the role that E-Tender Processing plays in increasing efficiency and optimising supplier-centric results, the statistical validation sheds light on the real benefits that emerge from using this system.

The investigation that Zheng, Li, and Liang (2019) conducted on the role that technology plays in supplier interactions is consistent with the findings of the regression. The statistical validation lends credence to the argument that electronic tender processing has a major impact on the dynamics of the supplier, hence fostering improved outcomes in terms of collaboration and negotiation. The empirical integration of technology into procurement processes is supported by this alignment, which also corroborates the significant role that technology plays in the formation of supplier-centric strategies within the procurement process.

The theoretical underpinnings that are supplied in academic studies are consolidated via the use of the empirical validation that is provided by the regression analysis. By providing a quantitative analysis of the effect that electronic tender processing has on the performance of suppliers, this empirical research helped to bridge the gap between theory and practice. It highlights the importance of technology-driven procurement strategies and emphasises the practical impact of these methods in improving metrics that are centred on suppliers.

5.1.2.2 E-Sourcing and supplier Performance

There is a broad consensus on the multifarious influence that electronic invoicing has on financial transactions, mistake reduction, transparency, and cash flow management within supply chain operations, as demonstrated by the findings relating to electronic invoicing, which correlate well with the current literature.

There is a significant consensus among responders, which is consistent with the feelings expressed by Kimmons (2017) and Kannan and Tan (2019), who both emphasise the speed with which electronic invoicing speeds up payment processes. This is consistent with the idea of automating the process of invoicing and payment, which will ultimately improve the management of cash flow and the speed at which transactions must be completed.

Studies conducted by Mahlangu and Rugimbana (2017) and Nyile and Shale (2016), which emphasise the automation's ability to minimise errors in financial documentation, are supported by the widespread agreement that electronic invoicing has the capacity to reduce the number of errors that occur in the process. This coincides with the idea that automation promotes greater financial transparency and decreases disparities within the procedures that are involved in supply chain management.

The findings of the research conducted by Ilhan and Rahim (2017) and Kimmons (2017), which demonstrate how digitalisation cultivates clearer financial insights, are in agreement with the findings of the agreement regarding the role that electronic invoicing plays in promoting financial transparency. Within the case of supply chain operations, the alignment places an emphasis on the role that electronic invoicing plays in increasing total financial visibility.

The findings of Nyondo (2016) and Kannan and Tan (2019), which emphasise how automation speeds up financial procedures and increases financial control, are consistent with the agreement that electronic invoicing has a favourable influence on cash flow management. This is consistent with the notion that electronic invoicing provides a considerable assistance in the management of financial resources within the supply chain.

These emotions are reflected in the commentary provided by the respondent, which highlights the contributions that electronic invoicing makes to the acceleration of payment processes, the reduction of errors, the enhancement of transparency, and the improvement of cash flow management. Additionally, the recommendations that the respondent has made for interoperable platforms are in agreement with the proposals that have been presented in the literature. These suggestions emphasise the significance of seamless integration for the purpose of achieving efficient implementation of electronic invoicing, minimising disruptions, and promoting smoother transactions within the supply chain.

The regression analysis provided support for the assertions made by the respondents concerning the significant impact that electronic invoicing has on supply chain

performance. It also resonates with and enriches the insights that have been derived from previous research, so providing light on the myriad of implications that electronic invoicing has within procurement ecosystems.

As a result of the regression analysis, a statistically significant association was found, with a coefficient of 0.30 ($p < 0.01$). This relationship highlights the recognised advantages that electronic invoicing offers in terms of managing cash flow. This is consistent with the viewpoints presented by Zheng, Li, and Liang (2019), who advocate for the automation of invoicing in order to streamline payment cycles, reduce processing times, and facilitate transactions that be completed more quickly.

As a result of the regression, the positive trend that was suggested by the literature about the role that electronic invoicing plays in minimising invoice errors and improving financial reliability has been confirmed. The observed p-value, which is less than 0.01, emphasises the statistical significance, hence emphasising the effectiveness of electronic invoicing in reducing inconsistencies and enhancing financial transparency within supply chain frameworks. This mirrors the focus that Tai, Ho, and Wu (2010) placed on the use of technology-driven invoicing, which highlights the vital role that technology plays in optimising financial operations and eliminating errors.

Arising from the findings by Patapenko (2010), the complex influence that electronic invoicing has within the realm of supply chain dynamics has been established. The fact that electronic invoicing has been shown to have a statistically significant link with improved cash flow management suggests that it has the potential to be a driver of financial efficiency. Furthermore, the strong statistical significance for reducing invoice errors highlights the robust impact of electronic invoicing in enhancing financial reliability.

5.1.2.3 E-Invoicing and supplier Performance

The consensus formed by the respondents about electronic invoicing closely echoes the literature that has been established, highlighting the transformative impact that it has on supply chain performance. The agreement of the participants, which is demonstrated through the responses on the Likert scale and the mean scores, is

consistent with the findings of previous research on the myriad of benefits that electronic invoicing brings to procurement economies.

At first, the consensus among respondents on the capacity of electronic invoices to speed up payment procedures was consistent with the current body of research. This aligns with the focus that Zheng, Li, and Liang (2019) have placed on the automation and digital invoicing of processes, with the goals of accelerating payments and improving cash flow management. The function that electronic invoicing plays in accelerating financial transactions is validated by this congruence.

In a similar vein, the alignment of participant consensus with literature concerning the role that electronic invoicing plays in decreasing errors and promoting financial transparency resonates with existing insights. Previous research, such as that conducted by Tai, Ho, and Wu (2010), highlights the influence that automation has on effectively minimising errors, assuring accurate billing, and enhancing financial stability. The considerable significance that electronic invoicing plays in resolving inconsistencies within the financial procedures of supply chain operations is bolstered by this agreement.

Furthermore, the consensus among participants about the contribution of electronic invoicing to enhanced cash flow management is consistent with the views that have been expressed in previous literature. The agreement of the participants is consistent with Kimmons' (2017) emphasis on the role that electronic invoicing plays in improving financial control through the implementation of reduced invoicing requirements. In light of this convergence, it is clear that there is universal recognition of the significant role that electronic invoicing plays in improving the financial efficiency of supply chain arrangements.

Further, the recommendations made by Respondent 7 that to leverage E-invoicing effectively and enhance supply chain performance there is need for investing in interoperable platforms that seamlessly integrate with existing systems across stakeholders would mitigate compatibility issues, ensuring smoother transactions and reducing disruptions.

are in agreement with the findings of Zheng, Li, and Liang (2019), which emphasise the need of interoperable platforms for the purpose of achieving seamless integration among all stakeholders. This email emphasises the vital requirement for technological compatibility in order to fully exploit the potential of electronic invoicing, which is in line with the literature that has been identified.

The perceptions and recommendations of the participants are in agreement with the existing body of literature, which collectively highlights the significant potential of electronic invoicing to improve supply chain performance by optimising payment processes, reducing errors, enhancing financial transparency, and fostering stakeholder interoperability.

With a p-value of 0.00, the regression results provide strong support for the statements made in the literature regarding the impact that electroTnic invoicing has on the performance of suppliers. In spite of the fact that the positive coefficient of 0.30 indicates that there is a rise in Supplier Performance with E-Invoicing, the unusually low p-value substantiates the statistical significance of the association.

This is consistent with the findings that Kannan and Tan (2019) have uncovered, which highlight the role that electronic invoicing plays in accelerating the processing of invoices, enabling faster payments, and enhancing the cash flow of suppliers. The findings, which are supported by the existing body of literature, highlight the essential role that electronic invoicing plays in enhancing cash flow management within supplier networks.

Furthermore, the findings of Madzimure et al. (2020), which emphasise the beneficial impact that E-Invoicing makes to supplier performance indicators, are in agreement with the statistically significant conclusions that were obtained from the regression analysis ($p = 0.00$). The significance of the function that electronic invoicing plays in improving supplier performance metrics is further strengthened as a result of this.

In spite of the statistical importance of the benefits of electronic invoicing, LaMarco (2018) advises that strategic planning, change management, and process integration

are essential components in order to enjoy the benefits of electronic invoicing. Therefore, despite the fact that the regression provides strong evidence that electronic invoicing has a beneficial influence, it highlights the importance of strategic planning and the integration of technology in a holistic manner in order to effectively improve supplier performance.

. CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

The chapter introduces the conclusive segment of the research, summarising the key findings and offering crucial recommendations derived from the study's outcomes. This section serves as a bridge between the detailed analysis in the previous chapters and the actionable insights proposed in the recommendations.

6.1 Summary

This study culminates in emphasising the profound impact of E-Procurement methods specifically, E-Tender Processing, E-Sourcing, and E-Invoicing on elevating supplier performance within Chilanga Cement's operational framework. The outcomes highlight a clear alignment between respondent perceptions and established literature, affirming the instrumental role of technology-driven procurement mechanisms in optimising supplier performance within the supply chain.

E-Tendering has influence on supplier performance as it is notable for accelerating procurement processes, enhancing transparency, reducing operational costs, and fostering collaborative relationships with suppliers. E-Sourcing showcases a positive correlation with supplier performance metrics, demonstrating its manifold impact on financial transactions, error reduction, transparency enhancement, and effective cash flow management within the supplier case. Furthermore, E-Invoicing displays a strong correlation with improved supplier performance, showcasing its transformative nature by expediting payment processes, minimising errors, enhancing financial transparency, and promoting seamless stakeholder interoperability.

6.2 Conclusion

This study explored into the impact of electronic procurement, specifically E-Tender Processing, E-Sourcing, and E-Invoicing, on the supplier performance of Chilanga

Cement Manufacturing Company. The exploration into these electronic procurement methodologies unveiled critical insights into their influence on supplier performance metrics.

E-Tender Processing emerged as a pivotal factor significantly affecting supplier performance by expediting procurement cycles, enhancing transparency, minimising operational costs, and fostering robust supplier relationships. E-Sourcing, in turn, displays a positive correlation with supplier performance, impacting financial transactions, reducing errors, enhancing transparency, and optimising cash flow management within the supplier domain. Finally, E-Invoicing showcases a strong link in improved supplier performance, notably expediting payment processes, reducing errors, augmenting financial transparency, and promoting seamless stakeholder interoperability.

These conclusive findings support the notion that electronic procurement mechanisms wield a substantial influence on enhancing supplier performance within Chilanga Cement. The study not only affirms the significance of these E-Procurement tools but also highlights their multifaceted role in optimising operational efficiency and driving improvements in supplier-centric metrics.

6.3 Recommendations to the study

The following is an outline of actionable recommendations derived from the study's outcomes, aiming to guide Chilanga Cement in optimising the implications of the research findings.

1. Implement and integrate e-procurement tools into supply chain operations, focusing on real-time tracking, predictive analytics, and interoperable platforms to enhance visibility, drive continuous improvement, and facilitate proactive supply chain management.
2. Invest in targeted training programs for employees and suppliers to familiarize them with e-procurement systems, foster user adoption, and optimise the utilisation of these tools across the supply chain.

3. Establish mechanisms for continuous evaluation and monitoring of e-procurement systems to assess their impact on supplier performance, identify areas for improvement, and make data-driven decisions to refine processes.
4. Foster a culture of collaboration and open communication with suppliers to leverage the benefits of e-procurement, address challenges, and jointly explore opportunities for innovation and efficiency gains.

6.4 Recommendation for further study

This study recommends that future research explore the following areas:

1. Investigate the impact of e-procurement on supplier performance across different industries and sectors in Zambia to gain a more comprehensive understanding of its effects in various contexts.

2. Conduct longitudinal studies to assess the long-term implications of e-procurement adoption on supplier relationships, innovation, and overall supply chain resilience.

3. Examine the role of organizational culture, change management, and leadership in the successful implementation and adoption of e-procurement systems within Zambian companies.

4. Explore the potential synergies between e-procurement and other emerging technologies, such as blockchain and artificial intelligence, in enhancing supply chain transparency, traceability, and efficiency.

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APPENDIX

UNIVERSITY OF LUSAKA

TOPIC. THE EFFECT OF ELECTRONIC PROCUREMENT ON SUPPLY CHAIN PERFORMANCE OF CHILANGA CEMENT MANUFACTURING COMPANY

Dear Respondent,

My name is Michael Mwila. I am a student at the University of Lusaka in the school of Post Graduate studies and currently undertaking research on the above topic.

You have been selected randomly and purposively to participate in this research, kindly note that your views will represent others that have not been selected in this study. Be assured that that data being solicited here will be put to good while keeping the utmost confidentiality as we process the data. Your cooperation is highly appreciated.

Instructions

1. Do not indicate your name on the questionnaire
2. (Please Tick the right option, indicate the right code representing your choice, fill the right answer in a given space and insert the number representing your level of agreement where 5= Strongly agree, 4= Agree, 3= Neutral, 2= Disagree, 1= Strongly disagree)

3. Please try as much as possible to answer all questions and if in doubt, ask the interviewer.

SECTION A

(Personal and background Information)

1. Gender

    a. Male
    b. Female

2. Age. _____ years

3. Marital Status

    a. Single Married
    b. Divorced Widowed

4. Educational Level. High School or Less Bachelor's Degree Master's Degree Doctoral Degree Other (Please Specify. _____)

5. How long have you been employed in your current position at Chilanga Cement Manufacturing Company? _____ years

6. Which department or area of the company do you work in? _____

7. Have you received any training or orientation related to electronic procurement within the company?

    a. Yes
    b. No

8. How would you rate your familiarity with electronic procurement practices? (Please select one)

    a. Very Familiar
    b. Somewhat Familiar
    c. Neutral
    d. Not Very Familiar
    e. Not Familiar at All

9. How often do you use electronic procurement methods in your role? (Please select one)

    a. Daily
    b. Weekly
    c. Monthly
    d. Rarely
    e. Never

10. What is your primary role or job title within the company? _____

11. How many years of experience do you have in the field of supply chain management or procurement? _____ years

12. Are you involved in the decision-making process related to procurement and supply chain activities at your company?

    a. Yes
    b. No

13. Have you ever worked in a role that involved traditional (non-electronic) procurement methods before joining Chilanga Cement Manufacturing Company?

    a. Yes
    b. No

14. Do you believe that electronic procurement can significantly impact the performance of supply chain activities in your company?

    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

SECTION B

The effect of electronic procurement on supply chain performance of Chilanga cement manufacturing company

The following assertions relate to the effect of electronic procurement on supply chain performance of Chilanga cement manufacturing company. Please indicate your level of agreement or disagreement by stating either strongly agree, agree, neutral, disagree or strongly disagree.

a) Influence of E-tendering process on the supply chain performance

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. E-tendering enhances the efficiency of our supply chain.					
2. E-tendering reduces procurement lead times.					
3. E-tendering improves transparency in procurement.					
4. E-tendering reduces					

procurement costs.					
5. E-tendering increases supplier collaboration.					
6. E-tendering enhances the overall competitiveness of our supply chain.					

1. Can you provide an example of how E-tendering has impacted supply chain performance at Chilanga cement manufacturing company?

   _____
   _____
   _____
   _____

2. Do you have any suggestions for improving the E-tendering process in the case of supply chain performance?

   _____
   _____
   _____
   _____

b) Effect of E-sourcing on the supply chain performance

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. E-sourcing improves supplier selection processes.					
2. E-sourcing increases procurement efficiency.					
3. E-sourcing enhances supplier relationship management.					
4. E-sourcing reduces procurement errors.					
5. E-sourcing enhances procurement cost control.					
6. E-sourcing improves supply chain visibility.					

1. What aspects of E-sourcing have you found to be most beneficial to supply chain performance?

   _____
   _____
   _____
   _____

2. Are there any challenges or drawbacks associated with E-sourcing that affect supply chain performance?

   _____
   _____
   _____
   _____

3. How do you think E-sourcing could be further optimized to enhance supply chain performance?

   _____
   _____
   _____
   _____

c) Influence of E-invoicing on supply chain performance

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. E-invoicing accelerates payment processes.					
2. E-invoicing reduces					

invoice errors.					
3. E-invoicing enhances financial transparency.					
4. E-invoicing streamlines accounts payable and receivable.					
5. E-invoicing improves cash flow management.					
6. E-invoicing reduces manual data entry in finance.					

1. In your experience, what advantages does E-invoicing bring to supply chain performance?

   _____
   _____
   _____
   _____

2. Have there been any instances where E-invoicing has posed challenges to supply chain performance? Please provide examples.

_____

_____

_____

_____

3. What recommendations do you have for leveraging E-invoicing to improve supply chain performance?

_____

_____

_____

_____

d) Assertions on Supply Chain Performance

Statements	**1**	**2**	**3**	**4**	**5**
Our suppliers deliver products/services on-time					
Our suppliers respond quickly to our petition					
Our suppliers have low price/cost of product/service					
Our suppliers have enough flexibility to respond to unexpected demand changes					
Our suppliers deliver the correct quantity of product					
Our suppliers are willing to adjust product /services to meet changing need					
We customer's orders on time					
We have short order to deliver cycle time					
We have fast customer response rate					

Thank you for your participation.

APPENDIX II

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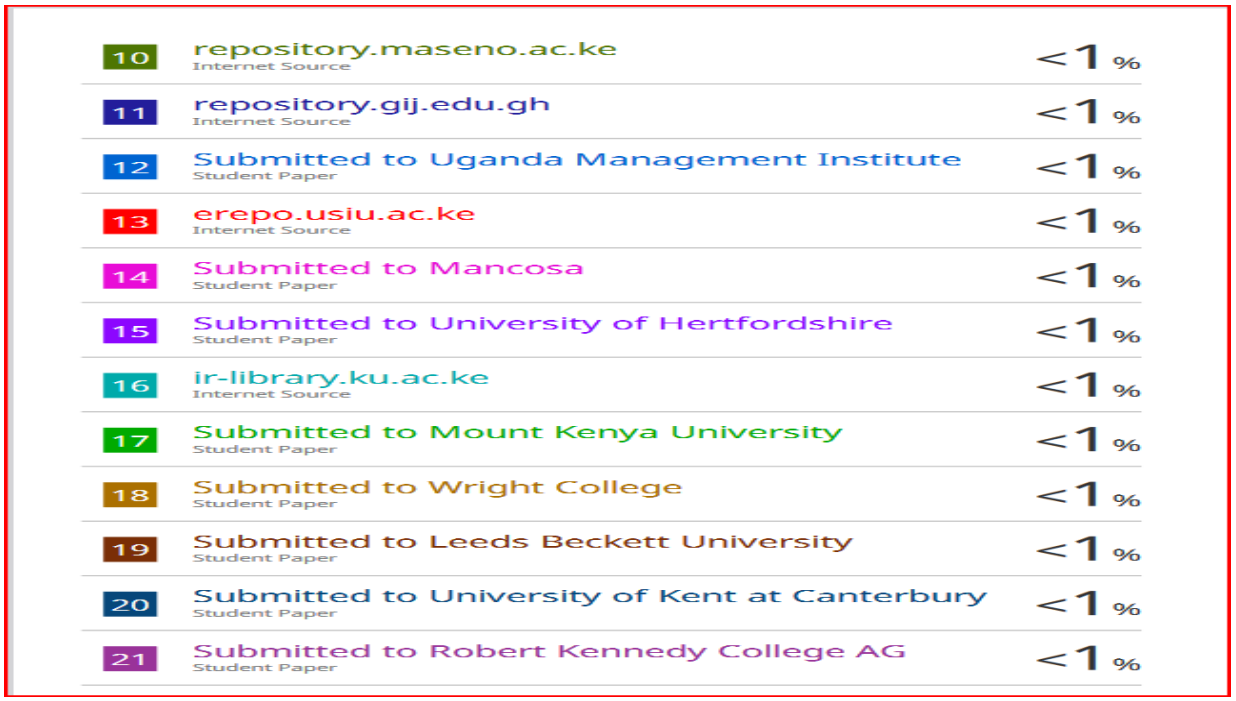

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